

# National Skills Bulletin 2017



National Skills Council

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# National Skills Bulletin

## 2017

A Report by the Skills and Labour Market Research  
Unit (SLMRU) in SOLAS on behalf of the National Skills  
Council

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## Foreword by the Minister

Our aim is to have the best education and training service in Europe by 2026. Accurate information is essential to developing the policies needed to achieve this. The National Skills Bulletin is an important source of up to date information which can help guide progress in this area.

Since the crash which wiped out 20% of private sector jobs in a short few years, there has been a strong recovery in job opportunities. Over the five years from 2012 to 2017, an extra 228,000 jobs have been created; unemployment has fallen from 15.1% to 6.1%. We are seeing evidence of a strong, stable economy with youth unemployment, involuntary part-time working and other similar indicators in decline while participation rates are rising and net inward migration has started again.

There are positive trends, but if they are to be sustained, we need to understand the underlying changes and areas of skills needs for the future. It is important to understand that these numbers are the outcome of a complex web of movements and decisions made by individual workers and employers. For example, the National Skills Bulletin tells us that in 2016 alone there were 1.1 million 'transitions' within the Irish labour market. That means there were 1.1 million movements between employment and unemployment, from employment to inactivity such as retirement, from inactivity to employment, and so on. The net result of all these movements is that there are 56,000 more people in employment at the end of the year than at the start, but there is so much more going on than the total figure tells us.

Nearly 86% of our labour force has a third level or higher secondary/FET level qualification. That is very significant. Our highly educated workforce is one of the key reasons why Ireland is such an attractive country for foreign direct investment. Indeed, our research shows the benefits to the individual - of those with a third level qualification in 2016, just 4% were unemployed.

Our aim must be to improve the matching of the skills and needs across the board. We must focus on providing opportunities at all stages in life to all people to improve and expand their skills or change direction in their careers. We must also provide different pathways for people to reach their full potential. Apprenticeships and traineeships can offer exciting opportunities and are a fundamental factor in the success of industry in our European neighbour countries, particularly in Germany. We have doubled the number of new entrants to apprenticeships in the past 4 years and are now enrolling nearly 4,000 each year.

Providing people with opportunities at all stages of their life to improve their skills or engage in further study makes a real, tangible difference to people's lives. The 2017 National Skills Bulletin contains much information to help guide public policy and inform our decision making in education and training provision but we must never lose sight of this simplest of all messages: learning works.

**Richard Bruton TD**  
**Minister for Education and Skills**





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## Executive Summary

The National Skills Bulletin 2017 is the thirteenth in an annual series of reports produced by the Skills and Labour Market Research Unit (SLMRU) in SOLAS and the first to be produced on behalf of the National Skills Council (NSC). The Bulletin provides an overview of the Irish labour market at occupational level, by examining a variety of indicators on demand and supply.

The objective of the Bulletin is to inform policy formulation in the areas of employment, education/training, career guidance and immigration. The Bulletin also aims to assist students, job seekers, persons returning to the labour force, investors and employers in making labour market decisions.

For the most part, the analysis presented in the Bulletin is based on data held in the SLMRU National Skills Database, spans 130 occupational groups and examines a range of labour market indicators.

### Irish Labour Market in 2016

Ireland continued to experience a strengthening labour market during 2016 with further improvements in a number of labour market indicators:

- the labour force increased by almost 26,000 (annual average)
- the participation rate increased by 0.3 percentage points to 60.3% (annual average)
- employment increased by over 56,000 (annual average)
- the employment rate increased by 1.5 percentage points to 64.8% (annual average)

- the unemployment level declined by over 30,000 (annual average)
- the unemployment rate declined by 1.6 percentage points to 7.9% (annual average)
- the long term unemployment rate declined to 3.6% (quarter 4)
- the broad unemployment measure (combining unemployed and part-time underemployed persons) declined to 10.9% (quarter 4)
- the youth unemployment rate and inactivity rate also declined between 2015 and 2016
- the number of persons in part-time employment who were underemployed decreased by over 12,000 (quarter 4)
- inward migration exceeded outward migration resulting in positive net migration of 16,200 persons
- the total number of redundancies declined to 4,313, compared to 77,000 in 2009.

Despite this, there remains areas that may require monitoring including

- the dependency rate continues to increase, with a three percentage point increase since 2013, primarily related to an increase in the old age (those over 65 years) dependency rates.

### Employment and Unemployment by Broad Occupation

The strongest absolute employment growth (in annual average terms) between 2015 and 2016 was observed for professional occupations (8,100), operatives (7,400), and managers (7,300).



In quarter 4 2016, the unemployment rate was highest for those previously employed in elementary (7.5%) and sales (6.5%) occupations and lowest for those previously employed in professional occupations (1.7%). Between quarter 4 2015 and quarter 4 2016, the unemployment rate declined for all occupational groups with the rate for operatives observing the greatest decline of 3.8 percentage points, followed by skilled trades (2.9 percentage points).

### Sectoral Employment and Unemployment

Between quarter 4 2015 and quarter 4 2016 the strongest employment growth was observed in the construction sector (9.2%); over this period, employment increased in all sectors excluding administrative services (where it remained unchanged).

Compared to five years previously (quarter 4 2011 to quarter 4 2016), employment in agriculture, professional services and construction each grew by 28% or more; employment contracted in public administration and defence and the financial activities sectors.

### National Skills Strategy Progress

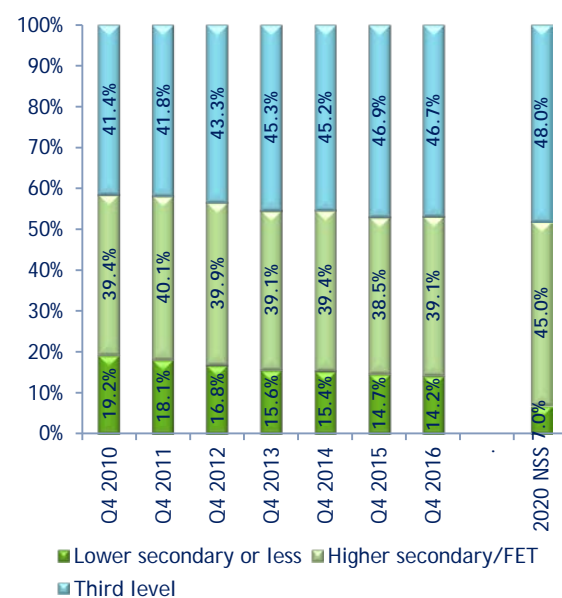
Figure A.1 presents the education attainment of the labour force (15-64 years) and the targets set out in the 2007 National Skills Strategy (NSS) and carried over in the new 2016 National Skills Strategy<sup>1</sup>. Over the period quarter 4 2015 and quarter 4 2016, the share of working age third level graduates in the labour force decreased marginally to 46.7% (0.2 percentage point since 2015). An improvement was observed at the lower end of the education scale, with the share of

<sup>1</sup> Ireland's National Skills Strategy 2025, January 2016

persons with lower secondary qualifications or less declining by 0.5 percentage points to 14.2%.

In relation to the third level graduate cohort, the decrease in the share at this level translates to a widening of the gap to the 2020 target to 1.3 percentage points. The gap in reaching the target was over seven percentage points for the cohort with less than higher secondary education (14.2% compared to 7%).

Figure A.1 Labour Force (15-64 years) by Education and the NSS Target



Source: SLMRU (SOLAS) analysis of CSO data

### Labour Market Transitions

Based on quarterly flows, it was estimated that over 1.1 million labour market transitions occurred in the Irish labour market in 2016: approximately 180,000 transitions between employment and unemployment; almost 300,000 between employment and inactivity and 275,000 between unemployment and inactivity. In addition, almost 360,000 transitions occurred within employment, either due to a change of employer or change

of occupation. The distribution of transitions is presented in Table A.1.

Table A.1 Average Quarterly Transitions by ILO Status, 2016 (Persons aged 15-74)

ILO start quarter	ILO end quarter		
	Employed	Unemployed	Inactive
Employed	97.4%	0.9%	1.6%
Unemployed	15.4%	63.8%	20.8%
Inactive	3.4%	2.6%	94.0%

Source: SLMRU (SOLAS) analysis of CSO data

Several occupations have been identified as the most frequent movers between all labour market states. These are primarily concentrated in elementary occupations (waiters, bar staff, cleaners, catering assistants, construction and security), care workers, sales assistants and general clerks.

**Retirement** - The highest volume of transitions to retirement were observed for sales assistants, care workers and farmers.

**Replacement** - The highest replacement rates (exit rates to all forms of inactivity, including retirement) were observed for business associate professionals, receptionists, IT engineers, sales workers (sales assistants, customer services), hospitality workers (waiters, bar staff and catering assistants), food operatives, farm workers, cleaners and security guards.

**Turnover** - Changes of employer were most frequent for professionals (IT programmers, doctors), skilled trades (electricians, carpenters), hospitality workers (chefs, waiters, catering assistants and managers, bar staff), services (hairdressers, child-minders, sales) and operatives (assemblers, construction, storage).

## Vacancies

In 2016, vacancies advertised through IrishJobs.ie were mostly concentrated in professional and associate professional occupations; newly advertised vacancies through DSP Jobs Ireland were concentrated in elementary, personal services and skilled trades occupations.

The most recent SLMRU Recruitment Agency Survey points to an increase in the number of mentions of difficult-to-fill (DTF) vacancies. Although professional occupations (mostly IT programmers, but also for engineers, accountants, doctors etc.) account for the majority of all DTF mentions, there were also frequent mentions across all occupational groups, but particularly for technician posts, multilingual sales and customer care.

## Sourcing of Skills from Outside the European Economic Area (EEA)

During 2016, employers continued to source skills from outside the EEA. Approximately 7,700 new employment permits were issued in 2016, a 27% increase on the previous year. New permits issued for critical skills accounted for almost half (47%) of all new permits in 2016, with a further 36% for general permits and 11% for intra-company transfers.

The number of permits issued has been growing in recent years for most sectors, particularly in the health and ICT sectors. In 2016, the ICT sector accounted for 40% of all new permits issued with the health sector accounting for 30%. In terms of occupations, professionals accounted for over three quarters of all new permits issued, for positions including doctors, software engineers/developers, nurses, engineers and business analysts.

## Shortages<sup>2</sup>

While shortages exist for a number of occupations across all sectors of the economy, many of these are small in magnitude and in particular niche areas requiring a number of years' experience.

## Science

The skills in short supply chiefly related to experienced candidates (e.g. five years or more) and niche scientific areas typically associated with the pharmaceutical, biopharma and food innovation industries.

Shortages, albeit small in number, have been identified in relation to the following roles:

- chemists/analytical scientists (especially product formulation, and analytical development for roles in biopharma)
- quality control analyst including pharma co-vigilance (i.e. drug safety) roles.

## Engineering

The demand for engineers, typically for roles in pharmaceutical and medical devices manufacturing, relates largely to those with significant experience (at least five years) in industry specific settings. Shortages include

- process and design (including R&D)
- quality control/quality assurance (including standards, compliance and regulatory affairs, mostly EHS<sup>3</sup> compliance)
- automation (including lean processes)
- validation/computer validation system (CVS), CQE (certified quality engineer) certification

<sup>2</sup> The term 'shortage' in this report refers only to a situation where the supply of skills or labour from within the Irish labour force is insufficient to meet demand (which does not imply a shortage at the European Economic Area (EEA) level).

<sup>3</sup> Environmental Health and Safety

- chemical engineers
- electrical engineers (safety, tech. specification, mechatronics - development and integration of mechanical, electrical and software systems; power generation and transmission)
- mechanical engineers: with skills and experience in polymer engineering and injection moulding
- technicians: quality assurance/control, process (e.g. injection moulding/polymer engineering), extrusion and maintenance.

## ICT

Shortages of ICT skills have been identified in the following areas:

- software developers: mobile (iOS/Android), database (with Oracle/SQL), web, cloud; with skills in Java, JavaScript, C++, .Net, PHP, CSS, F#, Python and Ruby on Rails the most frequently mentioned
- engineers: network (Linux, Open Source), database, QA, automated performance testers, DevOps (developing/testing, process re-engineering and communication skills)
- systems/solutions architects, database architects (e.g. data centres/data warehousing)
- web design (niche areas only): particularly web related applications focusing on enhancing users' online experience (UX) and supporting user interaction (UI) with 3-5 years' experience
- InfoSec (IT security), IoT (internet of things), cyber security analyst, data/information security, network security

- business intelligence: BI solutions, big data analysts (e.g. Hadoop, Cassandra, SQL), ERP (enterprise resource planning) with SAP
- IT managers and business analysts (especially systems migration and IT project management e.g. waterfall and agile)
- IT technicians: troubleshooting, tech support with languages, particularly German and database administrators.

#### Business and financial

Shortages of skills have been identified in the following areas:

- accounting: financial and management accountants with expertise in solvency, taxation, IFSR<sup>4</sup> relevant skills and regulatory compliance; accountants for roles in industry with ERP system and reporting tools, as well as language skills; actuaries
- business intelligence and risk analysis; financial systems analysts; entry level and experienced revenue managers (specific sectors, e.g. hospitality)
- data analytics: experienced (5 years+) statisticians; economists and data scientists (big data, data visualisations and quantitative modelling)
- FinTech: business and financial professionals with skills in specific software packages and experience (including international)
- financial management/financial analysis: trustee managers; deposit managers; payroll managers
- multilingual financial clerks: credit controllers; accounts payable/receivable; payroll specialists; fund accounting and transfer pricing specialists.

<sup>4</sup> International Financial Reporting Standards

#### Healthcare

Shortages continue to persist for the following occupations:

- medical practitioners (especially locum and non-consultant hospital doctors, registrars and medical specialists (e.g. general and emergency medicine, oncology, psychiatry, orthopaedic, anaesthetists, paediatricians))
- nurses - advanced nursing practitioners (e.g. intensive care, operating theatre, theatre nurse managers), registered nurses (e.g. general nurse, cardiovascular care, elder persons' care, paediatric, oncology, intellectual disability care, fertility) and clinical nurse managers
- radiographers (clinical specialists; MRI and CT radiographers)
- niche area specialists (audiologists, cardiac technician, dieticians).

#### Construction professionals

Shortages of the following skills have been identified:

- construction project managers (with relevant experience and specialist knowledge)
- quantity surveyors, building services/structural/site engineers.

#### Construction craft

There is still a considerable overhang of construction skills in the Irish labour market: in May 2016, there were over 9,000 construction tradespersons seeking employment through the Public Employment Service (PES). It should be noted, however, that a significant number of job seekers in each of these occupations has a Leaving Certificate or lower level of qualification. Strong employment growth is forecast for these occupations up to 2020 and as a result,

the availability of qualified tradespersons (i.e. NFQ 6 advanced certificate) may become an issue in the short to medium term. Indeed, despite the excess supply of most construction skills at present, a shortage of skills has been identified for the following occupations:

- curtain wallers
- glaziers
- steelfixer, steel erectors
- pipelayers
- shuttering carpentry
- shift managers and supervisors.

#### Other craft

Shortages of TIG/MIG welders continue to exist. The demand for welding skills is expected to be driven by the projected strong performance of high tech manufacturing, utilities and construction.

The demand for tool making skills has been increasing, owing mainly to the strong performance of the high tech manufacturing sector. Despite an increase in the supply of those with toolmaking skills in recent years through the education and training system, shortages of tradespersons with expertise in making highly complex precision tools are expected to continue in the short run.

Attracting and retaining skilled butchers/deboners remains a challenge for the meat industry in Ireland. This issue is likely to be exacerbated during the recovery, due to the greater availability of job opportunities across other sectors of the economy.

#### Arts, Sport and Tourism

Despite the increased supply from the education and training system, there remains

a shortage of chefs. While the supply is sufficient to meet the demand for lower skilled hospitality roles (waiters/bar staff and catering assistants), the availability of persons willing to take up those roles is expected to be negatively affected by the greater availability of job opportunities across other growing sectors.

#### Transport

A shortage of skills relevant to supply chain management has been identified, including

- purchasing managers and senior buyers
- senior planner (supply chain management including demand forecasting)
- distribution specialists with technical expertise (biopharma)
- administrative roles in procurement, supply chain and logistics with languages.

A shortage of drivers has also been identified. While there is a large number of job ready drivers seeking employment, some recruitment difficulties are arising due to issues such as age related insurance costs and the lack of experience in relation to new entrants. Difficulty in sourcing suitably qualified personnel has occurred in the following roles:

- heavy goods vehicle (HGV) drivers/articulated truck drivers/rigid truck with Certificate of Professional Competence (CPC)
- fork lift drivers (e.g. with VNA and/or turret license, reach truck)
- 360 machine drivers (14 ton).

#### Social & Care

Given a large level of movement between employment, unemployment and economic inactivity, as well as within and between

occupations, it is recognised that some employers may be experiencing difficulty in attracting and retaining qualified care and childcare workers. Changing demographics, along with Government policy, will impact on the demand for these skills in the short to medium term.

### Sales & customer service

In the context of international trade, issues with availability of the following skills relevant to sales and customer care have been identified:

- technical sales (e.g. software B2B and SaaS products)
- vendor managers/CRM roles with European languages (Nordic, Dutch and German).

In addition, a shortage of marketing experts required to lead product/brand management and business development (with languages) continues to exist.

### Operatives

While almost 8,000 operatives were seeking employment through the Public Employment Service in May 2017, many unemployed operatives have been trained in traditional operative skills and are deficient in technical and digital competencies required for high technology automated manufacturing. As such, shortages have been identified in the following occupations:

- qualified CNC (computer numeric control) operatives: particularly in high technology manufacturing (e.g. medical devices and pharmaceuticals) and engineering
- production operatives: vacancies, particularly in the high-tech manufacturing/med-tech sector, are proving difficult to fill and given the high

churn rates, it is possible that retention issues may arise as job opportunities in other sectors improve, resulting in a labour shortage for operative occupations

- construction operatives: ground workers, scaffolders, experienced tower crane operatives and pipelayers in line with the upturn in the construction industry.



## Introduction

The National Skills Bulletin 2017 is the thirteenth in an annual series of reports produced by the Skills and Labour Market Research Unit (SLMRU) in SOLAS and the first to be produced on behalf of the National Skills Council (NSC). It presents an overview of the Irish labour market at occupational level.

The Bulletin aims to assist policy formulation in the areas of employment, education/training, immigration (particularly the sourcing of skills which are in short supply in the Irish and EU labour market from the EEA), as well as informing career guidance advisors, students and other individuals making career and educational choices.

The analysis presented in the Bulletin is based primarily on the data held in the SLMRU National Skills Database, although it also draws on information from the Expert Group on Future Skills Needs' (EGFSN) sectoral studies and other relevant research. Occupations are classified using the Standard Occupational Classification (SOC 2010). In cases where the number of persons employed in an occupation is too small to allow for meaningful statistical analysis, two or more occupations were merged to form an occupational group. The analysis covers over 130 occupations.

Each occupation is examined in terms of the following:

- employment level and recent employment trends; the analysis is based on the data from the Central Statistics Office (CSO) Quarterly National Household Survey (QNHS); when interpreting the

employment data, the following should be borne in mind:

- the employment level for each occupation is expressed as an annual average (i.e. the average of four quarters in a calendar year)
- the trend analysis covers the five-year period 2011-2016, unless otherwise specified; growth over this period is calculated in terms of the annualised growth rate, sometimes referred to as the 'average annual growth rate' for ease of reading (although the two terms are not technically identical)
- unless otherwise stated, annual changes on a year-on-year basis cover the period quarter 4 2015 - quarter 4 2016<sup>5</sup>
- an employment profile (i.e. age, gender, nationality, employment type and education level); the analysis is based on the QNHS data for quarter 4 2016
- expected medium term employment growth (Occupational Employment Projections 2020, SOLAS, February 2014)
- job ready job seekers registered with the Public Employment Service (PES) (Department of Social Protection (DSP)); these are persons seeking employment who were previously employed in a specific occupation and are self-declared as job ready
- unemployment rate: the analysis is based on the QNHS data for quarter 4 2016

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<sup>5</sup>By examining the change in the level of employment one can assess the net result of total job creation and job losses. If an increase in the employment level was observed between two time points, it implies that more jobs were created than lost over that period – this is referred to as 'net job creation'; conversely, if a decrease in the employment level was observed, it implies that more jobs were lost than created.

- vacancies advertised through the Department of Social Protection's (DSP) Jobs Ireland vacancy portal (i.e. the Public Employment Service (PES)) and IrishJobs.ie (a private on-line vacancy advertising service)
  - the level of difficulty in filling vacancies; the analysis is based on data from the SLMRU Recruitment Agency Survey conducted in April 2017
  - the number of new employment permits issued to non-EEA nationals by the Department of Jobs, Enterprise and Innovation (DJEI)
  - recent announcements of job creation and job losses in the media
  - replacement demand and turnover estimates are based on the analysis of labour market transitions (QNHS)
  - the current balance between demand and supply<sup>6</sup>; the analysis is based on all of the above data and other available information; the occupations for which shortages<sup>7</sup> have been identified are highlighted and comments are made regarding the nature of the shortage (e.g. niche area); while the aim is to identify occupations for which shortages exist, further research is necessary to identify the cause and magnitude of these shortages and to recommend the appropriate (if any) policy response.
- The National Skills Bulletin 2017 is structured as follows:
- Section 1: sets the Irish labour market within the context of recent trends and developments in the macroeconomy and presents an overview of the economic and employment outlook for Ireland
  - Section 2: examines trends in key labour market indicators (employment, unemployment and the labour force) and the composition of national employment (gender, age, nationality, education etc.)
  - Section 3: examines employment trends in economic sectors (the final quarter of 2016 is compared with the same period in the previous year and five years previously)
  - Section 4: analyses employment trends by broad occupational group (i.e. employment growth and the composition of employment)
  - Section 5: examines recent trends in Irish unemployment (levels and rates) and the characteristics of the unemployed population (i.e. gender, age, educational attainment, nationality, occupation and sector)
  - Section 6: presents analysis of labour market transitions between unemployment, employment and economic inactivity at occupational level
  - Section 7: examines the inflow of labour from non-EEA countries through the various employment permit schemes
  - Section 8: provides an overview of trends and the types of vacancies advertised through the DSP Jobs Ireland vacancy portal and IrishJobs.ie; it also reports the findings of the April 2017 SLMRU Recruitment Agency Survey on difficult-to-fill-vacancies
  - Section 9: presents labour market indicators for over 130 occupations grouped into 17 occupational groups and highlights occupations in short supply.

<sup>6</sup> Forecasts of shortages are not provided, unless implicit in the available data.

<sup>7</sup> The term 'shortage' in this report refers only to the situation where the supply of skills or labour from within the Irish labour force is insufficient to meet demand. It is possible that a sufficient supply of skills or labour for an occupation in question may be found within the European Economic Area (EEA).

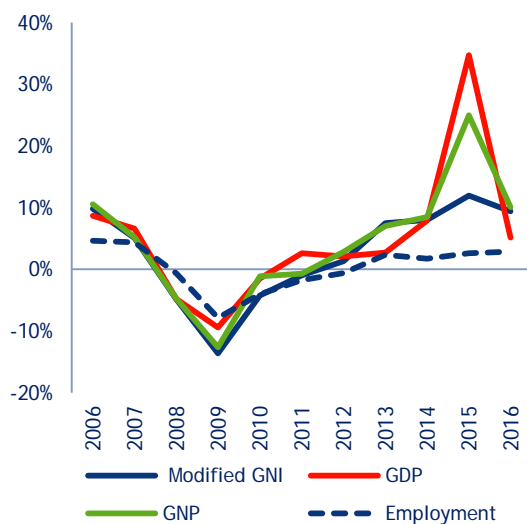


## Section 1 Macroeconomic Context

### Economic growth

Ireland was the fastest growing economy in the Eurozone in 2016<sup>8</sup>. The Irish economy grew by 5.2% in gross domestic product (GDP) terms in 2016 compared to 2015, bringing GDP to over €275 billion, 40% above the pre-crisis peak reached in 2007. Gross national product (GNP) increased by 10.1% in 2016, as factor income outflows were down by 9.4% in 2016<sup>9</sup>. After the publication of the 2015 results, it was widely accepted that Modified Gross National Income (GNI\*), that corrects for the relocation of intangible assets, globalization of production processes and residential location of multinational firms, is a better measure of the domestic economy<sup>10</sup>. As measured by the GNI, the Irish economy grew by 9.4% between 2015 and 2016 (Figure 1.1).

Figure 1.1 GDP, GNP, GNI (at current market prices) and Employment, Annual Change, 2006-2016



Source: SLMRU (SOLAS) analysis of CSO data; Central Bank of Ireland, Quarterly Bulletin Q2 2016

<sup>8</sup> Ameco database. SLMRU calculations of annual growth rates using GDP at current prices.

<sup>9</sup> CSO, Statistical Release, 09 March 2017.

<sup>10</sup> Central Bank of Ireland (2017), Quarterly Bulletin, April.

Strong growth in Ireland was achieved as a result of recovery in the domestic economy over and above an unfavourable external environment due to weak sterling, uncertainty surrounding Brexit and potential changes in international taxation and trade arrangements.

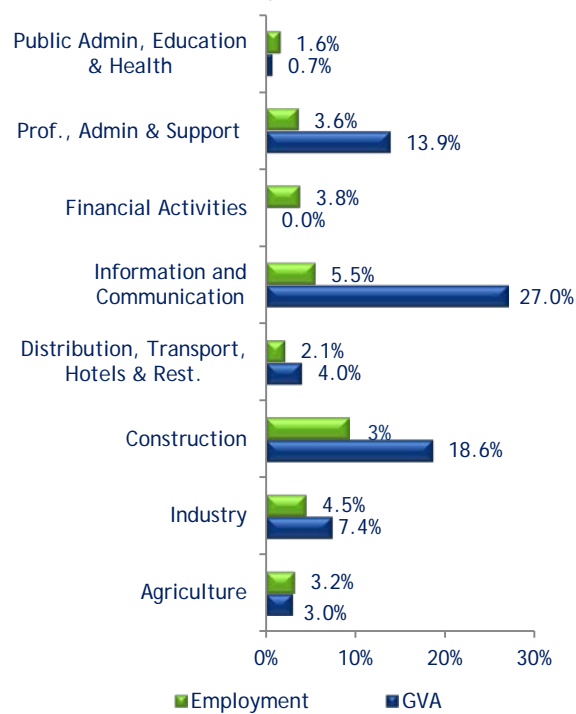
### Growth Components

The main drivers of growth in 2016 were capital investment and personal consumption increases: capital formation increased by 45.5% since 2015 and personal consumption increased by 3.0%. Total domestic demand increased by 16.8% in 2016, supported by growth in employment, and concomitant increases in incomes and strengthening investment. Net exports declined in 2016, whereas they were the main growth component in 2015. Both GDP and GNP growth is forecast to slow down in 2017 and 2018 to 3.5%-3.2% for GDP and 3.3%-2.8% for GNP<sup>11</sup>.

At a sectoral level, output growth was driven by a strong increase in gross value added (i.e. output) in the information and communication and construction sectors (see Figure 1.2). Gross value added in quarter 4 2016 increased by 27% in the ICT and 19% in the construction sector compared to quarter 4 2015.

<sup>11</sup> Idem.

Figure 1.2 Annual Percentage Change in Gross Value Added & Employment, 2015-2016

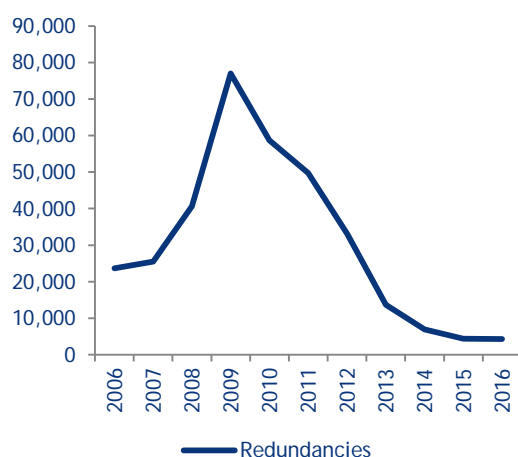


Source: SLMRU (SOLAS) analysis of CSO data  
 Note: Gross Value Added is seasonally adjusted and chain linked annually and referenced to 2015.

### Redundancies

In 2016, 4,313 redundancies were registered with the DSP, the lowest level since their peak in 2009, but on a par with that reported in 2015 (Figure 1.3).

Figure 1.3 Redundancies, 2006-2016



Source: DSP

### Balance of Payment and Current Account

In 2016, the Irish current account was estimated to be €12.5 billion and 4.7% of GNP. In 2015, export growth was the main driver of growth in the Irish economy, with a 14% annual increase. However, in 2016, export growth slowed to 2.4% and import growth outpaced exports with a 10.3% increase during the year. In the short and medium-term, the current account surplus is forecast to narrow to 4.6% in 2017 and 4.3% of GNP in 2018<sup>12</sup>.

Foreign direct investment (FDI) inflows have been a significant source of finance, as Ireland has accumulated inward FDI stocks of 168.4% of its GDP (2012). In addition, foreign controlled enterprises in Ireland contribute to 56.2% of total value added (2011), by far the highest rate in the Eurozone<sup>13</sup>. Net foreign direct investment flows reached €13.4 billion as outflows and inflows slowed in 2016 compared to 2015. In 2016, multinationals invested €95.2 billion in equity and €33.7 billion in reinvested earnings in Ireland. However, several foreign affiliates also divested existing investment to the sum of €115.8 billion and reduced their intra-company loans.

Despite lower net FDI inflows, many of the projects provide benefits such as significant capital investment, job creation and increased exports. According to the IDA, the 242 investment projects approved in 2016 will create 6% more net jobs, approximately 11,800 jobs.

In terms of attractiveness as an FDI location, A.T. Kearney's Foreign Direct Investment Confidence Index placed Ireland in 23<sup>rd</sup> place

<sup>12</sup> Central Bank, (2017) Quarterly Bulletin, April.

<sup>13</sup> Eurostat, FATS database. Most recent data is for 2012.

in 2016 and 20<sup>th</sup> in 2017. While robust economic growth and the low corporate tax rate were mentioned as favourable factors, EU pressure on Ireland to raise its tax rate and Brexit were mentioned as potential risks.

In 2016, there was also strong growth among the indigenous firms. Between 2015 and 2016, total employment in Enterprise Ireland (EI) client companies increased to over 201,000 jobs, adding 9,117 net jobs to the economy. In addition, EI companies spent €42.4 billion in sales, of which €21.6 billion were exports<sup>14</sup>.

#### Competitiveness

The 2017 IMD Global Competitiveness Yearbook rankings moved Ireland up one place in overall competitiveness from 2015 to sixth place in 2016 among 63 countries benchmarked. Ireland was ranked in first position for the following sub categories:

- labour productivity
- investment incentives
- national culture
- flexibility and adaptability
- attracting and retaining talent
- attitudes towards globalization

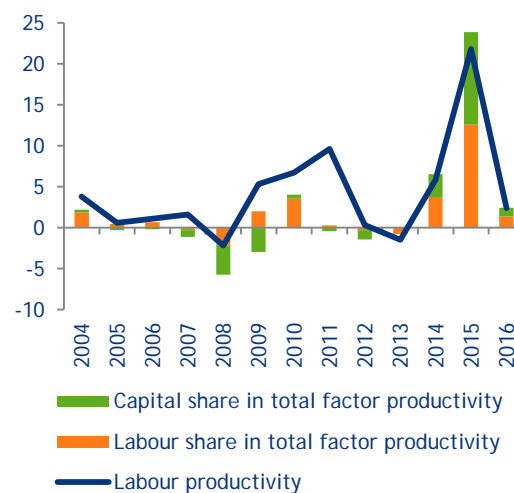
In a recent report, the National Competitiveness Council (NCC) commented that Ireland was facing major competitiveness challenges in developing the resilience of its enterprise base, especially in light of Brexit. Ensuring competitiveness requires cost competitiveness, boosting productivity and skills availability. While cost (and price) competitiveness are at the heart of international attractiveness of Ireland, as a

<sup>14</sup> Enterprise Ireland, 2016 Highlights.

small open economy, productivity is the main engine of growth in the long-run.

Figure 1.4 shows the growth rate of total factor productivity (TFP) and two of its components, i.e. labour and capital, from 2004 to 2016 in Ireland. Productivity in Ireland was slowing before the crisis. Productivity turned negative in 2008 and in 2012 but since 2013 has recovered with a significant increase in 2015. Labour is seen as the main driving factor of productivity in Ireland, with a smaller share for capital (Figure 1.4).

Figure 1.4 Total Factor Productivity and Labour Productivity Growth

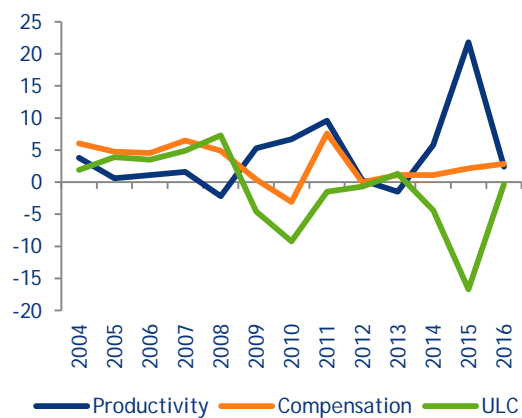


Source: Ameco, Eurostat, SLMRU calculations

Labour productivity in Ireland has been strong compared to that of the Eurozone. Real labour productivity growth (per hour worked) was 2.4% in 2016, against the Eurozone average of 1% for the same period and -0.5% in the UK. As seen in Figure 1.5, labour costs lagged behind productivity growth, both in terms of compensation of employees (per hour) and real unit labour costs (ULC) since 2013<sup>15</sup>.

<sup>15</sup> Unit labour costs are defined as the ratio of labour costs to labour productivity. Compensation of employees

Figure 1.5 Competitiveness: Productivity versus Labour Costs in Ireland (Annual per cent change)

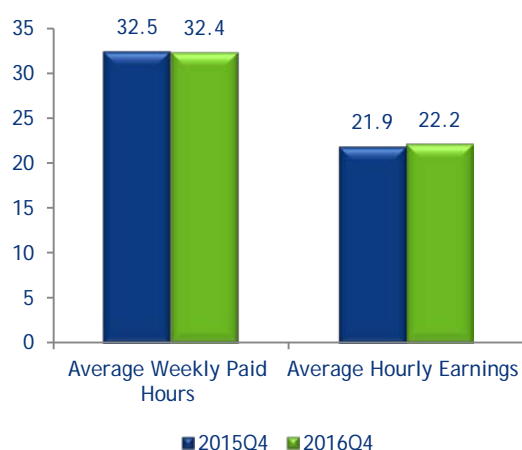


Source: Eurostat

#### Hours Worked and Earnings

Figure 1.6 presents the average weekly paid hours and average hourly earnings for the overall economy. In quarter 4 2016, the number of average weekly paid hours was 32.4, which was 10 minutes less than one year previously. In quarter 4 2016, average hourly earnings were €22.2, which was 30 cent more than in quarter 4 2015.

Figure 1.6 Average Weekly Paid Hours & Average Hourly Earnings

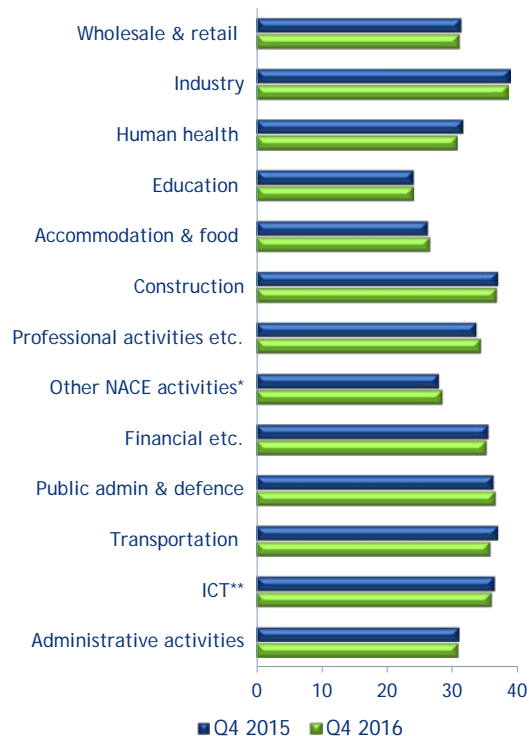


Source: CSO, Earnings, Hours and Employment Costs Survey

consists of wages and salaries, and of employers' social contributions.

Economy-wide averages may hide changes across sectors. Figure 1.7 presents average weekly paid hour by broad sectors. In quarter 2016, industry had the highest average weekly hours paid at 38.6. This was closely followed by electricity, water and waste management (37.7 hours), construction (36.8 hours) and public admin and defence (36.6). The least hours worked within a week was in the education sector (24.1 hours), followed by the accommodation and food sector (26.6 hours).

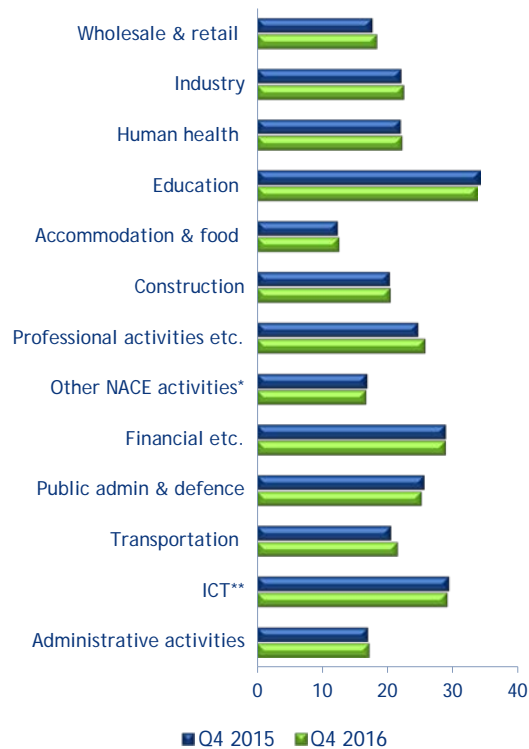
Figure 1.7 Average Weekly Paid Hours by Sector



Source: CSO, Earnings, Hours and Employment Costs Survey

In 2016, hourly earnings were highest in the education sector, with €33.76 per hour and lowest in the accommodation and food sector, with €12.6 per hour (Figure 1.8). This is in line with previous years.

Figure 1.8 Average Hourly Earnings by Sector



Source: CSO, Earnings, Hours and Employment Costs Survey

### Global Outlook

Global economic growth forecasts for 2017-2018 are higher than the 3.2 per cent estimated for 2016, driven by growth in global trade and industrial production. Nevertheless, these rates are below pre-crisis growth rates<sup>16</sup>. Most advanced economies face excess capacity as well as risks from aging populations, weak investment and slow productivity growth<sup>17</sup>.

For Ireland, any risks to growth in the Eurozone, the UK or the US have a more direct impact as these countries are its main trade and investment partners. The US growth rates for 2017 and 2018 were both revised downwards to 2.1% due to less expansionary

<sup>16</sup> World Economic Outlook Database, April 2017.

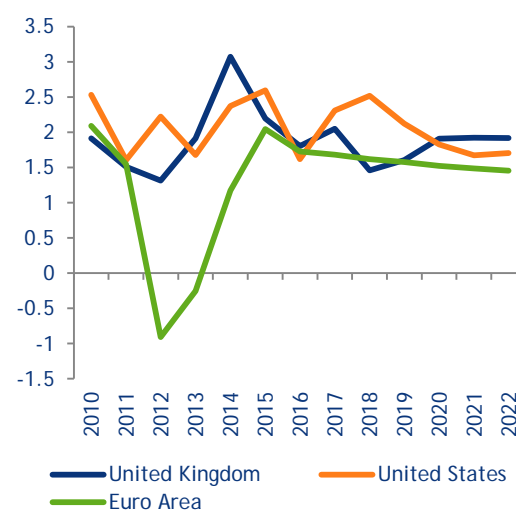
<sup>17</sup> IMF (2017), World Economic Outlook Update, April.

fiscal policy. The growth forecasts for the UK are 1.7% in 2017 and 1.5% in 2018, down from 1.8% in 2016. Despite a decline in election risk, policy uncertainty remains high not only in the US but also in the UK due to post-Brexit negotiations.

On the other hand, the outlook is positive for several Eurozone countries such as France, Germany, Italy and Spain. Stronger than expected growth revisions in these countries are driven by positive momentum in domestic demand.

Figure 1.9 presents the medium-term IMF growth projections of the major trading partners for Ireland. The economies of the three main trading partners are expected to grow moderately over the medium-term. The UK economy is expected to grow the strongest of the three, with an average annual GDP growth of 1.9% expected in 2020-2022, based on strong spending despite the June 2016 referendum on Brexit. The US is expected to grow at an average of 1.7% and the Euro area is expected to grow at an average of 1.5% over the same period.

Figure 1.9 GDP at Constant Prices



Source: IMF



Medium-term growth rates in both advanced and emerging market economies will be shaped largely by the pace of total factor productivity (TFP) growth. New evidence suggests that in Europe high levels of corporate debt and non-performing bank loans have constrained investment in capital goods and intangible assets, slowing the pace of capital-embodied technological change<sup>18</sup>.

Weak demand was noted in advanced economies in several recent reports. One explanation for slow recovery in demand is low total factor productivity growth and its negative impact on investment. Another is a prolonged period of high unemployment. This can lead to job seekers dropping out of labour market or become unemployable due to skill erosion<sup>19</sup>.

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<sup>18</sup> Adler, Duval, Furceri et al. (2017). "Gone with the Headwinds: Global Productivity." IMF Staff Discussion Note 17/04, IMF, Washington, DC.

<sup>19</sup> IMF (2017), World Economic Outlook, April, Washington DC.

## Section 2 Labour Market Overview

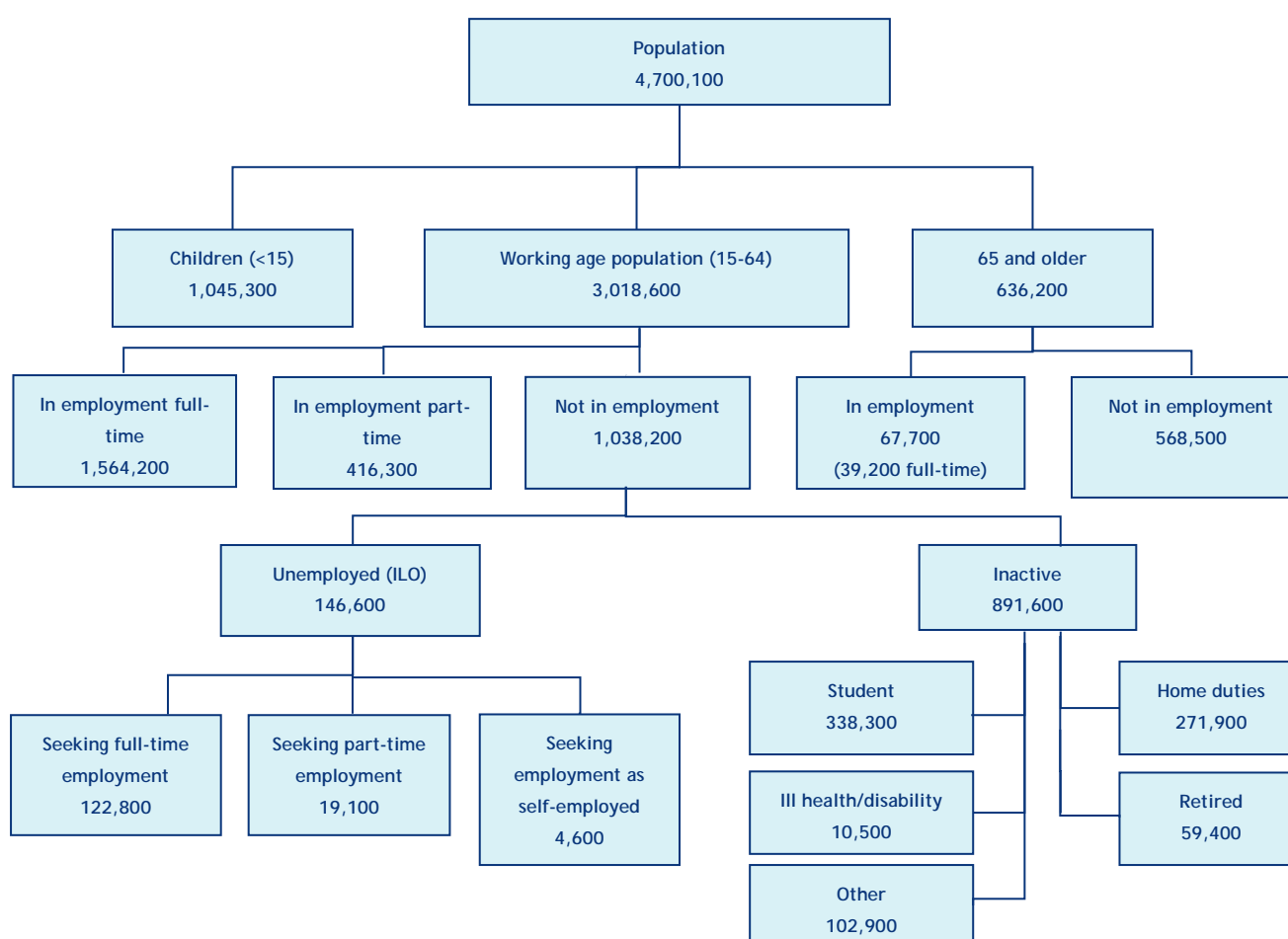
### 2.1 Population: Labour Market Status

In quarter 4 2016, there were an estimated 4.7 million persons living in Ireland, 46,600 more than in quarter 4 2015.

Figure 2.1 presents the labour market status of persons living in Ireland. In quarter 4 2016, the working age population (persons aged 15-64) was 3.02 million, almost 17,000 more than in quarter 4 2015. Compared to the previous year, full-time employment increased while

the number in part-time employment and not in employment decreased for the working age population. The number of children (persons younger than 15) was 1.05 million (an increase of more than 10,000), while the number of persons aged 65 and over was 636,200. Those aged 65 and over was the fastest growing age cohort, in both absolute and relative terms (19,500 or 3.2%). The number of those in employment for this group increased since quarter 4 2015, by 6.3%.

Figure 2.1 Population by Labour Market Status (ILO defined), Quarter 4 2016



Source: SLMRU (SOLAS) analysis of CSO data

Note: Discrepancies are due to rounding.



In quarter 4 2016, the total age dependency rate<sup>20</sup> (youth and older age) was 55.7%, which was 0.7 percentage points higher than in quarter 4 2015. Over this period, the youth age dependency rate increased by 0.1 percentage points to 34.6%, while the older age dependency rate increased by 0.6 percentage points to 21.1% (Table 2.1).

In quarter 4 2016, 1.98 million persons of working age were in employment, which was over 61,000 more than in quarter 4 2015. Approximately 1.04 million persons of working age were not in employment, which was 44,300 less than one year previously. Of the working age population not in employment, over 146,600 were unemployed and 891,600 were economically inactive.<sup>21</sup> Compared to quarter 4 2015, the number of unemployed and economically inactive persons decreased by 39,400 and 4,900 respectively.

Within the economically inactive group, there were:

- 338,300 students - 17,100 less than in quarter 4 2015
- 271,900 persons engaged in home duties - 4,400 less than in quarter 4 2015
- 59,400 retired persons - unchanged since quarter 4 2015
- 119,200 persons were inactive due to ill health or disability - 10,500 more than in quarter 4 2015
- 102,900 persons were inactive for other reasons - 5,900 more than in quarter 4 2015; of those inactive for other reasons, 8,300 were discouraged workers - unchanged from the year previously.

<sup>20</sup> The age dependency rate compares the non-working age population to those of working age.

<sup>21</sup> Economically inactive are defined as persons who are not in employment or unemployed (actively seeking employment).

In quarter 4 2016, the inactivity rate of the working age population<sup>22</sup> was 29.5% - 0.4 percentage points lower compared to quarter 4 2015. The economic dependency ratio<sup>23</sup> of 1.14 remained unchanged (Table 2.1).

Table 2.1 Dependency and Inactivity Rates

	2013	2014	2015	2016
Total dependency rate (0-14 and 65+)	52.7%	53.9%	55.0%	55.7%
Youth dependency rate (0-14)	33.6%	34.0%	34.5%	34.6%
Old age dependency rate (65+)	19.1%	19.9%	20.5%	21.1%
Inactivity rate (15-64)	30.0%	30.3%	29.9%	29.5%
Economic dependency ratio	1.13	1.15	1.14	1.14

Source: SLMRU (SOLAS) analysis of CSO data

## 2.2 Labour Market and Related Indicators

In 2016, the number of persons in the labour force was 2.19 million (annual average). Compared to 2015, this represented an increase of almost 26,000 (1.2%) (Figure 2.2). The labour market participation rate was 60.3%, a small increase on the previous year (Table 2.2). Further increases are expected, with the Central Bank of Ireland forecasting the labour force to reach 2.21 million in 2017 (Figure 2.2).

In 2016, there were 2.02 million persons in employment (annual average), which was 56,400 more compared to 2015. The employment rate was 64.8%, an increase of 1.5 percentage points compared to 2015

<sup>22</sup> The inactivity rate is the proportion of the population that is not in the labour force. The inactivity rate for the 15-64 age group (headline inactivity rate), is lower than the general inactivity rate.

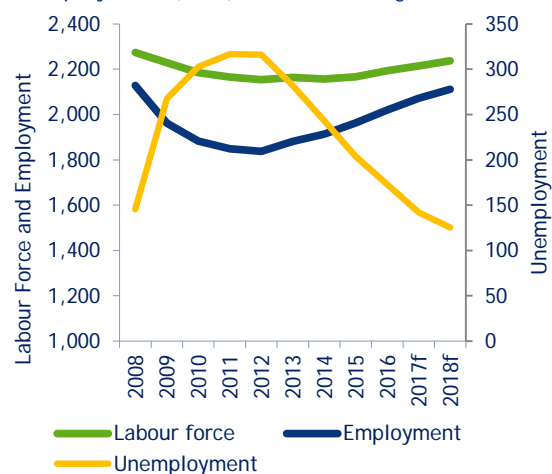
<sup>23</sup> The economic dependency ratio compares the total population not in the labour force to the number of those who are in the labour force.



(Table 2.2). The labour force and employment have been growing annually since 2012 and are anticipated to increase further to 2018 (Figure 2.2).

In 2016, unemployment averaged at 173,100, which was over 30,500 (15%) less than in 2015. The decline is expected to continue, with unemployment anticipated to average at 125,300 in 2018 (Figure 2.2).

Figure 2.2 Labour Force, Employment & Unemployment (000s), Annual Averages



Source: SLMRU (SOLAS) analysis of CSO data; Central Bank of Ireland, Quarterly Bulletin (April 2017)

In 2016, the unemployment rate declined to 7.9%, which was 1.6 percentage points below the average rate recorded in 2015 (Table 2.2). By April 2017, the seasonally adjusted monthly unemployment rate was estimated at 5.9%.

In quarter 4 2016, the long term unemployment rate was 3.6%, which was a 1.1 percentage point decrease from quarter 4 2015 (Table 2.3).

Table 2.2 Participation, Employment and Unemployment Rates (Annual Averages)

	Participation rate (%) (15+)	Employment rate (%) (15-64)	Unemployment rate (%) (15-74)
2010	60.7	59.7	13.9
2011	60.2	58.9	14.7
2012	59.9	58.9	14.7
2013	60.2	60.5	13.1
2014	60.0	61.7	11.3
2015	60.0	63.3	9.5
2016	60.3	64.8	7.9

Source: CSO

The broad unemployment measure, which combines unemployed and part-time underemployed, also declined from 13.5% in quarter 4 2015 to 10.9% in quarter 4 2016 (Table 2.3).

The youth unemployment rate declined from 18.8% in quarter 4 2015 to 15.2% in quarter 4 2016. Over this period, the NEET rate, which measures the share of 15-24 year old persons who are not in employment, education or training, remained unchanged at 12.3% (Table 2.3).

Table 2.3 Other unemployment indicators

	Long term UE rate (%) (15-74)	Broad UE rate (%) (15-74)	Youth UE rate (%) (15-24)	NEET* rate (%) (15-24)
Quarter 4 2015	4.7	13.5	18.8	12.3
Quarter 4 2016	3.6	10.9	15.2	12.3

\*Not in employment, education or training; ILO defined; there is a discrepancy between ILO and PES (self-declared principal economic status) measure of participation in education with the former used in the NEET rate potentially overstating the non-participation in the case of Ireland.

Source: SLMRU (SOLAS) analysis of CSO data

Migration estimates for the period 2011 to 2016 are presented in Table 2.4. Since 2015, inward migration has exceeded outward migration, resulting in positive net migration for the first time since 2009. Between 2011 and 2016, Inward migration increased by 29,000, while outward migration declined by 14,400.

Table 2.4 Migration Estimates (000s)

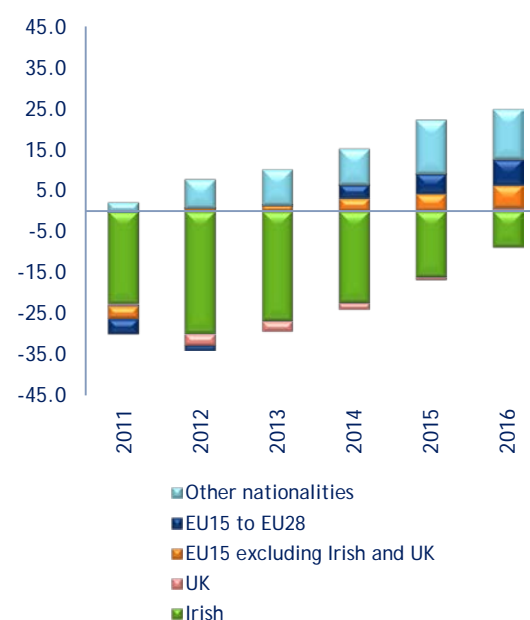
Year	Inward	Outward	Net migration
2011	53.3	80.6	-27.4
2012	57.3	83.0	-25.7
2013	62.7	81.3	-18.7
2014	66.5	75.0	-8.5
2015	75.9	70.0	5.9
2016	82.3	66.2	16.2

Source: CSO  
Note: Data has been revised based on Census 2016 figures

Irish nationals accounted for 56% of all emigrants and 35% of immigrants in 2016. The opposite migration flow was observed for non-EU nationals who accounted for 29% of immigrants and 17% of emigrants.

Figure 2.3 presents net migration estimates by nationality. Since 2013, net migration has been positive for all nationalities excluding those from Ireland and the UK; in 2016 it turned positive for UK nationals. Although remaining negative, net migration for Irish nationals has declined significantly since 2011, from 22,400 to 3,400 in 2016.

Figure 2.3 Net Migration Estimates by Nationality (000s), 2011-2016

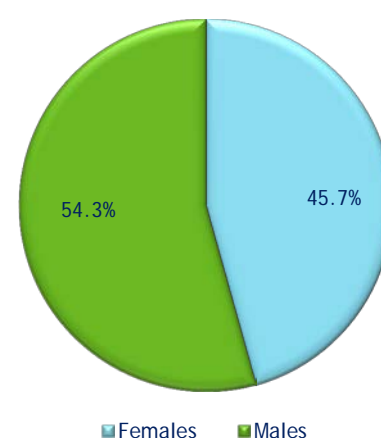


Source: SLMRU (SOLAS) analysis of CSO data  
Note: Data has been revised based on Census 2016 figures

## 2.3 Employment Composition

In quarter 4 2016, there were 2.05 million persons in employment (aged 15+). Males accounted for 54.3% (over 1.11 million persons) (Figure 2.4). The gender distribution of employment was broadly in line with that observed in quarter 4 2015, with males gaining 0.2 percentage points.

Figure 2.4 Employment by Gender, Quarter 4 2016

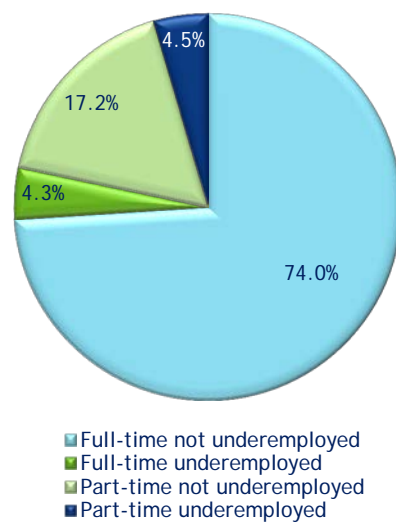


Source: SLMRU (SOLAS) analysis of CSO data

Figure 2.5 presents the distribution of employment between full-time and part-time employment. In quarter 4 2016, full-time employment accounted for 78.3% of total employment. Of those working full-time, 5.5% were underemployed (wished to work more hours and were available). Of those working part-time, 20.7% were underemployed.

Between quarter 4 2015 and quarter 4 2016, the number of persons in full-time employment who were underemployed increased by almost 15,000, while the number of persons in part-time employment who were underemployed decreased by over 12,000.

Figure 2.5 Employment by Employment Type, Quarter 4 2016



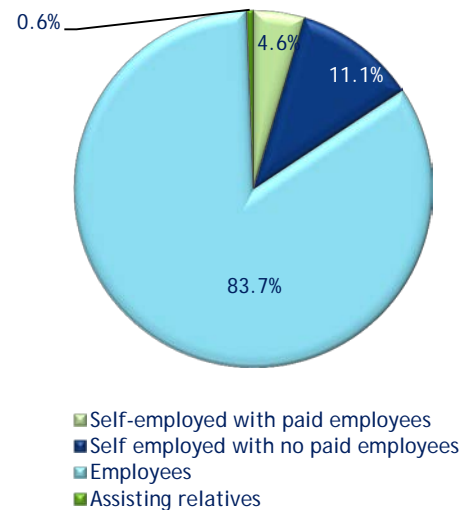
Source: SLMRU (SOLAS) analysis of CSO data

Figure 2.6 presents the distribution of employment by employment status. In quarter 4 2016, almost 84% of persons in employment were employees, of which 2.1% were employees on Government supported employment schemes. Self-employment accounted for 15.7% of total employment, of which 70.5% were self-employed with no paid employees.

Between quarter 4 2015 and quarter 4 2016, the share of employees increased by 0.7 percentage points.

Employment growth observed between quarter 4 2015 and quarter 4 2016 was primarily due to the increase in the number of employees - an increase of 67,300. Amongst employees, the number of persons employed on Government schemes declined marginally.

Figure 2.6 Employment by Employment Status, Quarter 4 2016

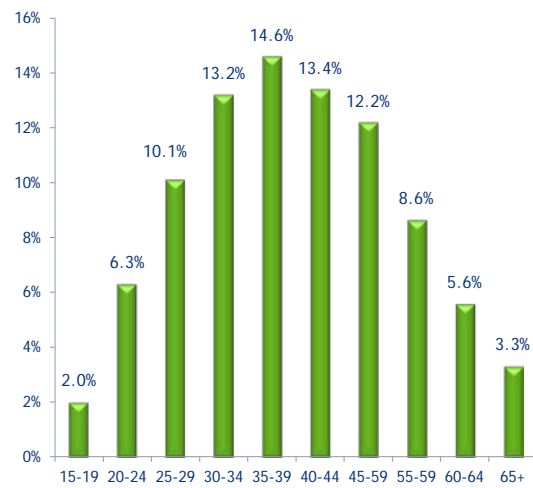


Source: SLMRU (SOLAS) analysis of CSO data

Figure 2.7 presents an age profile of those in employment. In quarter 4 2016, almost three quarters of employment was concentrated in the 25-54 age category (74.2%); those aged under 25 accounted for 8.3% and those aged 55+ for 17.5%.

Between quarter 4 2015 and quarter 4 2016, the age distribution remained broadly similar with a minimal decrease in the share of those aged 35 or below (0.1 percentage point).

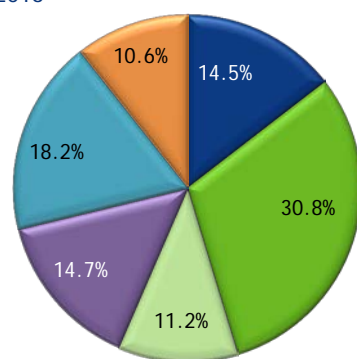
Figure 2.7 Employment by Age, Quarter 4 2016



Source: SLMRU (SOLAS) analysis of CSO data

Figure 2.8 presents the education profile of those in employment in Ireland. In quarter 4 2016, 14.5% of persons in employment had at most qualifications at NFQ levels 1-3 (e.g. Junior Certificate); 30.8% had qualifications at NFQ levels 4-5 (e.g. Leaving Certificate); 11.2% had qualifications at NFQ level 6, while the remainder had the equivalent of ordinary degree level or higher (NFQ 7-10).

Figure 2.8 Employment by Education (NFQ), Quarter 4 2016



■ NFQ1-3 ■ NFQ4/5 ■ NFQ6 ■ NFQ 7 ■ NFQ8 ■ NFQ9-10

Source: SLMRU (SOLAS) analysis of CSO data

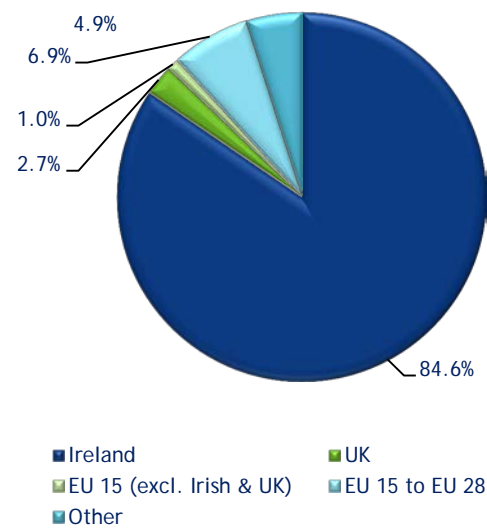
Note: excludes those who did not state their education level

Between quarter 4 2015 and quarter 4 2016, an increase was observed in the shares holding qualifications at levels NFQ 9-10 (0.6 percentage point) and NFQ 4/5 (1 percentage point).

Employment by nationality is presented in Figure 2.9. In quarter 4 2016, non-Irish nationals accounted for 316,200 persons or 15.4% of total employment. EU nationals accounted for over two thirds of all non-Irish nationals.

Between quarter 4 2015 and quarter 4 2016, the distribution of employment by nationality remained broadly unchanged. The share of Irish nationals declined by 0.3 percentage points, while the share of non-EU nationals increased by 0.2 percentage points.

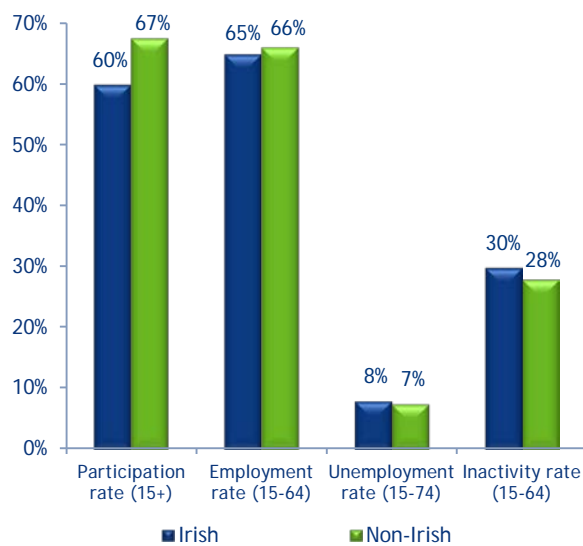
Figure 2.9 Employment by Nationality, Quarter 4 2016



Source: SLMRU (SOLAS) analysis of CSO data

In quarter 4 2016, non-Irish nationals had higher participation and employment rates, and slightly lower inactivity and unemployment rates than Irish nationals (Figure 2.10).

Figure 2.10 Participation, Employment, Unemployment and Inactivity Rates by Nationality, Quarter 4 2016



Source: SLMRU (SOLAS) analysis of CSO data

Between quarter 4 2015 and quarter 4 2016, the unemployment rate of both Irish and non-Irish nationals declined, while the employment rates increased. Over this period, the participation rate of non-Irish nationals decreased while it remained broadly unchanged for Irish nationals.

## 2.6 National Skills Strategy: Progress to Date

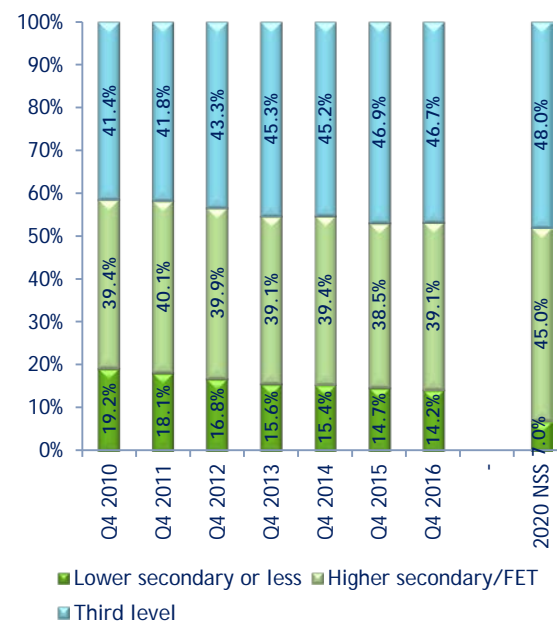
Figure 2.11 presents the educational attainment of the labour force (15-64 years) and the targets set out in the 2007 National Skills Strategy (NSS) and carried over in the new 2016 National Skills Strategy<sup>24</sup>. Over the period quarter 4 2015 and quarter 4 2016, the share of working age third level graduates decreased by 0.2 percentage points, while the share of those with lower secondary level education or less decreased by 0.5 percentage point. An improvement was observed at the higher secondary and further education level,

<sup>24</sup> Ireland's National Skills Strategy 2025, January 2016

with the share of this cohort increasing by 0.6 percentage point.

The gap to the 2020 target widened to 1.3 percentage points in relation to the third level graduate cohort. However, the share of those with lower secondary education or less decreased, moving by 0.5 percentage point closer to the 7% target.

Figure 2.11 Labour Force (15-64 years) by Education and the NSS Target

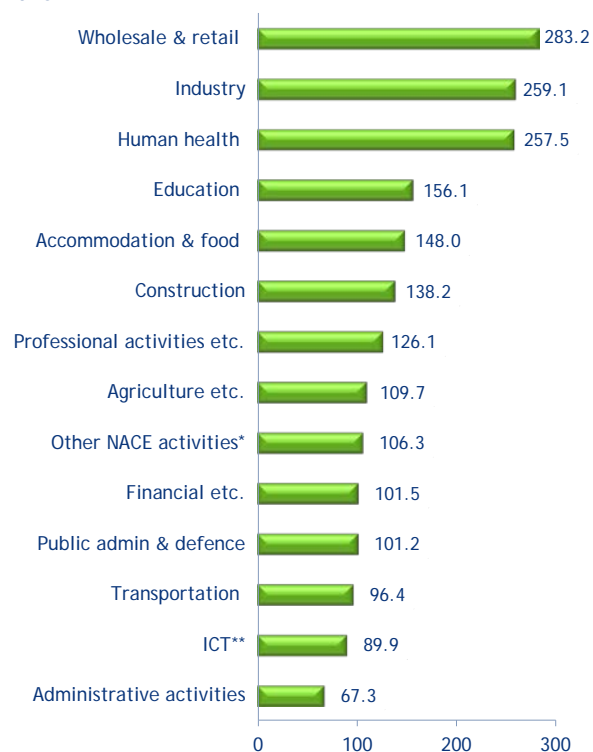


Source: SLMRU (SOLAS) analysis of CSO data

## Section 3 Employment by Economic Sector

National employment by broad economic sector (NACE Rev 2 defined) is presented in Figure 3.1. In quarter 4 2016, the wholesale/retail, industry and health sectors accounted for the largest employment numbers, each employing a quarter of a million persons or more. These sectors accounted for 13.8%, 12.7% and 12.6% of national employment respectively. Their shares in national employment were broadly in line with those observed in quarter 4 2015.

Figure 3.1 Employment by Sector (000s), Quarter 4 2016



Source: SLMRU (SOLAS) analysis of CSO data

\* Other NACE sectors include activities such as entertainment, repair of goods, a range of personal service activities, etc.

\*\*The information and communication sector includes computer programming, telecommunications, information services, publishing and broadcasting; it does not include ICT equipment manufacturing or the wholesale of computers, computer peripheral equipment and software.

Figure 3.2 presents employment growth by sector. Between quarter 4 2015 and quarter 4 2016, employment increased in all sectors except administrative services (which remained unchanged), with the strongest growth in construction (9%), professional activities (6%) and ICT (5%).

Over the five-year period from quarter 4 2011, the strongest growth was recorded in agriculture (although the CSO has advised caution in relation to sampling issues for this sector), professional services, construction, and accommodation, each recording growth of 20% or more. In this same time period, declines occurred for the financial and public administration and defence (PAD) sectors.

Figure 3.2 Employment Growth by Sector



Source: SLMRU (SOLAS) analysis of CSO data

\*Note: Estimates of employment in the agriculture, forestry and fishing sector are sensitive to sample changes over time and growth rates in this sector should be interpreted with caution.

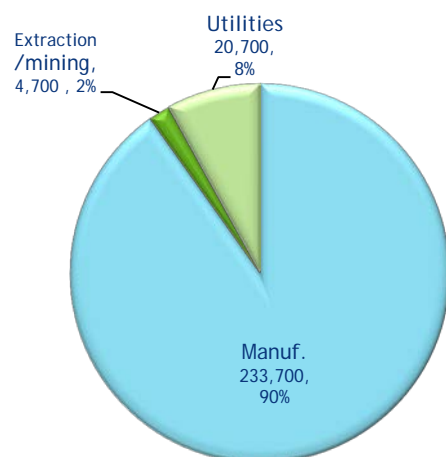
## Industry

In quarter 4 2016, over a quarter of a million persons were employed in the industrial sector. Employment increased by 10,700 or 4.3% compared to quarter 4 2015. Between quarter 4 2015 and quarter 4 2016, the share of industrial employment in total national employment increased marginally from 12.5% to 12.7%.

When compared with quarter 4 2011, employment in industry increased by 14,600, or 6%. The share of national employment accounted for by industry declined by 0.5 percentage points over this period, from 13.2%.

Figure 3.3 presents industrial employment by sub-sector. In quarter 4 2016, 90% of industrial employment was in manufacturing (233,700 persons), with utilities and extraction/mining accounting for 8% and 2% respectively.

Figure 3.3 Industrial Employment by Sector, Quarter 4 2016



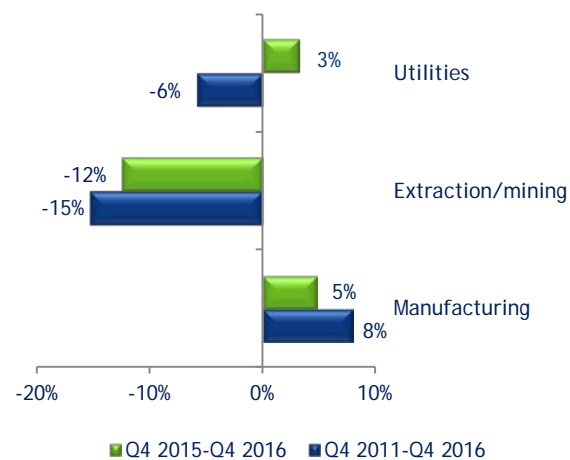
Source: SLMRU (SOLAS) analysis of CSO data

Figure 3.4 presents employment growth in industrial sub-sectors. Between quarter 4

2015 and quarter 4 2016, employment in utilities grew by 3%. Within this sub-sector, employment increased in electricity, gas, steam and air conditioning, while it decreased in water collection and treatment activities. Over the same period, employment in extraction/mining declined (by 12%), while manufacturing increased (by 5%).

In quarter 4 2016, employment in manufacturing was 8% (or 16,700) higher than in quarter 4 2011. By contrast, employment in extraction and utilities was lower by 15% and 6%. In utilities, the decline was primarily in water collection and related activities.

Figure 3.4 Industrial Employment Growth by Sub-Sector



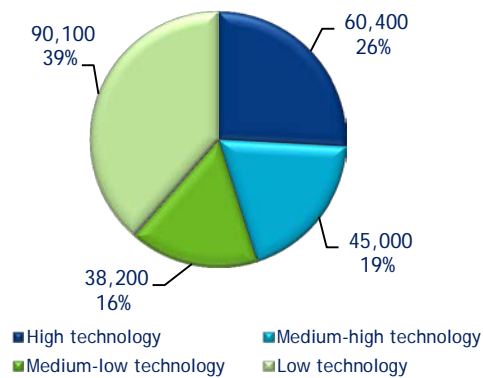
Source: SLMRU (SOLAS) analysis of CSO data

Figure 3.5 presents manufacturing employment by technological intensity. In quarter 4 2016, low technology manufacturing accounted for 39% of manufacturing employment, followed by high technology (26%), medium-high (19%) and medium-low (16%).<sup>25</sup>

<sup>25</sup> High technology: pharmaceuticals, computers, etc. (NACE 21,26); Medium-high: chemicals, electrical equipment, machinery, medical instruments, etc. (NACE 20,27-30); Medium-low: petroleum products, rubber and plastic, other non-metallic mineral products, fabricated



Figure 3.5 Manufacturing Employment by Technological Intensity, Quarter 4 2016

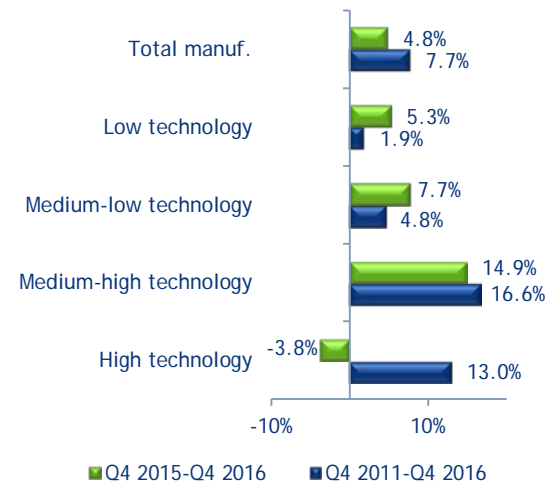


Source: SLMRU (SOLAS) analysis of CSO data

Figure 3.6 presents employment growth in manufacturing employment by technological intensity. Between quarter 4 2015 and quarter 4 2016, employment increased in all manufacturing sectors excluding high tech which declined by 3.8%. In absolute terms, the strongest growth was in medium-high tech manufacturing which expanded by 5,800 over this period.

When compared to quarter 4 2011, manufacturing employment increased across all levels of technological intensity. Over the five-year period, employment growth was strongest in medium-high tech manufacturing (16.6%). In absolute terms, the strongest growth was observed in high tech manufacturing at almost 7,000 additional persons employed.

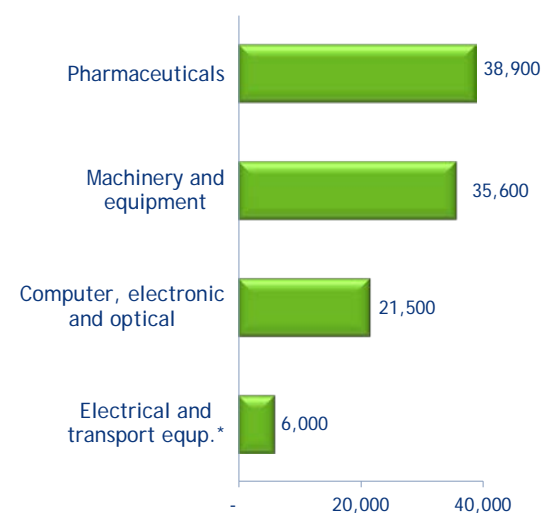
Figure 3.6 Manufacturing Employment Growth by Technological Intensity



Source: SLMRU (SOLAS) analysis of CSO data

Figure 3.7 presents employment in the high and medium-high technology manufacturing sub-sectors.<sup>26</sup> In quarter 4 2016, employment in high or medium-high tech manufacturing accounted for 45% of total manufacturing employment, with over 105,000 persons employed. Of these, pharmaceuticals accounted for 37% (or 38,900 persons).

Figure 3.7 High & Medium-High Tech Manufacturing Employment, Quarter 4 2016



Source: SLMRU (SOLAS) analysis of CSO data

\*NACE 27,29,30

metal products etc. (NACE 19,22-25,33); Low technology: food, beverages, textiles, leather, wood, paper, printing, etc. (NACE 10-18,31,32).

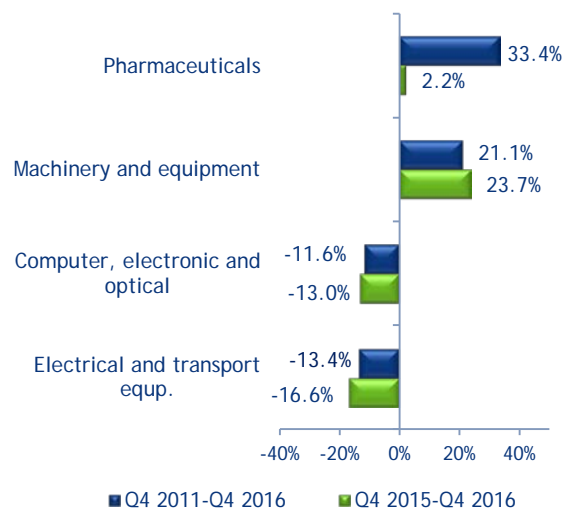
<sup>26</sup> Manufacturing of chemicals is not presented because figures are too small for statistical inference.



Figure 3.8 presents employment growth in high and medium-high tech manufacturing. Between quarter 4 2015 and quarter 4 2016, employment grew strongly in machinery and equipment at 23.7% while it decreased in both the computer and electrical equipment sub-sectors.

While year-on-year growth in pharmaceuticals was marginal, when compared to quarter 4 2011, employment in this sub-sector grew by a third, or almost 10,000 persons. Growth was also strong in machinery and equipment with a 21.1% increase, although declines occurred in the other two sub-sectors.

Figure 3.8 High and Medium-High Tech Manufacturing Employment Growth



Source: SLMRU (SOLAS) analysis of CSO data

### Construction

In quarter 4 2016, 138,300 persons were employed in the construction sector, accounting for 6.7% of national employment. Between quarter 4 2015 and quarter 4 2016, construction was the strongest growing sector of the economy, growing by 9.2% with an additional 11,600 persons employed. Over this period, employment growth was strongest

in specialised construction activities (e.g. bricklaying, scaffolding, construction equipment renting), with the additional 8,500 persons accounting for three quarters of the total increase for this sector.

Over the period quarter 4 2011 to quarter 4 2016, employment in the construction sector increased by more than 30,000 (or 28.2%). The growth was split almost equally between the development of building projects and specialised construction activities, whereas employment levels remained unchanged for those engaged in civil engineering activities.

### Agriculture

In quarter 4 2016, 109,700 persons were employed in agriculture, representing 5.4% of national employment. Of the total agricultural employment, 95% was in crop and animal production, with the remainder in forestry, fishing and aquaculture.

There was very little change in agricultural employment overall, as well as its sub-sectors, between quarter 4 2015 and quarter 4 2016. Compared to five years previously, employment was 29,500 higher.<sup>27</sup>

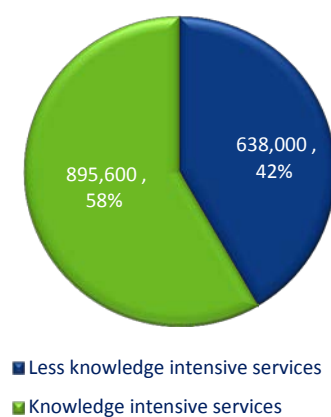
### Services

In quarter 4 2016, over 1.5 million persons were employed in the services sector, accounting for three quarters of national employment. Between quarter 4 2015 and quarter 4 2016, employment in the services sector increased by almost 39,000 (or 2.6%), while it grew by 8.6% (or 121,000 persons) in the five-year period since quarter 4 2011.

<sup>27</sup> Estimates of employment in the agriculture, forestry and fishing sector have been subject to sample changes over the last several years and growth rates in this sector should be interpreted with caution.

Figure 3.9 presents the composition of employment in the services sector in terms of knowledge intensity. Of the total services sector employment, 58% (895,600) was in knowledge intensive services - KIS (ICT, financial, legal, accounting, engineering, R&D, education, health and arts),<sup>28</sup> and the remainder was in less knowledge intensive services - LKIS (wholesale & retail, warehousing & transport, accommodation & food, office administration, real estate, travel, etc.)<sup>29</sup>. The distribution of employment between KIS and LKIS has remained broadly unchanged compared to quarter 4 2015.

Figure 3.9 Services Sector Employment, Quarter 4 2016



Source: SLMRU (SOLAS) analysis of CSO data

Between quarter 4 2015 and quarter 4 2016, increases in employment were broadly similar in relative terms for both sub-sectors, although in absolute terms the growth was strongest for knowledge intensive services, with an additional 24,000 persons employed compared to 15,000 for those in the LKIS sub-sector. Most of the increases in the numbers employed in LKIS were in food and beverage activities, warehousing, and the wholesale

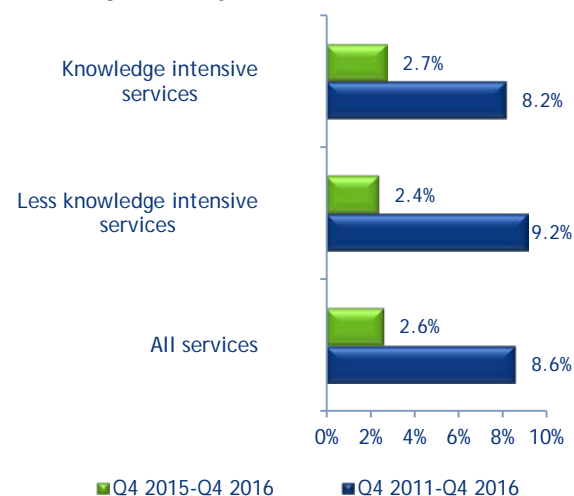
<sup>28</sup> NACE Rev. 2 50, 51, 58-66, 69-75, 78, 80, 84-93.

<sup>29</sup> NACE Rev. 2 45-47, 49, 52, 53, 55, 56, 68, 77, 79, 81, 82, 94-99.

and retail trade, while in KIS, social and residential care and computer programming activities had the largest increases.

Over the five-year period, quarter 4 2011 to quarter 4 2016, employment increased in both sub-sectors: it was 9.2% (or almost 54,000) higher in LKIS and 8.2% (or 67,700) in the KIS sub-sector. Over this period, the greatest absolute increase in LKIS was in food and beverage activities. The greatest absolute increases in KIS were in social work, computer programming, legal and accounting and education.

Figure 3.10 Services Sector Employment Growth by Knowledge Intensity



Source: SLMRU (SOLAS) analysis of CSO data

#### Wholesale and Retail Trade

In quarter 4 2016, 283,200 persons were employed in the wholesale and retail trade sector, accounting for 13.8% of national employment. Of these, 191,000 persons were employed in the retail trade, 51,100 in wholesale and 41,100 in the motor trade.

Over the period quarter 4 2015 to quarter 4 2016, employment in the wholesale and retail trade sub-sectors remained unchanged with

all gains associated with an increase in employment in the motor trade of 14.3% (or 5,100 persons).

Compared to quarter 4 2011, employment increased in all sub-sectors but was most pronounced in the motor trade (by 18.4% or 6,400 persons) and retail trade (by 2.7% or 4,900) sub-sectors.

#### Accommodation and Food Services

In quarter 4 2016, 148,000 persons were employed in accommodation and food services, accounting for 7.2% of national employment. Of this, food and beverage services accounted for two thirds, with the remainder accounted for by the accommodation sub-sector.

Between quarter 4 2015 and quarter 4 2016, employment increased in the food and beverage services sub-sector (7.3% or 6,600 persons), while it contracted in the accommodation sub-sector (by 3.3%).

Over the five-year period quarter 4 2011 to quarter 4 2016, employment in both sub-sectors grew strongly, with accommodation growing by 13.0% (or 5,800) and food and beverages by 29.8% (or 22,300).

#### Professional, Scientific and Technical Activities

In quarter 4 2016, 126,100 persons were employed in professional, scientific and technical activities, accounting for 6.2% of national employment. Of this, 26% was in engineering activities (including architectural activities and technical testing), 27% was in legal and accounting services, 25% in other professional, scientific and technical activities, with the remainder spread across

services such as scientific R&D, advertising and management consultancy.

Between quarter 4 2015 and quarter 4 2016, employment increased in all sub-sectors excluding scientific R&D (declined by 1,800 or 20.3%) and other professional activities (which remained unchanged).

Over the five-year period, quarter 4 2011 to quarter 4 2016, employment increased in all professional services sub-sectors. In absolute terms, the strongest growth over this period was observed for legal and accounting (12,400), engineering/architectural services (5,500), and other professional scientific and technical activities (3,800). In relative terms, employment growth was the strongest in management consultancy activities (by 62.2%).

#### Financial, Insurance and Real Estate Services

In quarter 4 2016, 101,500 persons were employed in the provision of financial, insurance and real estate services, representing 5% of national employment. Of the total sectoral employment, 62% was in financial services (e.g. banking), 20% in insurance, with the remainder in auxiliary and real estate activities.

Between quarter 4 2015 and quarter 4 2016, employment increased in banking and real estate activities (by 2,300 and 2,200 respectively), while it remained broadly level in insurance and activities auxiliary to financial services and insurance.

Over the five-year period quarter 4 2011 to quarter 4 2016, employment declined across all sub-sectors, excluding real estate which grew by 10.6%.

### Transportation and Storage

In quarter 4 2016, 96,400 persons were employed in transportation and storage related activities, accounting for 4.7% of national employment. Land transport accounted for 52%, warehousing for 21%, postal activities for 17%, and the remainder was accounted for by air and water transport.

Between quarter 4 2015 and quarter 4 2016, employment increased in warehousing (4,900), declined in air transport (2,100) and remained broadly unchanged in the remaining sub-sectors.

When compared to the situation five years previously, employment in warehousing experienced the greatest change with an additional 5,800 persons employed. Over this period, declines occurred in air transport and postal activities.

### Information and Communications (ICT)

In quarter 4 2016, 89,900 persons were employed in the ICT sector, accounting for 4.4% of national employment. Of the total employment in the ICT sector, 59% were in computer programming with a further 17% in telecommunications. The remainder was spread across other ICT services, such as broadcasting, publishing and motion picture production.

Between quarter 4 2015 and quarter 4 2016, employment in the ICT sector increased by 5.4% (or 4,600). This growth was attributed to an increase in employment in computer programming (7.1%, or 3,500) and film and TV activities (65.2%, or 2,500).

Over the five-year period from quarter 4 2011, employment in the ICT sector increased

by 15.7% (12,200). In terms of the sub-sectors, employment increased in computer programming (13,900) and film and TV (1,800), while it contracted for telecommunications (5,300) and broadcasting activities (1,600).

### Administrative and Support Service Activities

In quarter 4 2016, there were 67,300 persons employed in administrative and support services, accounting for 3.3% of national employment. Buildings and landscape services accounted for 39% of employment in this sector; security activities, 16%; office administrative activities, 15%; and the remainder distributed between employment activities, travel services and renting/leasing.

Between quarter 4 2015 and quarter 4 2016, there was no overall change in employment numbers in this sector. There was a small decline in employment numbers in office administrative activities while the remaining sub-sectors remained broadly unchanged.

Compared to quarter 4 2011, employment increased by 3.1%, or 2,000 persons. While some fluctuations occurred across sub-sectors the numbers involved were small.

### Healthcare and Social work

In quarter 4 2016, over a quarter of a million persons were employed in human health and social work activities, accounting for 12.6% of national employment. Employment in human health activities accounted for 58%, social work activities for 30% and residential care activities accounted for the remaining 12%.

Between quarter 4 2015 and quarter 4 2016, while the overall employment levels in the health and social care sector increased

modestly (by 1.5%), the changes in sub-sectors were more significant; employment in human health activities declined by 4% (or 6,100), while employment in residential care and social work activities increased by 15.6% and 8.1% respectively, amounting to an additional 10,000 persons.

Compared to five years previously, a similar pattern emerges, with growth in residential care and social work activities (an additional 20,800 persons combined) with a decline in the numbers employed in human health activities (of 3.9% or 6,100).

#### Education

In quarter 4 2016, at 156,100 persons employed, the education sector accounted for 7.6% of national employment.

Employment in the education sector increased by 1.7% (or 2,600) in the year since quarter 4 2015, while employment increased by 8% or 11,600 over the five-year period from quarter 4 2011.

#### Public Administration and Defence (PAD)

In quarter 4 2016, there were 101,200 persons employed in PAD, accounting for 4.9% of national employment. Employment levels in PAD have not experienced any significant changes in the five-year period examined.

#### Other Sectors

In quarter 4 2016, employment in all other sectors of the economy was 106,300, representing 5.2% of national employment. Over a third of employment was in personal services activities, followed by 21% in sports activities, 14% in arts activities, with the remainder distributed between other activities, such as cultural, gambling, domestic etc.

Within this composite sector, between quarter 4 2015 and quarter 4 2016, employment increased in sports ((2,300) and personal services (2,200), while declines occurred for household personnel (3,900). In all other sub-sectors, employment remained broadly in line with that observed one year previously.

Compared to five years previously, employment in quarter 4 2016 was higher in personal services (7,900) and sports activities (2,100) household personnel (3,400), with declines observed in activities of membership organisations (2,000) and for household personnel (1,100).

## Section 4 Employment by Broad Occupation

### 4.1 Employment

Employment by broad occupational group is presented in Figure 4.1, with farmers separated from other skilled trades. In quarter 4 2016, almost half of all persons were employed as 'white collar' workers (managers, professionals, associate professionals and admin). Those employed as skilled tradespersons accounted for almost 12% with elementary workers and farmers accounting for 10.9% and 4.0% respectively.

Between quarter 4 2015 and quarter 4 2016, the distribution of employment by broad occupational group has remained largely the same.

Figure 4.1 Employment by Broad Occupational Group (%), Quarter 4 2016



Source: SLMRU (SOLAS) analysis of CSO data

Figure 4.2 presents employment levels by occupational groups. In quarter 4 2016, there were over 600,000 persons working in

professional and associate professional occupations. Skilled trades, elementary and administrative occupations each accounted for over 200,000 persons employed.

Figure 4.2 Employment by Broad Occupational Group (000s), Quarter 4 2016



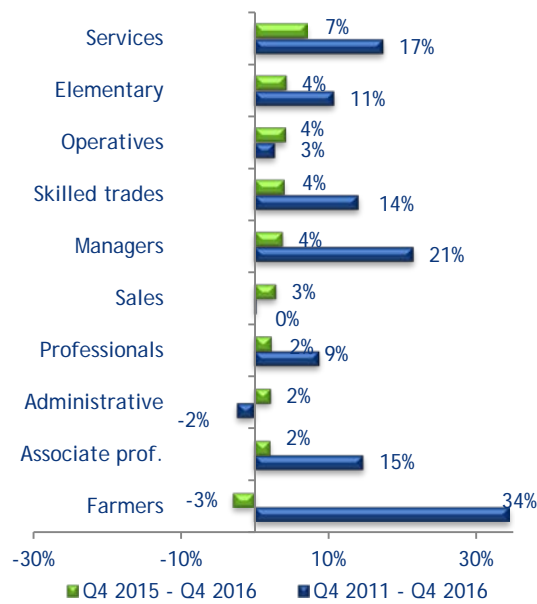
Source: SLMRU (SOLAS) analysis of CSO data

### 4.2 Employment Growth

Employment growth by broad occupational group is presented in Figure 4.3. Between quarter 4 2015 and quarter 4 2016, almost all occupations observed an increase in employment, with the exception of farmers. Those employed in services observed the greatest increase in employment (seven percentage points) followed by managers, skilled trades, operatives and elementary workers (four percentage points each). Between quarter 4 2011 and quarter 4 2016 employment increased for all occupations with the exception of administrative occupations.



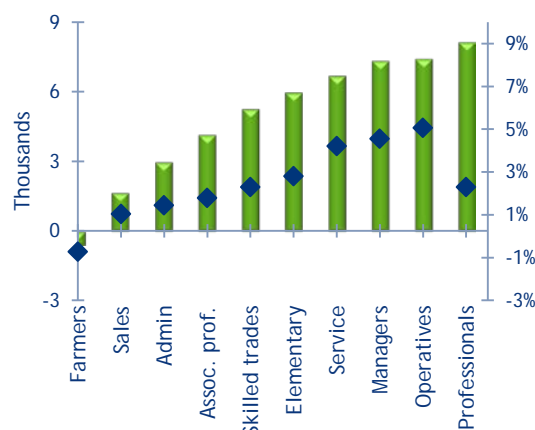
Figure 4.3 Employment Growth by Broad Occupational Group



Source: SLMRU (SOLAS) analysis of CSO data

Figure 4.4 presents the absolute and relative change in employment by broad occupational groups. Between 2015 and 2016 (annual average data), farmers were the only occupational group to experience a decline in employment growth, professionals observed the strongest absolute employment growth, followed by operatives and managers. At 5%, operatives observed the strongest growth rate followed by managers and services (4% each).

Figure 4.4 Employment Growth by Broad Occupational Group, Annualised Data, 2015-2016



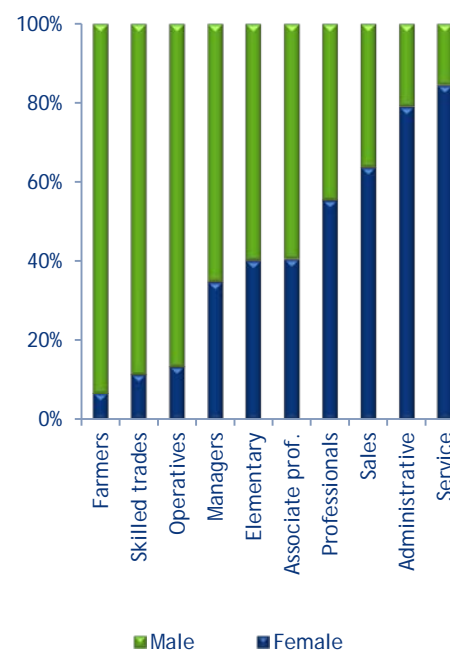
Source: SLMRU (SOLAS) analysis of CSO data

### 4.3 Employment by Gender

The distribution of employment by gender for broad occupational groups is presented in Figure 4.5. In quarter 4 2016, females were predominant in services, administrative and sales occupations. In contrast, over 80% of farmers, skilled tradespersons and operatives were male. Employment was most evenly distributed in the professional occupations (males 44% and females 56%).

Between quarter 4 2015 and quarter 4 2016, the increase in the number of females employed in services and skilled trades (relating to food preparation trades) was reflected in an increase in the share of females of three and one percentage points respectively. Similarly, increases in the absolute number of males employed resulted in increases in the share of males employed in professionals (three percentage points) and elementary occupations (one percentage point).

Figure 4.5 Employment by Gender and Broad Occupational Group (%), Quarter 4 2016



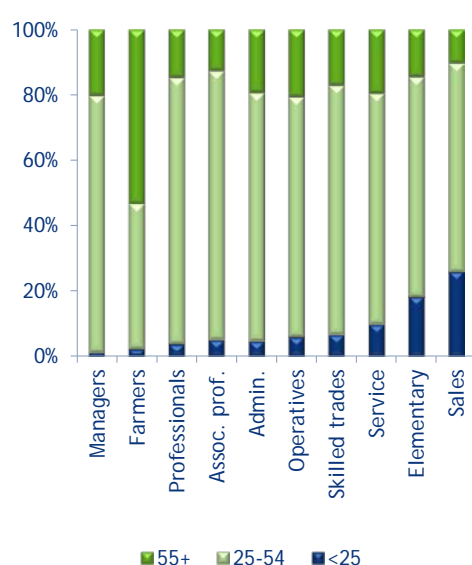
Source: SLMRU (SOLAS) analysis of CSO data

#### 4.4 Employment by Age

The age distribution of employment by broad occupational groups is presented in Figure 4.6. In quarter 4 2016, those aged 25-54 years accounted for the highest share employed in most occupational groups. Sales and elementary occupations had the highest share in the 15-24 age cohort; in contrast, managers had the lowest concentration of 15-24 year olds employed. Just over half of all farmers were aged 55 years of age or over.

Between quarter 4 2015 and quarter 4 2016, there was an increase in the share of those aged under 25 in sales and elementary occupations (three and two percentage points respectively). Despite an increase in absolute numbers for those aged 25-54 years, the shares declined for this age cohort across all occupational groups, excluding managers (increased by two percentage points). Managers aged 55 and above increased by one percentage point. Farmers were the only occupation to remain static across all age cohorts.

Figure 4.6 Employment by Age and Broad Occupational Group (%), Quarter 4 2016



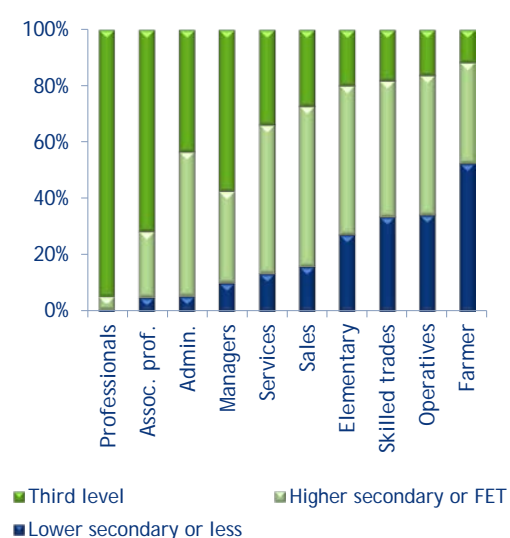
Source: SLMRU (SOLAS) analysis of CSO data

#### 4.5 Employment by Education

The educational distribution of employment in broad occupational groups is presented in Figure 4.7. In quarter 4 2016, the highest share of third level graduates was amongst professionals (93%), followed by associate professionals (70%) and managers (56%). In contrast farmers, operatives, skilled trades and elementary workers had the lowest share of third level graduates with just over half of all farmers having a lower secondary or less level of education.

Between quarter 4 2015 and quarter 4 2016, those with higher secondary education or FET experienced the largest growth in numbers employed leading to an increased share in occupations including administration and services (three percentage points each). A two percentage point increase occurred in the share of those employed in skilled trades with lower secondary education or less, whereas the share employed with third level qualifications declined across most occupations despite an overall increase in absolute terms.

Figure 4.7 Employment by Education and Broad Occupational Group (%), Quarter 4 2016



Source: SLMRU (SOLAS) analysis of CSO data

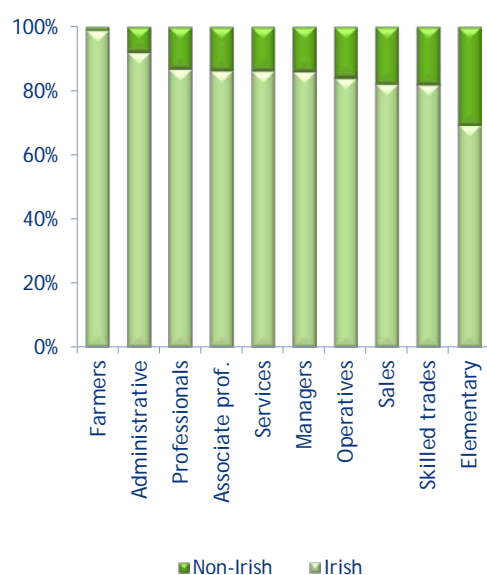


#### 4.6 Employment by Nationality

Figure 4.8 presents the distribution of employment in broad occupational groups by nationality. In quarter 4 2016, the share of non-Irish nationals was the highest in elementary (31%), sales (18%) and skilled trades (18%) occupations. In contrast, the share of non-Irish nationals was lowest for farmers (1%) followed by administrative workers (8%) and professionals (13%).

Between quarter 4 2015 and quarter 4 2016, the number of non-Irish nationals employed increased across most occupational groups but particularly for professional and associate professional occupations, resulting in gains of one percentage point each; those working in services and operative occupations declined leading to a fall in the share (of one percentage point each).

Figure 4.8 Employment by Nationality and Broad Occupational Group (%), Quarter 4 2016

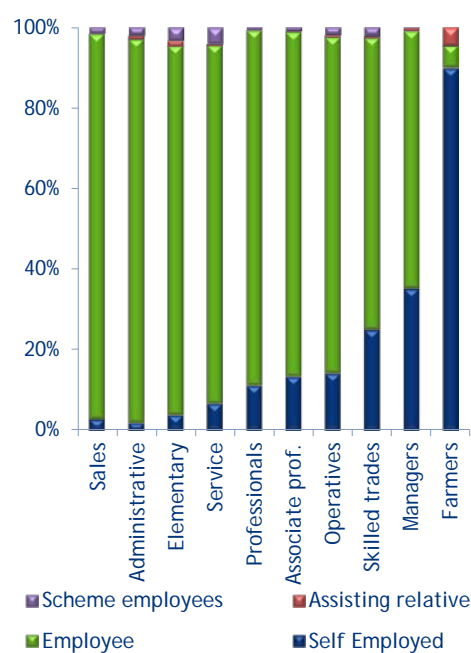


Source: SLMRU (SOLAS) analysis of CSO data

#### 4.7 Employment Status

Figure 4.9 presents employment in broad occupational groups by employment status. In quarter 4 2016, the majority of persons working across all occupations, with the exception of farmers, were employees. At 90%, farmers had the greatest share of persons self-employed, followed by managers (35%) and skilled tradesperson (25%). At 4%, the share of persons with the employment status 'assisting a relative' was the greatest in farming. Between quarter 4 2015 and quarter 4 2016, the distribution of employment between employees, self-employed and those assisting relatives remained broadly unchanged across occupational groups.

Figure 4.9 Employment by Employment Status and Broad Occupational Group (%), Quarter 4 2016



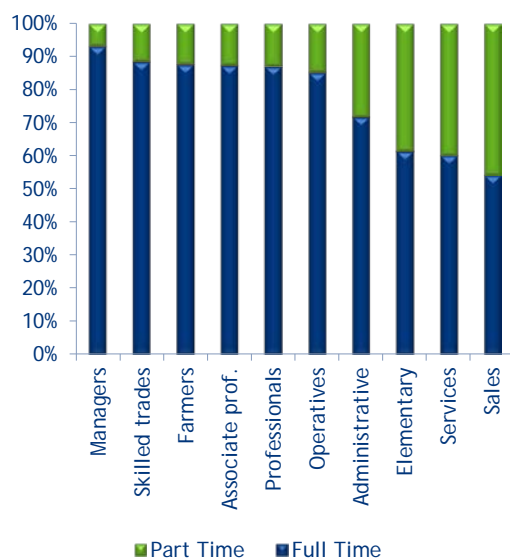
Source: SLMRU (SOLAS) analysis of CSO data

Note: The scheme employee refers to employees on community employment schemes (CES) and other employment schemes (e.g. work placement) based on the CSO's standard employment status classification.

Figure 4.10 presents the breakdown of employment in broad occupational groups by full-time and part-time work. In quarter 4 2016, the majority of workers across all occupational groups were in full-time employment. The highest share of part-time workers was found in sales (46%), services (40%) and elementary (39%) occupations.

Between quarter 4 2015 and quarter 4 2016, the share of full-time workers increased for almost all occupations, with the exception of elementary and sales occupations both of which remained static. Service workers observed the greatest increase in full-time employment (five percentage points).

Figure 4.10 Full-Time and Part-Time Employment by Broad Occupational Group (%), Quarter 4 2016



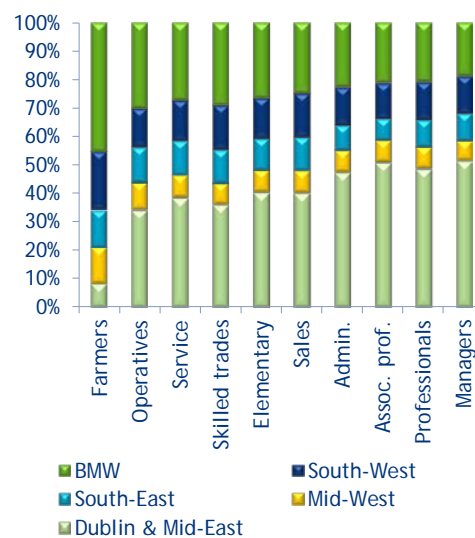
Source: SLMRU (SOLAS) analysis of CSO data

#### 4.8 Employment by Region<sup>30</sup>

The regional distribution of employment in broad occupational groups is presented in Figure 4.11. In quarter 4 2016, with the exception of farmers, over 30% of employment in each occupational group was located in Dublin and the Mid-East. The greatest share of white collar employment (managers, professionals, associate professionals and administrative workers) was located in Dublin and the Mid-East. Over 30% of those employed as operatives were located in the Border, Midlands and West.

Between quarter 4 2015 and quarter 4 2016, the share of operatives in Dublin and the Mid-East increased by three percentage points, while the share of professionals and salespersons decreased by three and one percentage points respectively. In the Border, Midlands and West region, the share of service workers decreased by three percentage points.

Figure 4.11 Employment by Region and Broad Occupational Group (%), Quarter 4 2016



Source: SLMRU (SOLAS) analysis of CSO data

<sup>30</sup>For presentation purposes, the Border, Midlands and Western regions were grouped into the BMW region while the Dublin and Mid-East region were grouped into the Dublin & Mid-East region.

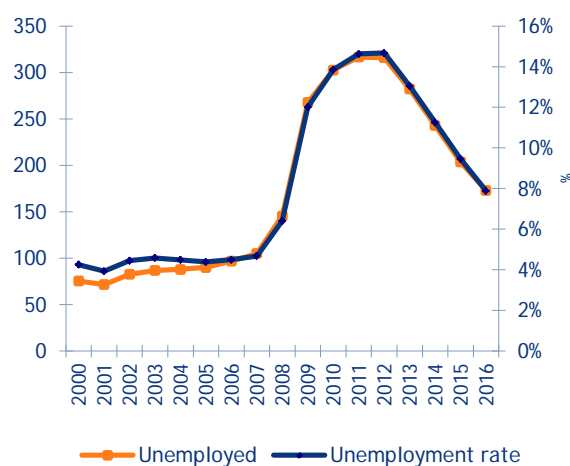
## Section 5 Unemployment

### 5.1 Unemployment and Unemployment Rate

Figure 5.1 presents the average annual unemployment levels and unemployment rates for the period 2000-2016. The number of persons unemployed has been declining annually since a peak of 316,000 in 2011-2012, with the level falling to just over 170,000 persons in 2016. By quarter 4 2016, the number of persons looking for employment had fallen below 150,000, approximately 40,000 less than the number recorded in quarter 4 2015.

The average annual unemployment rate was 8% in 2016; this reflects a continued decline and a decrease of just over 1.5 percentage points on the average rate in 2015.

Figure 5.1 Annual Average Unemployment Levels (000s) and Unemployment Rate (%)



Source: SLMRU (SOLAS) analysis of CSO data

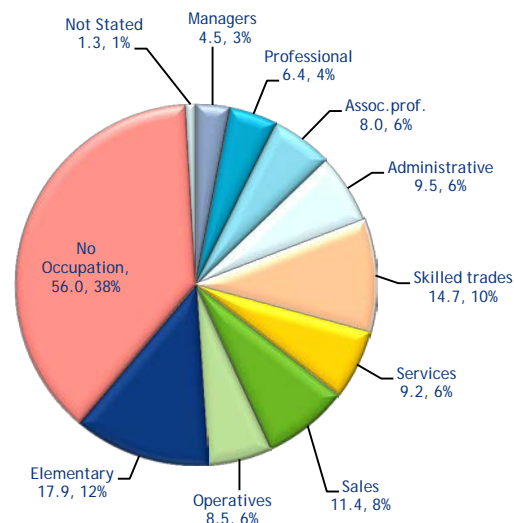
### 5.2 Unemployment by Occupation

The distribution of unemployment by broad occupational group is presented in Figure 5.2. Unemployed persons who did not state their previous occupation (e.g. looking for work for the first time, entering employment from

inactivity) accounted for over one third of all persons. In quarter 4 2016, of those who stated a previous occupation, the greatest share of unemployed persons had previously worked in elementary (12%) and skilled trades (including farmers) (10%) occupations. In contrast, managers and professionals continued to have the lowest share of unemployment (less than a 5% share each).

Between quarter 4 2015 and quarter 4 2016, the number of unemployed persons decreased across all occupations, excluding services. The share of those previously working in skilled trades observed the greatest decline (three percentage points).

Figure 5.2 Unemployment by Occupation (000s; %), Quarter 4 2016



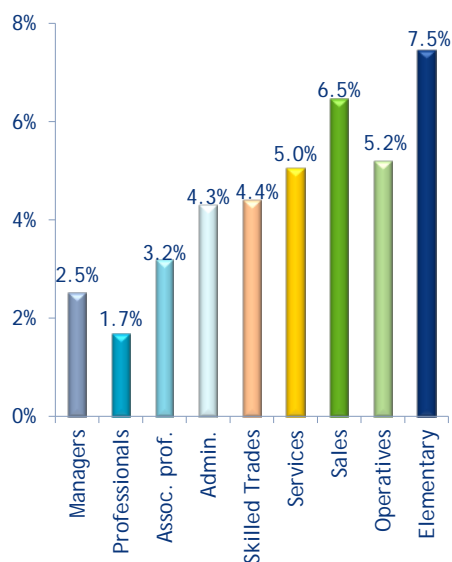
Source: SLMRU (SOLAS) analysis of CSO data

Figure 5.3 presents the unemployment rate by broad occupation. In quarter 4 2016, the unemployment rate was highest for elementary and sales occupations at 7.5% and 6.5% respectively. In contrast professionals had the lowest unemployment rate at 1.7%

followed by managers (2.5%) and associate professionals (3.2%).

Between quarter 4 2015 and quarter 4 2016, the unemployment rate declined for all occupational groups with the rate for operatives observing the greatest decline of 3.8 percentage points, followed by skilled trades (2.9 percentage points) and elementary occupations (2.4 percentage points).

Figure 5.3 Unemployment Rate by Occupation, Quarter 4 2016



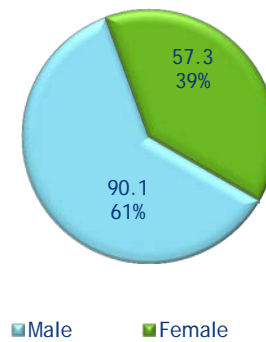
Source: SLMRU (SOLAS) analysis of CSO data

Note: Excludes persons who did not state their previous occupation.

### 5.3 Unemployment by Gender

Figure 5.4 presents the gender distribution of unemployed persons. In quarter 4 2016, 61% of unemployed persons were male. Between quarter 4 2015 and quarter 4 2016, the share of unemployed males decreased by five percentage points, while the overall number of males and females observed a decrease.

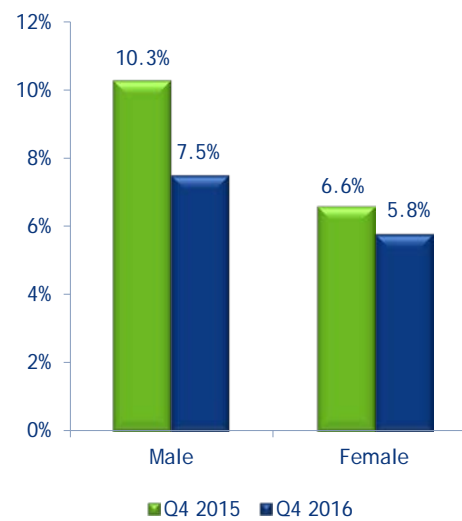
Figure 5.4 Unemployment by Gender, Quarter 4 2016



Source: SLMRU (SOLAS) analysis of CSO data

In quarter 4 2016, the unemployment rate for females continued to be lower than that of males. Between quarter 4 2015 and quarter 4 2016, the unemployment rate for both genders experienced a decrease, with males observing a more pronounced decline than females (at 3.7 percentage points compared to 1.7 percentage points).

Figure 5.5 Unemployment Rate by Gender, Quarter 4 2015 & Quarter 4 2016



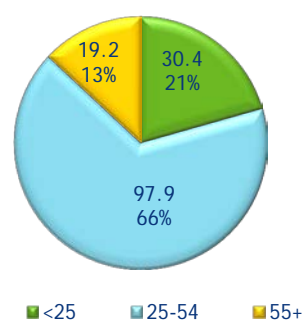
Source: SLMRU (SOLAS) analysis of CSO data

## 5.4 Unemployment by Age

The age distribution of unemployed persons is presented in Figure 5.6. In quarter 4 2016, the share of unemployed persons aged 25-54 was 66%; one in five unemployed persons was aged under 25.

Between quarter 4 2015 and quarter 4 2016, those employed in all age cohorts observed a decline in terms of absolute numbers, with those aged 25 - 54 experiencing the greatest decline (of 32,300). The shares of unemployed persons both under 25 years and 55 years and over increased (three and one percentage points respectively).

Figure 5.6 Unemployment by Age, Quarter 4 2016

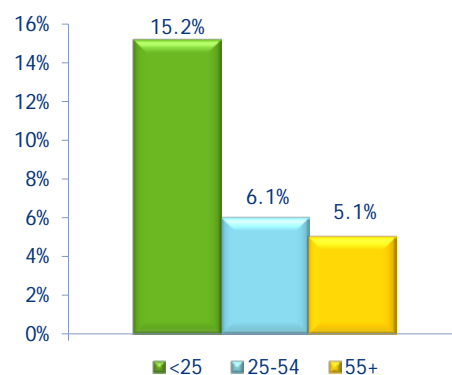


Source: SLMRU (SOLAS) analysis of CSO data

Unemployment rates by age are presented in Figure 5.7. In quarter 4 2016, the unemployment rate of those aged under 25 remained three times higher than those aged 55 years or over.

Between quarter 4 2015 and quarter 4 2016, the unemployment rate for all age groups declined. Those aged less than 25 years observed the greatest decline of almost four percentage points.

Figure 5.7 Unemployment Rate by Age, Quarter 4 2016



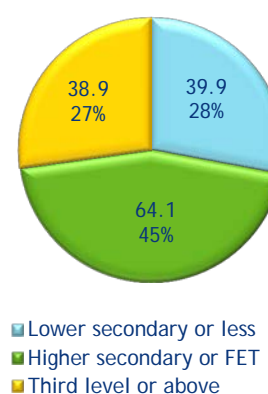
Source: SLMRU (SOLAS) analysis of CSO data

## 4.5 Unemployment by Education

Figure 5.8 presents unemployment by education level. In quarter 4 2016, 45% of unemployed persons had higher secondary or FET qualifications, 27% had a third level qualification while 28% had attained lower secondary education or less.

Between quarter 4 2015 and quarter 4 2016, while the number of unemployed persons declined across all education levels, it was most pronounced for those with higher secondary education or FET, with a fall of over 20,000 unemployed persons.

Figure 5.8 Unemployment by Education, Quarter 4 2016



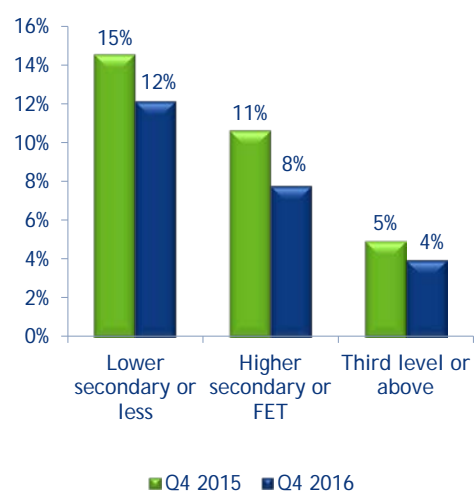
Source: SLMRU (SOLAS) analysis of CSO data

\*Excludes not stated

Figure 5.9 presents unemployment rates by education level. In quarter 4 2016, third level graduates continue to have the lowest unemployment rate (at 4%), while persons with a lower secondary education or less had the highest rate at 12%.

Between quarter 4 2015 and quarter 4 2016, the unemployment rate for all education levels decreased. There was a three percentage point decline both for those with lower secondary education or less and with higher secondary education or FET.

Figure 5.9 Unemployment Rate by Education, Quarter 4 2015 & Quarter 4 2016



Source: SLMRU (SOLAS) analysis of CSO data

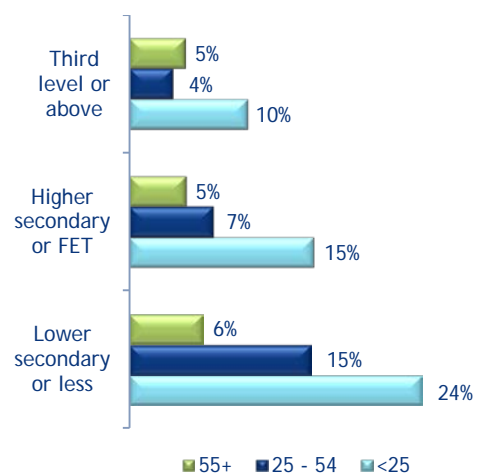
\*Excludes not stated

Figure 5.10 presents unemployment rates by education and age. In quarter 4 2016, persons aged under 25 with less than higher secondary education were at the greatest risk of unemployment. For the same age cohort the risk of unemployment was greatest across the three education levels. Third level graduates remained at the lowest risk of unemployment for those aged 25 and above.

Between quarter 4 2015 and quarter 4 2016, the unemployment rate decreased for all age

and education categories (except for third level graduates aged over 55 and between 25 and 54). Those aged below 25 years with lower secondary or less education observed the greatest decline of eight percentage points.

Figure 5.10 Unemployment Rate by Education and Age, Quarter 4 2016



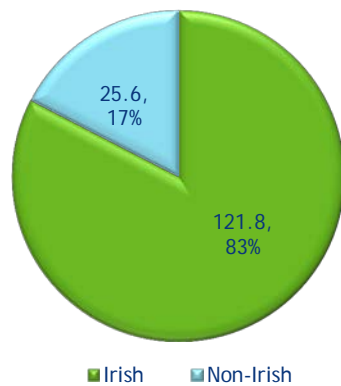
Source: SLMRU (SOLAS) analysis of CSO data

\*Excludes not stated

## 5.6 Unemployment by Nationality

Figure 5.11 presents the distribution of unemployment by nationality. In 2016, Irish nationals accounted for 83% of all unemployed persons. Between quarter 4 2015 and quarter 4 2016, the number of non-Irish nationals unemployed persons declined by over 9,000 whereas the number of unemployed Irish nationals declined by over 31,000 persons.

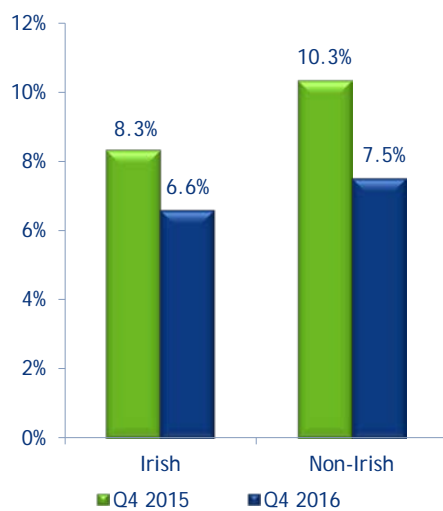
Figure 5.11 Unemployed by Nationality (%), Quarter 4 2016



Source: SLMRU (SOLAS) analysis of CSO data

The unemployment rates for Irish and non-Irish nationals are presented in Figure 5.12. In quarter 4 2016, Irish nationals had a lower unemployment rate than non-Irish nationals (at 6.6% compared to 7.5%). Between quarter 4 2015 and quarter 4 2016, the decrease in the unemployment rate for non-Irish nationals was most pronounced at 2.8 percentage points.

Figure 5.12 Unemployment Rate by Nationality, Quarter 4 2015 & Quarter 4 2016



Source: SLMRU (SOLAS) analysis of CSO data

## 5.7 Unemployment by Sector

The unemployment levels and unemployment rates by sector are presented in Table 5.1. In quarter 4 2016, the largest number of unemployed persons was for those previously employed in wholesale and retail, industry and construction, with the lowest numbers in agriculture, public administration and financial activities.

The unemployment rate in quarter 4 2016 was highest for the administration services sector (8.4%) followed by construction (7.9%). The agriculture and professional services sectors had the lowest unemployment rates at 1.5% and 2.5% respectively.

Between quarter 4 2015 and quarter 4 2016, the construction sector experienced the largest fall in the number of persons unemployed, at 13,000. The unemployment rates decreased for almost all sectors with the exception of ICT, administrative services and education with increases of less than one percentage point each.

Table 5.1 Unemployment by Sector, Quarter 4 2016

Sector	Unemployed 000s	Unemployment rate
Agriculture	1.6	1.5%
Industry	12.6	4.6%
Construction	11.9	7.9%
Wholesale/retail	14.6	4.9%
Transportation	4.5	4.5%
Accomm./food	7.9	5.1%
ICT	3.8	4.0%
Finance	2.8	2.7%
Prof. services	3.2	2.5%
Admin. service	6.2	8.4%
PAD	2.7	2.6%
Education	4.6	2.8%
Health	8.7	3.3%
Other	6.1	5.4%
<b>Total</b>	<b>147.4</b>	<b>6.7%</b>

Source: SLMRU (SOLAS) analysis of CSO data



## Section 6 Labour Market Transitions

### 6.1 Overall Transitions

The change in the labour market status of individuals – employment, unemployment and economic inactivity – between two points in time is referred to as a ‘labour market transition’. The analysis of labour market transitions is based on the QNHS data, which allows for the examination of the labour market status of survey participants who remain on the survey panel in two subsequent quarters. On average, 66% of respondents reappeared from one quarter to another during the 2016 survey cycle.

Average quarterly labour market transitions for 2016 are presented in Table 6.1.<sup>31</sup> As observed in the preceding years, most individuals do not change their labour market status between successive quarters: in 2016, on average, 97.4% of individuals who were in employment, remained employed; 94% of those economically inactive, continued to be outside the labour force and 63.8% of those unemployed remained unemployed. Nonetheless, some individuals changed their labour market status between quarters: 2.5% of individuals transitioned out of employment – 1.6% to inactivity and 0.9% to unemployment; 36.2% of individuals transitioned out of unemployment – 20.8% to inactivity and 15.4% to employment.

<sup>31</sup> Each repeat respondent’s weight was inflated proportionately, so that the sum of all repeat respondents corresponds to the population estimate of the ending quarter (this method implies that employment, unemployment and inactivity levels derived from transitions analysis do not equate to the actual levels reported by the CSO QNHS); Eurostat uses a method for estimation of labour market transitions which does not deal with individual record weight adjustments, but adjusts weights for gender and age group aggregate cohorts and uses iterative ranking to achieve alignment with starting and ending quarter totals; given the level of granularity required for occupational analysis, Eurostat method is not used here.

The overall distribution of transitions was broadly in line with that of 2015, with a decrease in the share of persons remaining in unemployment the most noticeable change (falling from 66.7% in 2015 to 63.8% in 2016). This resulted in a higher share entering employment from unemployment, from 14.1% in 2015 to 15.4% in 2016.

Table 6.1 Labour Market Transitions by ILO Status (Persons Aged 15-74<sup>32</sup>), 2016

ILO start Q	ILO end Q		
	Employed	Unemployed	Inactive
Employed	97.4%	0.9%	1.6%
Unemployed	15.4%	63.8%	20.8%
Inactive	3.4%	2.6%	94.0%

Source: SLMRU (SOLAS) analysis of CSO data

Figure 6.1 shows estimated annual transitions<sup>33</sup> for 2016. Because a person can change their labour market status several times in a year, the term ‘transitions’ is used, rather than ‘persons’.

Based on quarterly flows, it is estimated that over 1.1 million transitions occurred in the Irish labour market in 2016, which was broadly in line with 2015. Quarterly transitions represent an underestimation of the true volume of activity, because transitions can occur more frequently than on a quarterly

<sup>32</sup> The analysis focuses on persons aged 15-74, which is in line with the Eurostat approach; in previous Bulletins the focus was on persons aged 15+, however, the difference in findings is negligible given that there is very little movement between labour market status for persons aged 75 and over.

<sup>33</sup> Sum of transitions between quarter 4 2015 to quarter 1 2016, quarter 1 2016 to quarter 2 2016, quarter 2 2016 to quarter 3 2016, quarter 3 2016 to quarter 4 2016.

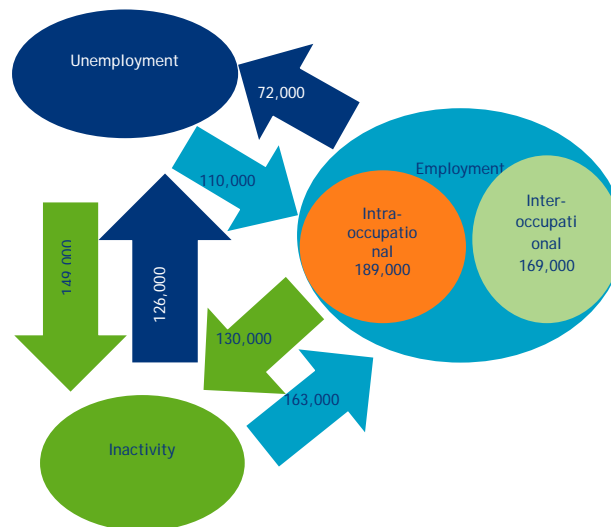
basis.<sup>34</sup> Nonetheless, even quarterly transitions indicate a significant volume of movements in the Irish labour market during 2016.

There were approximately 180,000 transitions between employment and unemployment; almost 300,000 between employment and inactivity and over 270,000 between unemployment and inactivity. In addition, almost 360,000 transitions occurred within employment, either due to a change of employer (intra-occupational transitions) or change of occupation (inter-occupational transitions).

The number of transitions into employment, from both unemployment and inactivity exceeded transitions out of employment. There were almost 40,000 more transitions from unemployment to employment than in the opposite direction. Similarly, there were over 30,000 more transitions from inactivity to employment than in the opposite direction. There has been a decrease in flows between unemployment and inactivity of approximately 15,000 each way since 2015. By contrast, there has been a significant change in movement for those already in employment, with increases in the number of intra-occupational transitions of 20,000 since 2015 and inter-occupational transitions of almost 70,000 over the same time period.

<sup>34</sup> CSO Job Churn analysis estimated 630,000 hirings for 2015 for those aged 16-74, while the estimated number of labour market transitions to employment from all three ILO states (employment, unemployment and inactivity) was 530,000 for 2015; while there were differences in methodology and focus of measurement, the discrepancy indicates that transitions are likely to underestimate the true volume of job finds.

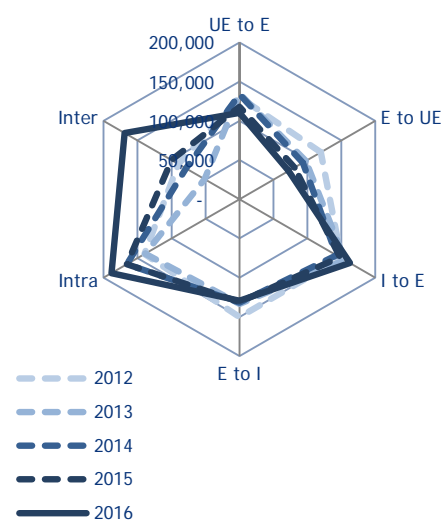
Figure 6.1 Labour Market Transitions, 2016 (Sum of Four Quarters)



Source: SLMRU (SOLAS) analysis of CSO data

Figure 6.2 presents how the volume of labour market transitions between the three labour market states changed over the period 2012-2016. There is a clear continuous decrease in the volume of transitions from employment to unemployment over this period, while the increase in the volume of intra, and inter occupational movements was substantial.

Figure 6.2 Labour Market Transitions, 2012-2016



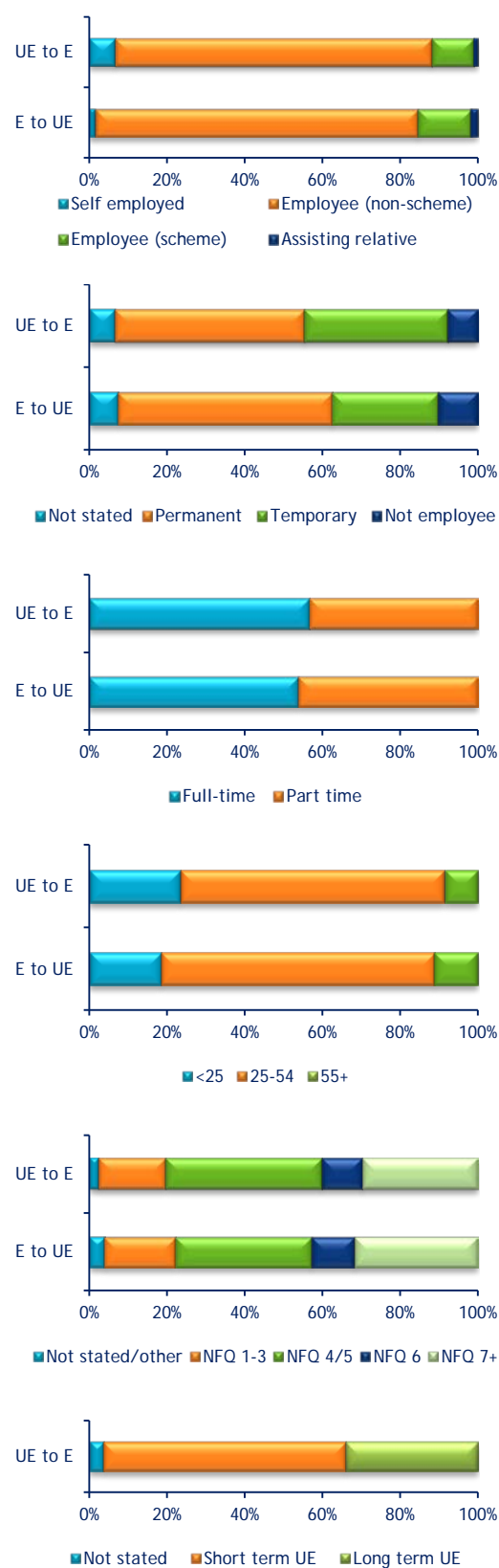
Source: SLMRU (SOLAS) analysis of CSO data

## 6.2 Transitions between Employment and Unemployment

The composition of transitions between employment and unemployment is presented in Figure 6.3.

- At over 90%, the employee category accounted for the majority of those transitioning between employment and unemployment; of these, 11% were associated with State-sponsored employment schemes, a fall of two percentage points when compared to the share observed in 2015.
- In terms of permanency of tenure, 55% of exits to unemployment were from permanent jobs, compared to 49% of entries into permanent employment; the numbers both entering and exiting employment to/from temporary posts saw the greatest decline when compared to 2015.
- The distribution of transitions between part-time and full-time jobs was almost evenly split, with full-time accounting for 54% of transitions from employment to unemployment, while 57% of transitions from unemployment to employment.
- Similar to 2015, the share of persons under 25 was greater for transitions into employment, compared to their share in exits to unemployment (23% compared to 18%).
- Holders of NFQ4/5 qualifications accounted for 35% of transitions between employment and unemployment; just under a third of transitions were associated with holders of qualifications at NFQ level 7 or above, similar to 2015.
- Of all transitions from unemployment to employment in 2016, 34% were from long-term unemployment, compared to 36% in 2015.

Figure 6.3 Transitions between Employment and Unemployment, 2016



Source: SLMRU (SOLAS) analysis of CSO data

### 6.3 Transitions between Employment and Inactivity

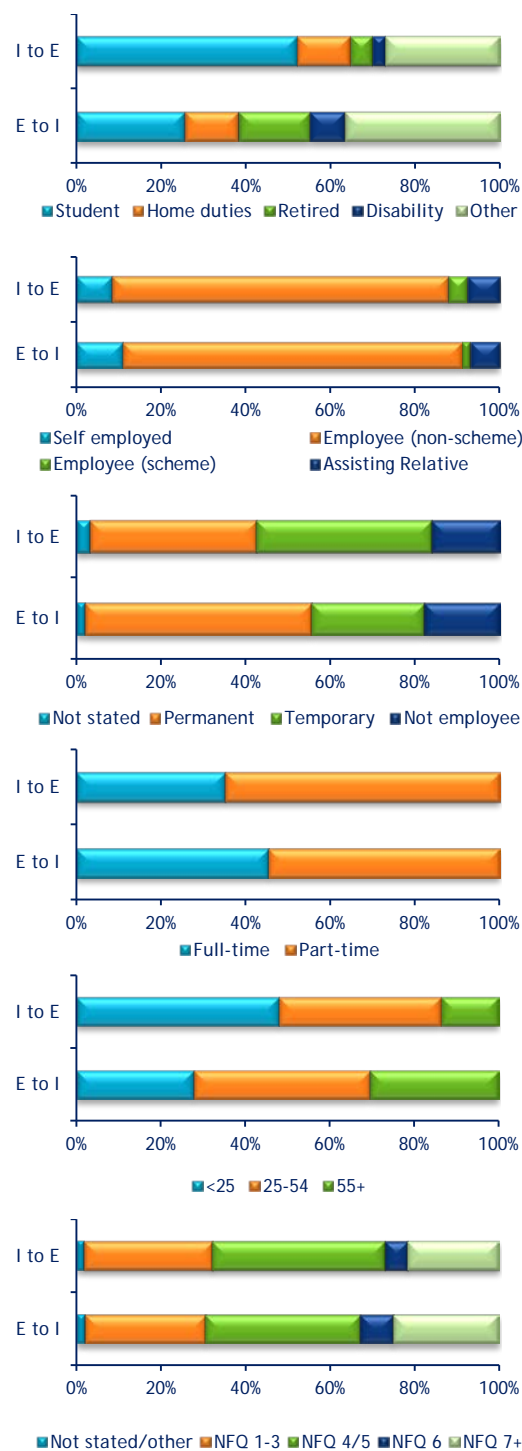
The composition of transitions between employment and inactivity is presented in Figure 6.4.

- Of total transitions from employment into inactivity, 26% was to study, 17% to retirement<sup>35</sup>, 13% to home duties and 8% was accounted for by exits due to disability; in terms of transitions from inactivity to employment, over a half (52%) was from study, 13% from home duties, with the remainder from other forms of inactivity; the distributions were broadly in line with those observed in 2015, with the exception of exits from employment to retirement (increased by four percentage points) and exits from employment to student (declined by four percentage points).
- As in previous years, in 2016, the significant majority (over 80%) of transitions between employment and inactivity were in the employee category (although the share associated with Government employment schemes who exited employment to inactivity fell from 5% to 2% since 2015).
- 54% of transitions from employment to inactivity were from permanent employment, compared to 39% of transitions from inactivity into permanent employment; the share of transitions from inactivity to permanent employment decreased by one percentage points compared to 2015, although there was an increase in the absolute numbers.
- In 2016, almost two thirds of transitions between employment and inactivity were associated with part-time employment;

<sup>35</sup> Total transitions to retirements were estimated at 22,000; however, not all retired persons became inactive (some continued to be employed, others were still actively looking for work (unemployed)).

the share of transitions from employment to inactivity from full-time posts increased by three percentage points since 2015 (from 42% to 45%).

Figure 6.4 Transitions between Employment and Inactivity, 2016



Source: SLMRU (SOLAS) analysis of CSO data

- As would be expected with the high share of students in transitions from inactivity to employment, the share of persons aged under 25 exiting inactivity to employment was greater than their share in exits from employment (48% compared to 28%); the opposite was the case for persons aged 55 and over (30% of transitions were to inactivity compared to 14% to employment).
- More than two thirds of transitions between employment and inactivity were associated with persons holding qualifications equivalent to NFQ level 5 or below; the share transitioning from employment to inactivity at NFQ level 6 and above was higher than the share transitioning from inactivity to employment at this education level (33% compared to 27%).

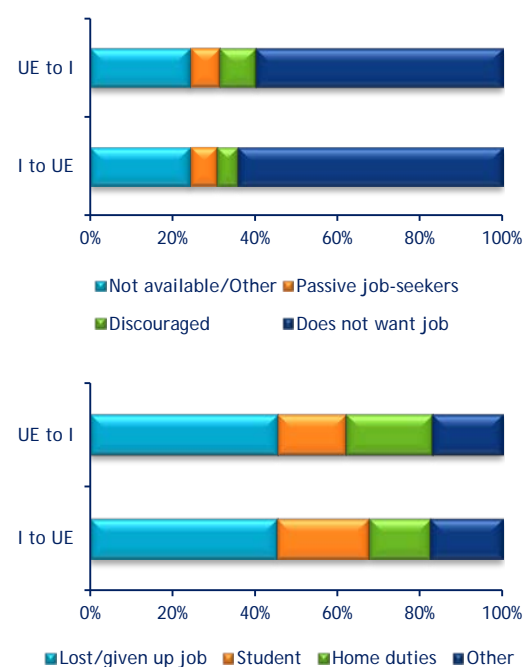
#### 6.4 Transitions between Unemployment and Inactivity

The composition of transitions between unemployment and inactivity in 2016 is presented in Figure 6.5.

- Just over 60% of flows between unemployment and inactivity was associated with persons who did not want a job for various reasons; however, a further 15% was associated with persons who did want a job but were passive in their job search or discouraged; the share, and absolute number, of discouraged workers transitioning from unemployment to inactivity rose by four percentage points since 2015.
- Transitions between unemployment and inactivity associated with persons who had lost or given up employment accounted for 45% in both directions; 22% of transitions from inactivity to unemployment were related to students,

a fall of five percentage points on 2015; transitions to home duties accounted for 21% of flows from unemployment to inactivity and for 15% in the opposite direction.

Figure 6.5 Transitions between Unemployment and Inactivity, 2016



Source: SLMRU (SOLAS) analysis of CSO data

#### 6.5 Transitions by Occupational Group

Labour market transitions by broad occupational group are presented in Table 6.2. Overall, elementary, skilled trades and associate professional occupations accounted for the highest frequencies of transitions.

Transitions between **employment and unemployment** (in both directions) were most frequent in skilled trades, elementary and sales occupations with the number of transitions broadly comparable in each direction.

- Of all transitions from unemployment to employment, 30%, or 33,000, related to persons with no previous occupation.
- Persons with no previous occupation most frequently transitioned from unemployment into employment as elementary and sales workers, accounting for 24% and 17% of transitions for those with no previous occupation respectively (Figure 6.6).

Table 6.2 Labour Market Transitions by Occupational Group (000s), 2016 (All Quarters)

	E to UE	UE to E*	E to I	I to E*	Inter out	Inter in	Intra
Managers	2.5	4.1	7.2	4.2	11.9	21.4	7.8
Prof	7.6	6.6	13.8	7.4	18.4	25.8	27.5
Assoc. prof.	6.6	7.3	10.9	5.8	26.7	37.9	19.2
Admin	6.8	8.4	13.4	4.3	12.5	10.8	16.1
Trades	11.5	13.2	14.2	7.5	30.8	27.7	26.2
Services	6.3	6.5	14.4	4.9	6.7	9.0	16.7
Sales	9.6	9.1	19.2	7.1	11.9	7.6	25.8
Operatives	7.2	8.1	9.3	5.5	10.8	12.5	14.8
Elementary	13.1	14.2	24.9	8.9	39.1	16.8	34.5
No occup.	1.0	32.7	2.2	107.1	-	-	-
Total	72.2	110.2	129.5	162.7	168.9	169.5	188.6

\*Refers to previous occupation

Source: SLMRU (SOLAS) analysis of CSO data

The number of transitions between **employment and inactivity** were greatest in sales and elementary with a larger share moving out of employment than vice versa across all broad occupational groups.

- Two thirds of transitions from inactivity to employment were for those persons with no previous occupation; of these, half were previously classified as students and were primarily in the younger age cohorts (i.e. aged 15-29 years).
- Persons with no previous occupation most frequently transitioned from inactivity into

employment as elementary and sales workers, accounting for 29% and 18% of transitions for those with no previous occupation respectively.

- When observing occupational distributions of transitions into employment from inactivity there was a difference depending on whether the previously or currently held occupation was considered; the share of elementary and sales occupations in transitions into employment was greater when the current rather than the previous occupation was considered (Figure 6.6), while the share of managerial, professional and skilled trades was smaller (this was also the case for those transitioning from unemployment although to a lesser extent).

The number of **inter-occupational transitions**<sup>36</sup> increased significantly in 2016 compared to previous few years. While increased opportunities for promotion and movement due a more buoyant labour market may be a factor, classification issues may also be contributing to this increase; a significant share of transitions occurred between numerous related occupational groups including agricultural managers and farmers, IT/business analysts and business associate professionals, architect/quantity surveyors and estimators/valuers, engineering technicians/fitters/mechanical engineers, IT user support technicians/IT engineers.

- The highest number of inter-occupational transitions into occupations (inter in) were for associate professionals, skilled trades and professional occupations.
- Inter-occupational transitions out of occupations (inter out) were most frequent

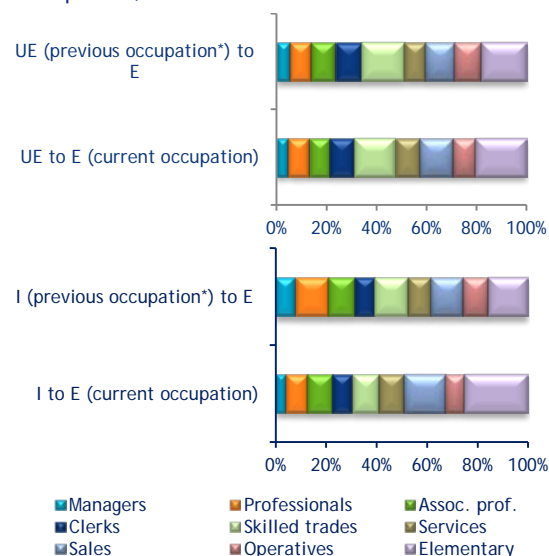
<sup>36</sup> This relates to persons who remained in employment between the two quarters, but changed occupation.



- in elementary, skilled trades and associate professional occupations.
- The number of transitions into occupations (inter in) exceeded those out of occupations (inter out) for associate professionals, managers, professionals, and to a lesser extent for services and operative occupations.
  - The increase in the number of inter-occupational transitions was most noticeable in skilled trades (both directions), associate professionals (inter in), elementary (inter out), managers (inter in) and professionals (mainly inter out).

**Intra occupational transitions<sup>37</sup>** were most frequent for professional, skilled trades and elementary occupations; increases in transitions related to elementary and sales occupations.

Figure 6.6 Transitions by Previous and Current Occupation, 2016



\* Excludes persons with no previous occupation

Source: SLMRU (SOLAS) analysis of CSO data

<sup>37</sup> Persons who remained employed in the same occupation between the two quarters, but who changed employer during the months of the starting quarter.

## 6.6 Transitions by Occupation


Individual occupations within each broad occupational group for which the highest number of transitions across the different labour market states was observed is presented in Table 6.3.

Occupations with the highest number of transitions between employment and unemployment (both directions) included elementary occupations (waiters/bar staff, catering assistants, construction and storage), sales assistants and general administrators. A high number of transitions from unemployment to employment was also observed for those previously employed in occupations including skilled trades (carpenters, chefs, plasterers, electricians), managers (production and retail), personal services (child-minders, care workers and hairdressers), along with PAs and receptionists.

Occupations most frequently transitioning in and out of inactivity (both directions) included sales assistants, elementary occupations (waiters, catering assistants and construction), services workers (care workers and child-minders), farmers, general administrators, food operatives and teachers. Occupations with the highest number of transitions from employment to inactivity due to study were: sales assistants, general admin, waiters, catering assistants and construction labourers. Those most frequently exiting employment to engage in home duties included sales assistants, farmers and care workers. Farmers, care workers and sales assistants were associated with the highest number of transitions into inactive retirement.

There was a high frequency of inter-occupational transitions across all occupational groups. The highest number of





inter-occupational transitions was observed for sales assistants, elementary occupations (cleaners, security guards, storage, waiters/bar staff, catering assistants and construction labourers), fitters, technicians (IT and engineering) and catering managers. Occupations which featured amongst those with the highest number of inter-occupational transitions in, but not the other way around, included agricultural managers, IT business analysts, IT technicians, HR officers and housekeepers.

A high number of intra-occupational transitions was observed for many elementary occupations (waiters, cleaners, catering assistants, packers, labourers in construction, agriculture and storage); administrative occupations (general, financial and government, personal assistants and

receptionists); skilled trades (chefs, carpenters, mechanics, electricians, painters, fitters, roofers); sales and customer care workers; IT technicians; services occupations (care and child-care workers, hairdressers, housekeepers); amongst professionals, nurses, accountants, programmers, teachers, and doctors had the highest number of transitions between employers; amongst operatives, truck drivers, assemblers, construction operatives and drivers (truck and van).

As in previous years, several occupations have been identified as the most frequent movers in all directions and between all labour market states. These are primarily concentrated in elementary occupations (waiters, bar staff, cleaners, catering assistants, construction and security), care workers, sales assistants and general clerks.

Table 6.3 Occupations with Most Frequent Transitions, 2016 (All quarters)

	Managers	Professionals	Associate prof.	Admin	Tradespersons	Services	Sales	Operatives	Elementary
E to UE		Teachers	Sales exec.	General	Painters	Housekeeper	Sales assistants	Construction	Construction
		Accountants					Customer services	Van drivers	Waiters/bar staff
									Catering
									Storage Cleaners
UE to E prev occ	Production	Accountants		General	Carpenters	Childminders	Sales assistants	Truck drivers	Construction
	Retail			PA	Chefs	Care workers			Storage
				Receptionist	Plasterers	Hairdressers			Catering
					Electricians				Waiters Bar staff
E to I	Hotel mgrs	Teachers		General	Farmers	Care workers	Sales assistants	Truck drivers	Waiters/bar staff
	Functional	Nurses		PA	Chefs	Childminders	Customer services	Van drivers	Cleaners
		IT programmer				Ed support		Taxi drivers	Construction
				Finance		Housekeeper		Food operatives	Catering Farm workers Storage
E to study			General			Sales assistants		Waiters/bar staff Construction Catering Farm workers	
E to home duty				Farmers	Care workers	Sales assistants			
E to retirement				Farmers	Care workers	Sales assistants			
I to E prev occ		Teachers		General	Farmers	Childminders	Sales assistants	Food operatives	Waiters
						Care workers			Construction Catering
Inter out	Restaurant	Mechanical eng	Bus. analysts	General	Fitters	Care workers	Sales assistants	Food operatives	Catering
	Production	Social worker	Eng. technician	Receptionist	IT engineers	Childcare	Customer services	Assemblers	Storage
	Functional	Accountants	Estimators/valuers	HR admin	Catering mgrs				Cleaners
	Retail	IT	QA technician	Finance	Farmers				Construction
	Agriculture	programmer	Lab technician		Electrical				Security guards Waiters/bar staff
Inter in	Agriculture	Mechanical engineer	Eng. technician	General	Fitters	Housekeeper	Sales assistants	Construction	Construction
	Restaurant	IT bus analyst	IT support tech	Finance	Catering mgrs	Care workers		Assemblers	Waiters
	Retail	Quantity surveyors	Protective services	Government	Farmers			Taxi drivers	Storage
	Production	Bus analysts	HR		Chefs				Security guards
	Publicans	Electronic eng	Financial accounts						Cleaners
	Storage	Teachers	Business sales exec.						
Intra	Production	Nurses	Sales exec.	General	Chefs	Care workers	Sales assistants	Truck drivers	Waiters/bar staff
		Accountants	HR officers	PA	Carpenters	Hairdressers	Customer services	Assemblers	Construction
		IT program.	Sales accounts	Finance	Electricians	Childminders		Taxi drivers	Cleaners
		Teachers	IT technicians	Government	Painters	Housekeeper		Construction	Catering
		Doctors	Trainers/instructors	Receptionist	Mechanics			Van drivers	Storage
		Scientists			Fitters				Packers Farm workers

## 6.7 Replacement and Turnover

The estimates of replacement and turnover rates based on the labour market transitions are presented in Table 6.4.

Two estimates of replacement rates are presented: one based on transitions to inactive retirement and one based on all exits to economic inactivity (retirement, home duties, study, disability etc.) adjusted for net losses arising from inter-occupational movements.<sup>38</sup> While for some occupations, the inclusion of net losses from inter-occupational transitions increases replacement demand (transitions out of an occupation are greater than transitions in), for others it decreases replacement demand (transitions in are greater than transitions out).

Table 6.4 Employment, Replacement and Turnover Rates by Occupational Group, 2016 (All quarters)

	Emp.	Replacement		Turnover	
		Retirement	Exits to inactivity (including retirement) and net exits due to inter-occup. movement	Intra-occupational	Intra-occup. and neutral inter-occup. movement
Managers	169,200	1.0%	-1.4%	4.6%	10.9%
Professionals	362,900	1.1%	1.8%	7.6%	10.8%
Assoc. prof.	236,500	0.9%	-0.1%	8.1%	14.0%
Admin.	209,900	1.5%	7.2%	7.7%	10.6%
Trades	318,700	0.9%	5.4%	8.2%	14.5%
Personal serv.	166,200	1.2%	7.3%	10.1%	12.6%
Sales	164,600	0.7%	14.3%	15.6%	19.5%
Operatives	154,100	1.7%	4.9%	9.6%	14.8%
Elementary	219,800	0.9%	21.5%	15.7%	22.7%
Not stated	18,200	-	-	-	-
Total	2,020,000	1.1%	6.3%	9.3%	14.1%

<sup>38</sup> It is recognised that this approach has limitations: it overestimates demand where there is no intention to replace those who leave; it underestimates demand as it ignores emigration and deaths and assumes that exits to unemployment arise due to job closures only, rather than dismissals or voluntary exits.

In 2016, economically inactive retirements accounted for almost 22,000 or 1.1% of total employment (compared to 0.9% in 2015). The rates were above average for operative and administrative occupations and below average for sales occupations (0.7%). In terms of individual occupations, the highest retirement rates were observed for care workers (Table 6.5).

When all exits to inactivity (adjusted for net losses from inter-occupational movements) (Table 6.4, column 4) were considered, the replacement rate was estimated at 6.3% - similar to the rate in 2015. Above average replacement rates were observed for elementary, sales, services and administrative occupations. Negative replacement rates for managers and associate professionals, and a low rate for professionals, are likely to be due to the aforementioned classification issue with various business analysts and surveyors/valuers. At occupational level, the highest replacement rates were observed for business associate professionals, receptionists, lab technicians, sales workers (sales assistants, customer services), hospitality workers (waiters, bar staff and catering assistants), food operatives, farm workers, cleaners and security guards.

In addition to replacement rate estimates, labour market transitions were used to estimate turnover rates. Two turnover rates are presented: one based on intra-occupational transitions (change of employer) (Table 6.4, column 5) and another based on intra-occupational transitions, as well as neutral inter-occupational transitions (Table 6.4, column 6).

In 2016, the turnover rate based on the intra-occupational movements was estimated at

9.3% (one percentage point higher than in 2015). A higher than average rate of intra-occupational movements was observed for sales and elementary occupations; managers had the lowest turnover rates. In terms of individual occupations, change of employer was the most frequent for hospitality workers (chefs, waiters, catering assistants and managers, bar staff), services (hairdressers, child-minders, sales), elementary (agriculture, construction, storage, cleaning), professionals (scientists, doctors), carpenters and HR officers.

When the turnover estimates were adjusted to account for neutral inter-occupational transitions (transitions between occupations where exits from an occupation were compensated in full by entries to that occupation), the average turnover rate increased to 14% (an increase of one percentage point on 2015). Although the inclusion of neutral inter-occupational transitions to change of employer increases the estimated turnover rate for all occupational groups, the pattern is similar to that of the rate based on the intra-occupational transitions alone, with rates typically lower for white collar occupations and trades. The list of occupations with the highest replacement rates based on intra-occupational and neutral inter-occupational movements is presented in Table 6.5 (column 4).

Table 6.5 Occupations with Above Average Replacement and Turnover Rates, 2016

Replacement		Turnover	
Retirement	Inactivity plus net inter occupational	Intra-occupational	Intra-occupational plus neutral inter-occupational
Care workers	Business associate prof	Doctors	Production mgrs
	Lab technicians	Scientists	Restaurant mgrs
	Sports coaches	HR officers	Doctors
	Social workers	Carpenters	Electrical/electronic eng.
	Receptionists	Chefs	Engineering technicians
	Electricians	Child-minders	HR officers
	Sales assistants	Hairdressers	Fitters
	Customer service	Sales assistants	Carpenters
	Food operatives	Customer service	Welders
	Farm workers	Mobile machine drivers	Chefs
	Cleaners	Farm workers	Catering managers
	Security guards	Elementary construction	Child-minders
	Elementary storage	Cleaners	Sales assistants
	Catering assistants	Elementary storage	Customer service
	Waiters	Catering assistants	Assemblers
	Bar staff	Waiters	Construction operatives
		Bar staff	Farm workers
			Elementary construction
			Security guards
			Elementary storage
			Catering assistants
			Waiters
			Bar staff

## Section 7 Employment Permits

### 7.1 Introduction

All non-EEA nationals are required to attain an employment permit in order to take up employment in Ireland. The analysis of employment permit data provides insights into the areas where employers are having difficulty in sourcing suitably qualified candidates from the Irish and EU labour market.

In order to attain an employment permit, an individual must have a valid job offer from a prospective Irish employer who has proved that there were no Irish or EEA nationals available to fill the post. The Employment Permit Act in 2014 introduced nine classes of employment permits as detailed below:

- **Critical skills:** replaces the green card and is designed to attract highly skilled people into the labour market
- **General:** replaces the old Work Permit utilised to attract non-EEA nationals for occupations which are experiencing a labour or skills shortage
- **Intra-company transfer:** facilitates the transfer of senior management, key personnel or trainees who are non-EEA nationals from an overseas branch of a multinational corporation to its Irish branch
- **Dependent/partner/spouse:** primarily used to support the attractiveness of Ireland as a location of employment for potential and current critical skills employment permit holders and researchers
- **Contract for services:** designed for situations where a foreign undertaking has won a contract to provide services to an Irish entity to facilitate the transfer of

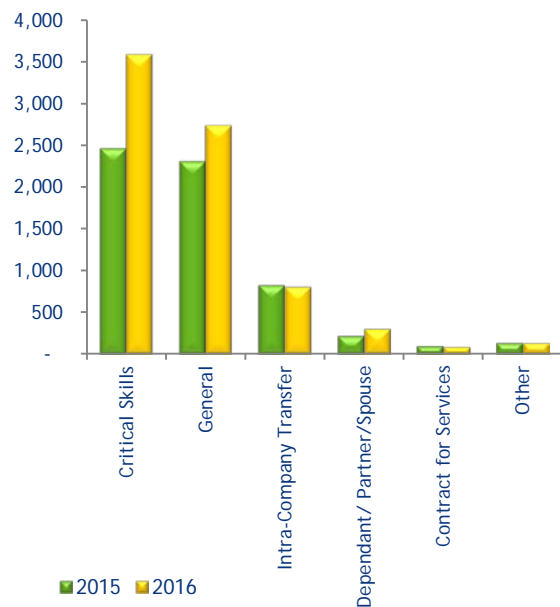
non-EEA employees to work on the contract in Ireland

- **Reactivation:** where a foreign national who entered the State on a valid Employment Permit but who fell out of the system or who has been badly treated or exploited in the workplace
- **Sport and cultural:** for the employment of foreign nationals with the relevant qualifications, skills, experience or knowledge for the development, operation and capacity of sporting and cultural activities
- **Internship:** facilitates the employment of foreign nationals who are full-time students, enrolled in a third level institution outside the State, for the purpose of gaining work experience
- **Exchange agreement:** facilitates the employment of foreign nationals pursuant to prescribed agreements or other international agreements to which the State is a party.

### 7.2 Overall Trends

Approximately 7,700 new employment permits were issued in 2016, a 27% increase on the previous year. New permits issued for critical skills accounted for almost half (47%) of all new permits issued in 2016, with a further 36% for general permits and 11% for intra-company transfers. Critical skills permits accounted for the largest share of the increase in new permits issued since 2015, with a rise of 46%.

Figure 7.1 New Employment Permits by Type, 2015-2016

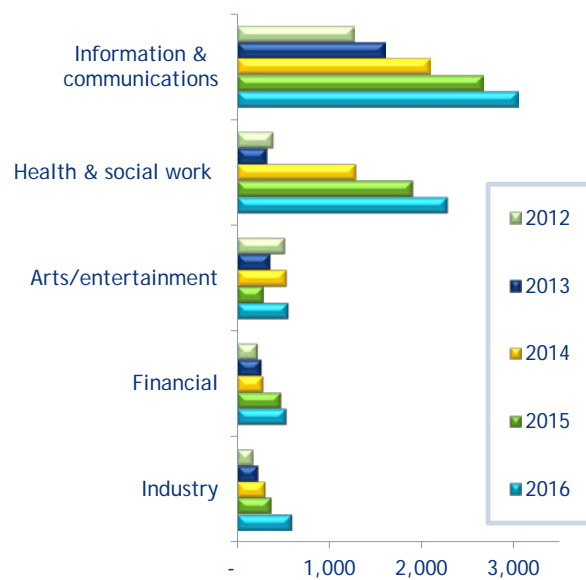


Source: DJEI

### 7.3 Employment Permits by Sector

Figure 7.2 provides a breakdown of new employment permits issued by sector.

Figure 7.2: New Employment Permits for Selected Sectors\*, 2012-2016



Source: DJEI

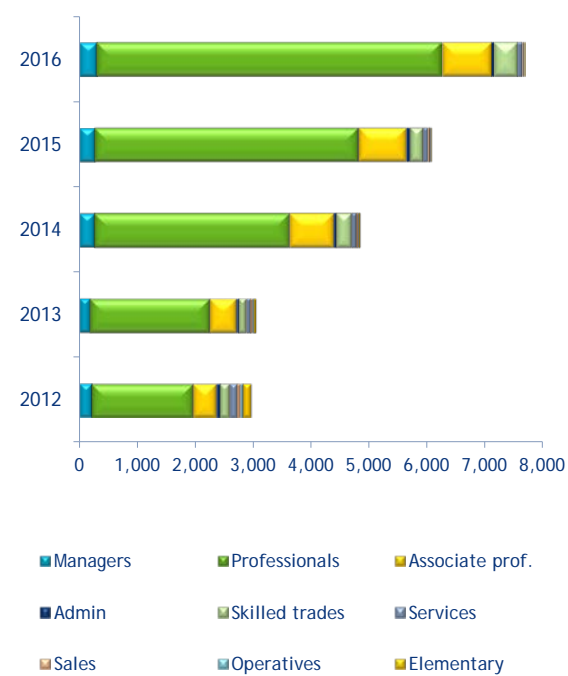
\*in 2016, these five selected sectors account for 91% of all new permits issued

The number of permits issued has been growing in recent years for most sectors, particularly in the health and ICT sectors. In 2016, the ICT sector accounted for 40% of all new permits issued with the health sector accounting for 30%. The increase in the number of permits issued to the health sector since 2013 relates to the reintroduction of medical employment permits.

### 7.4 Permits by Occupation

The exponential growth in new permits issued between 2013 and 2016 is almost entirely attributed to professional occupations, accounting for 90% of the increase over the period (Figure 7.3).

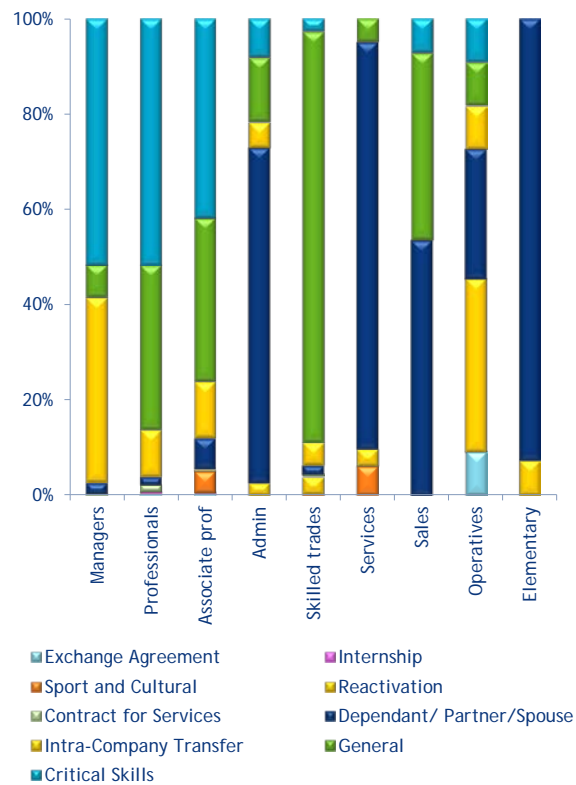
Figure 7.3 New Employment Permits by Broad Occupation, 2012-2016



Source: DJEI

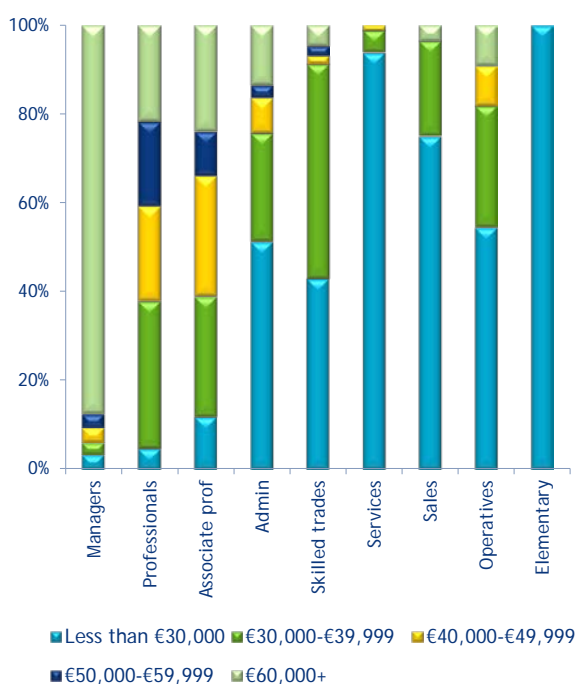
The type of permit issued varies across occupational group (Figure 7.4) as do the salary levels as detailed in Figure 7.5, both with similar shares to that of 2015.

Figure 7.4 New Employment Permits by Permit Type, 2016



Source: DJEI

Figure 7.5 New Employment Permits by Salary, 2016



Source: DJEI

## Managers

- **Overall:** new employment permits for managerial positions accounted for 4% of all permits issued in 2016
- **Type:** critical skills accounted for over a half (52%) of the new permits issued for this occupation with a further 39% for intra-company transfers
- **Salary:** 90% of new permits issued had a salary of €50,000 or more, by far the occupation with the largest share of permits offering salaries at this level
- **Sector:** employment permits were primarily issued for positions in industry (26%), arts/recreation (25%) and IT (19%)
- **Nationality:** over a half (57%) of all permits issued for managers were for those originating from the USA
- **Occupations:** new employment permits were most frequently issued for:
  - vice presidents/CEOs/CFOs in financial services
  - general managers in manufacturing
  - HR/operations managers.

## Professionals

- **Overall:** new employment permits for professionals accounted for over three quarters of total permits issued in 2016
- **Type:** permits were primarily related to critical skills (52%) and general permits (35%)
- **Salary:** a third of new permits issued were for a salary of between €30,000-39,999 with a further 41% with a salary of €50,000 or more
- **Sector:** permits were mainly issued for positions in IT (42%) and the health sector (37%)



- **Nationality:** a half of all new permits for professionals were issued to persons from India and Pakistan
- **Occupations:** new employment permits were most frequently issued for:
  - IT: software engineers/developers, network engineers, IT business analysts, test (analysts, engineers), architects (software, systems, technical, solutions), UX/UI designers, systems engineers
  - health: medical doctors (senior house officers, registrars (primarily general but also in emergency medicine, orthopaedics and anaesthetics)), nurses, radiographers
  - financial: accountants, actuary, auditors, financial/risk analysts, business intelligence consultants
  - industry: engineers (e.g. process & equipment, automation, design, service, quality control), scientists (data, chemists, medical laboratory, physicists).

#### Associate Professionals & Technical

- **Overall:** new employment permits for associate professionals accounted for 11% of total permits issued in 2016
- **Type:** at 42%, critical skills permits accounted for the highest share of new permits issued followed by general permits, at 34%, and inter-company transfers, at 11%
- **Salary:** 40% of new permits issued had a salary of less than €40,000
- **Sector:** a half of new permits issued were for the IT sector, with a further two fifths in arts, entertainment and sport, and 12% in financial services

- **Nationality:** persons from India and the USA accounted for a third of all new permits issued for this occupational group
- **Occupations:**
  - sales & marketing: primarily account strategists (with languages) but also market specialists, business development/acquisition and online sales managers
  - financial/risk analysts, auditors, account managers
  - IT: technical support
  - graphic designers
  - sports professionals.

#### Administrative and Secretarial

- **Overall:** with 37 permits, administrative positions accounted for less than 1% of total new permits issued in 2016
- **Type:** permits for this occupational group were primarily for dependents/partner/spouses
- **Salary:** three quarters of new permits issued had a salary of less than €40,000
- **Sector:** new permits were primarily in arts/recreation and financial services sectors
- **Occupations:** financial and general administration.

#### Skilled trades

- **Overall:** new employment permits issued for those in skilled trades accounted for 5% of total permits issued in 2016
- **Type:** most (86%) new permits issued were general permits
- **Salary:** the majority of permits issued were for employment with a salary of less than €40,000
- **Sector:** almost a half (43%) of all new permits issued were for the

accommodation and food services sector, with a further 38% in agriculture

- **Occupations:** new permits were most frequently issued for:
  - chefs: a half of new permits issued for skilled trades was for chefs, many in ethnic cuisine and also for head chefs
  - butchers/boners (with relevant experience considered a requirement rather than specific educational attainment)
  - field service engineers.

#### Caring, Leisure and Other Services

- **Overall:** new permits issued for those in caring occupations accounted for 1.1% of total permits in 2016
- **Type:** the majority (85%) of permits issued for this occupational group were issued for dependant/partner/ spouses
- **Salary:** over 90% of new permits issued had a salary of less than €30,000
- **Occupations:** permits were most frequently issued for healthcare assistants.

#### Sales and Customer Services

- **Overall:** new employment permits issued for those in sales related occupations accounted for 0.4% of total permits issued in 2016; permits were most frequently issued for customer service occupations.

#### Operatives

- **Overall:** at 11 permits issued, new employment permits for operatives accounted for 0.1% of total permits issued in 2016.

#### Elementary Occupations

- **Overall:** at 27 permits issued, new employment permits for elementary occupations accounted for 0.4% of total permits issued in 2016.

## Section 8 Vacancies

There are a number of reasons for vacancies occurring, whether it is expansion, replacement or churn. Before detailing the type of vacancies that are occurring in the Irish labour market, it is important to determine the nature of the vacancies, where possible.<sup>39</sup> This section provides a summary of the vacancies that occurred most frequently in 2016 from two sources, namely:

- Public Employment Service (PES) vacancy data (from Department of Social Protection's vacancy portal Jobs Ireland) - only vacancies for the first six months of 2016 were available for analysis
- private recruitment agency (IrishJobs.ie).

This section also provides an analysis of persons recently hired in 2016, detailing the sector and occupation they were hired in along with a profile of their age and education level. The vacancy rates by sector, as reported on a quarterly basis by the CSO, are also outlined.

### 8.1 Recent job hires

Recent job hires refers to employees who were employed in a 'reference week' and had started working for their employer up to three months earlier. The analysis provided here is from the CSO's QNHS data; data from the four quarters in 2016 are summed to give an annual figure.

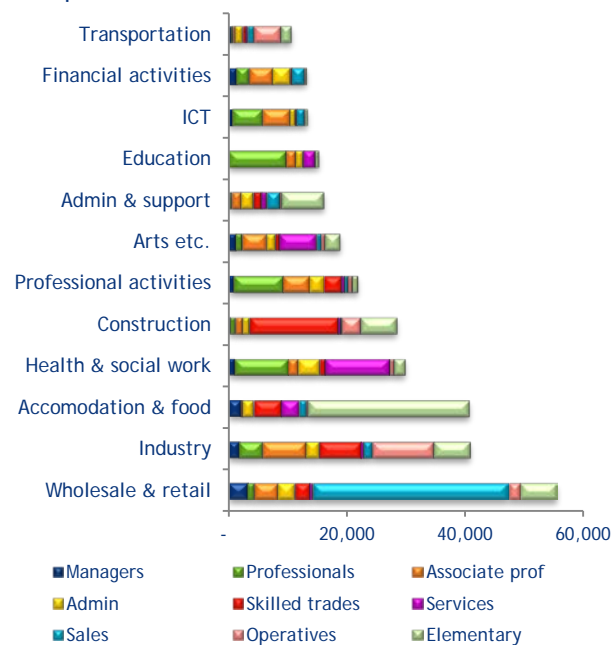
An analysis of recent job hires alone is not an indication of job opportunities but when combined with an examination of employment growth (Sections 3 & 4) and labour market transitions (Section 6), it can provide a clear

<sup>39</sup> Detailed analysis of the vacancy data is published in the Vacancy Overview 2016, SOLAS/EGFSN 2017.

indication of where job openings have been occurring, a profile of the persons taking up employment and the extent to which these openings are occurring due to expansion or churn.

In 2016, recent job hires were most frequent in wholesale and retail (mainly sales occupations), industry (operatives) and accommodation and food (waiters, bar staff etc.), with churn considered the prevailing factor (Figure 8.1). Most of the recent job hires for professional occupations were in education, professional activities, health and the ICT sector.

Figure 8.1 Recent Job Hires by Sector and Occupation, 2016

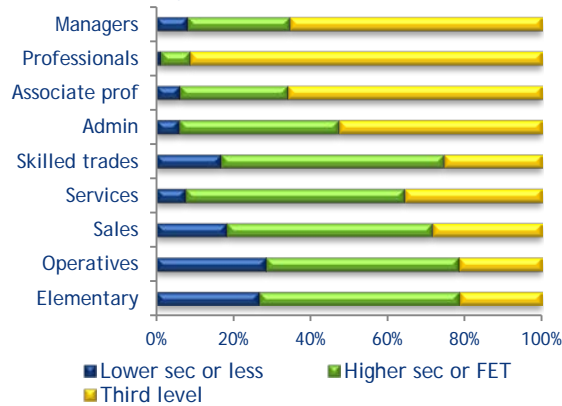


Source: SLMRU analysis of CSO QNHS data

At 90%, those recently hired in professional occupations in 2016 were most likely to have a third level qualification (Figure 8.2). Over half (55%) of persons recently hired in skilled trades and personal services held at most

higher secondary or further education. Recently hired operatives had the highest share of persons with lower secondary education or less at 28%, followed by elementary occupations (at 26%).

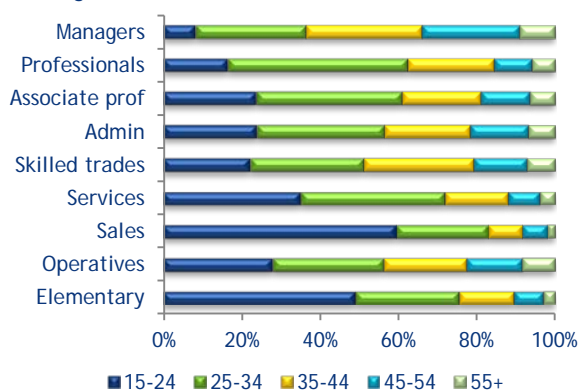
Figure 8.2 Recent Job Hires by Occupation and Education, 2016



Source: SLMRU analysis of CSO QNHS data

Figure 8.3 examines the occupation and age of those recently hired in 2016. Approximately a half of those recently hired for sales and elementary occupations were aged 15-24. The older age cohorts (aged 45+) were most likely to be recently hired in managerial (34%) and operative (23%) roles in relative terms, but in absolute terms, the older cohorts were most likely to gain employment in skilled trades (at 8,000 persons).

Figure 8.3 Recent Job Hires by Occupation and Age, 2016

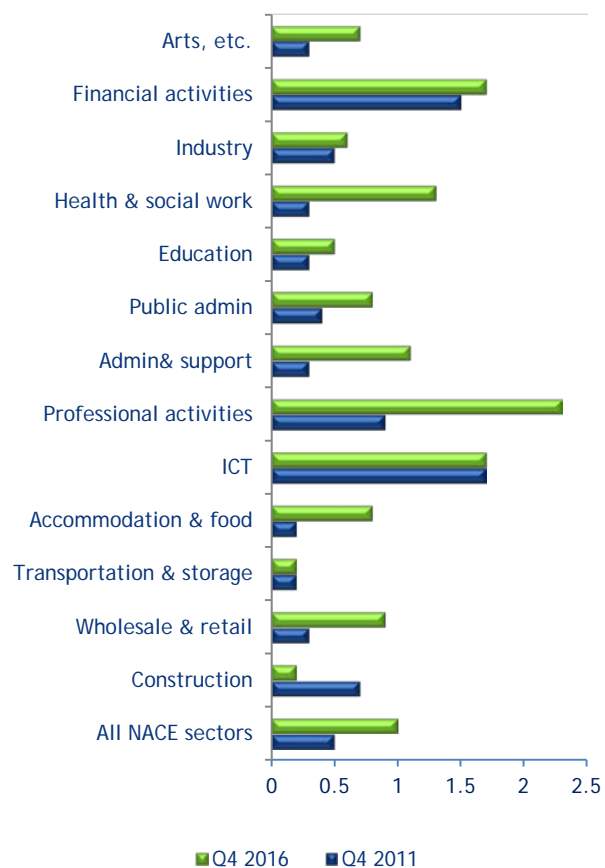


Source: SLMRU analysis of CSO QNHS data

## 8.2 CSO vacancy rates

The job vacancy rate, as detailed in the CSO Earnings, Hours and Employment Costs Survey (EHECS), measures the proportion of total posts that are vacant as a proportion of total occupied posts combined with job vacancies. In the fourth quarter of 2016, the overall vacancy rate stood at 1%. Figure 8.4 presents the vacancy rates by sector; the highest rate in quarter 4 2016, and the largest gain since the fourth quarter of 2011, was recorded for the professional activities sector. The lowest vacancy rates were recorded for the transportation and storage and construction sectors, each at 0.2% in quarter 4 2016.

Figure 8.4: CSO Vacancy Rate by Sector, Quarter 4 2011 and Quarter 4 2016

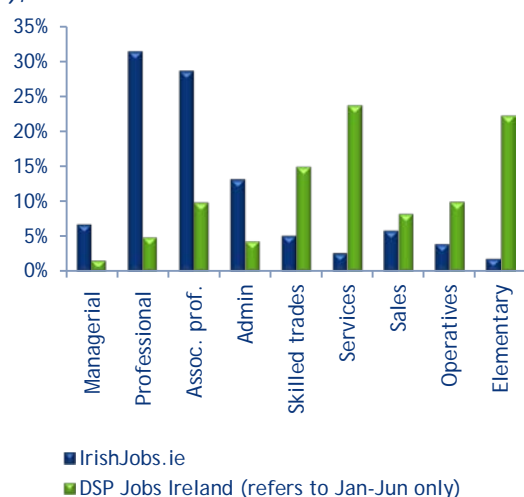


Source: CSO EHECS

### 8.3 Vacancies by Occupation

In 2016, vacancies advertised through IrishJobs.ie were mostly concentrated in professional and associate professional occupations (Figure 8.5). Newly advertised vacancies through DSP Jobs Ireland were concentrated in elementary, personal services and skilled trades occupations.

Figure 8.5 Vacancies by Occupational Group (%), 2016



Source: IrishJobs.ie and DSP Jobs Ireland

The main job titles that were notified through DSP Jobs Ireland in 2016 (Jan-Jun) were as follows:

Managers	<ul style="list-style-type: none"> <li>Restaurant, retail and hotel managers</li> </ul>
Professionals	<ul style="list-style-type: none"> <li>Nurses (staff, registered, clinical nurse managers)</li> <li>Higher education lecturers (across all disciplines), English language teachers</li> <li>Engineers: including process, quality, project, manufacturing, mechanical, maintenance, refrigeration and HVAC service engineers, civil/site/structural engineers, quantity surveyors</li> <li>Accountants (mainly financial but also management), auditors</li> <li>Software engineers/developers, games-related (testers, designers), web designers</li> </ul>
Associate professionals	<ul style="list-style-type: none"> <li>Sales and marketing (brand ambassadors/promotional staff, sales executives), with languages</li> <li>IT technical support (with languages), database administrators</li> <li>Youth workers</li> <li>Logistics: inventory stock takers, purchasing/buyers, production managers</li> <li>Other: interpreters, recruitment consultants, CAD technicians, graphic designers, fundraisers</li> </ul>

Admin	<ul style="list-style-type: none"> <li>Administrators (office, accounts, sales), receptionists (including hotel), medical secretaries</li> <li>Accounts technicians, payroll administrators, credit controllers, bookkeepers</li> </ul>
Skilled trades	<ul style="list-style-type: none"> <li>Chefs: chef de partie, commis, sous and head chefs; also breakfast chefs, pizza chefs; ethnic chefs, mainly Indian, Chinese and Thai</li> <li>Electricians: including commercial, industrial and field service technicians, security systems engineer, cable/alarm installer</li> <li>Carpenters: including 1<sup>st</sup>/2<sup>nd</sup> fix carpenters, shuttering and joiners, roofers</li> <li>Butchers (retail/food processing), boners/trimmers</li> <li>Mechanics (car, HGV), panel beaters, spray painters, tyre fitters, car valet</li> <li>Plumbers: including industrial, domestic/commercial, pipe fitters</li> <li>Fitters, welders (coded, stainless steel, MIG/TIG, butt/electric fusion), steel fabricators</li> <li>Other trades: steel fixers/erectors, plasterers, bricklayers/stonemasons, painters, baker, cabinet makers</li> </ul>
Personal services	<ul style="list-style-type: none"> <li>Care workers: relates to both those providing care in the home and in nursing homes</li> <li>Childcare workers</li> <li>Air transport: cabin crew and ramp agents</li> <li>Other personal services: hairdressers/barbers, beauty therapists, nail technicians, dental nurses, housekeepers</li> </ul>
Sales & customer service	<ul style="list-style-type: none"> <li>Sales assistants (retail (e.g. convenience stores, petrol stations, supermarkets), counter, including deli and pharmacy); over half were for part-time positions</li> <li>Telesales, contact/call centre representatives, (language skills required for all of these)</li> <li>Fundraisers, field sales representatives and door to door salespersons</li> <li>Merchandisers, stocktakers</li> </ul>
Operatives	<ul style="list-style-type: none"> <li>Process operatives, food production operatives, mushroom pickers</li> <li>Drivers: artic, HGV, rigid, multidrop, machine drivers/operators, dumper (site/artic), teleporter, forklift, tower crane</li> <li>Other drivers: delivery, van, bus and coach drivers</li> <li>Other operatives: groundworker/pipefitter, paver, scaffolders (both basic and advanced)</li> </ul>
Elementary	<ul style="list-style-type: none"> <li>Security guards: event security guards were the most frequently mentioned but also door supervisors, retail and static security</li> <li>Cleaning: primarily part-time positions advertised</li> <li>Kitchen and catering assistants: primarily in catering, but also for porters, deli/counter staff and baristas (two thirds were full-time positions; 80% required at least some experience)</li> <li>Waiters/waitresses: over half were part-time positions and most required at least some experience</li> <li>Other elementary: warehouse operatives, general operatives, construction labourers, bar staff, accommodation assistants, farm labourers, order pickers, and stock-takers.</li> </ul>

The main job titles that were notified through IrishJobs.ie in 2016 were as follows:

Managers	<ul style="list-style-type: none"> <li>Production, operations, service, financial, HR, technical, construction site and supply chain</li> <li>Retail/store and warehouse managers, sales and marketing</li> </ul>
Professionals	<ul style="list-style-type: none"> <li>IT programmers (with Java, Oracle/SQL, .Net)</li> <li>Other IT (systems analysts/engineers, technical architects, test engineers, applications/web developers, IT security analyst)</li> <li>Engineering: quality, process, project, manufacturing, design, regulatory affairs, civil</li> <li>Business: business/risk analysts, business intelligence, project managers</li> <li>Finance - risk analysts, compliance/regulatory reporting and financial accountants</li> <li>Nurses (staff, clinical nurses, theatre and to a lesser extent, community, cancer, psychiatric, paediatric, orthopaedic)</li> <li>Medical practitioners (anaesthetic, paediatric, orthopaedic, gynaecology), pharmacists, radiographers, medical scientists, social workers, physiotherapists, psychologists, dieticians</li> </ul>
Associate professionals	<ul style="list-style-type: none"> <li>Business/financial: analysts (business, financial, data, quality assurance), tax managers, audit manager, claims officers (with languages), underwriters, tax advisors, credit risk officers, transfer agents, marketing executives</li> <li>Sales and marketing: product/brand management, business development, sales managers, inside sales (with languages), account managers</li> <li>Buyers, supply chain planners, procurement officers</li> <li>HR generalists, advisors, recruitment coordinators, health and safety officers</li> <li>IT technicians - tech support (with language skills), administrators (systems, database)</li> <li>Other technicians: laboratory, engineering (process, manufacturing, quality), pharmacy</li> </ul>
Administrative	<ul style="list-style-type: none"> <li>Financial - fund accountants, accounts payable/receivable, payroll, credit controllers, pensions, claims handlers</li> <li>General administrators, receptionists, executive assistants, document controllers, billing, HR</li> </ul>
Skilled trades	<ul style="list-style-type: none"> <li>Engineer: validation, C&amp;Q (commissioning &amp; qualification), automation, QA, HVAC, test</li> <li>Maintenance technicians/fitters, toolmakers, calibration technicians</li> <li>Chefs (head, chef de partie, sous, executive), catering managers</li> </ul>
Personal services	<ul style="list-style-type: none"> <li>Care workers, healthcare assistants</li> </ul>
Sales & customer service	<ul style="list-style-type: none"> <li>Customer service/care/representative and collections specialists (with languages)</li> <li>Retail sales assistants, telesales advisors</li> </ul>
Operatives	<ul style="list-style-type: none"> <li>Manufacturing, process, production</li> <li>Drivers: artic, multi-drop, rigid, HGV, delivery</li> </ul>
Elementary	<ul style="list-style-type: none"> <li>Warehouse operatives, general operatives</li> <li>Kitchen and catering assistants.</li> </ul>

## Recruitment Agency Survey (April 2017)

Professional occupations accounted for three quarters of all difficult to fill mentions in April 2017.

The main job titles that were reported to be difficult to fill were as follows:

Managers	<ul style="list-style-type: none"> <li>Director of sales (with product strategy expertise); business development managers</li> <li>Marketing/digital commerce managers</li> <li>Purchasing managers - senior buyers</li> <li>Supply chain specialists especially senior planners (supply chain management including demand forecasting) and distribution specialists with technical expertise (biopharma)</li> <li>Project managers/directors in construction with relevant experience and specialist knowledge</li> <li>IT project managers including IT and business processes solutions/change management</li> <li>Production managers - director of quality (MedTech/biopharma)</li> <li>Business processes change managers (IT and business processes)</li> <li>Hotel/accommodation sales managers</li> <li>Restaurant managers</li> </ul>
Professionals	<ul style="list-style-type: none"> <li>Database architects/engineers (e.g. data centre/data warehouse engineer and integration developers (e.g. ORACLE, SQL MySQL, Infobright, Infini DB, DB &amp; enterprise web development, DB data modeller for fintech))</li> <li>Programmers &amp; software developers (esp. UX/UI design (e.g. Front-end - CSS, HTML, .NET, C#, Fsharp, JavaScript, JQuery, -interactive visual/visual basic); Back-end developers (PHP, .NET, Ruby, Python, Perl, Erlang, Oracle/SQL/mysql, JavaScript/NodeJS, Flash Node; with infrastructure/DB and server expertise))</li> <li>IT system analyst, Internet protocol/networks engineer, cyber security analyst</li> <li>DevOps developers interdependence of software dev. and IT operations for FinTech); Cloud developers/SaaS developers (e.g. web service and API)</li> <li>IT and telecom integration; mobile telephony applications (iOS and androids)</li> <li>IT managers (especially system migration with niche skills (e.g. Waterfall and Agile))</li> <li>IT QA &amp; software testing</li> <li>Engineering - process, project, design (including R&amp;D), quality control/quality assurance (including standards, compliance and regulatory affairs, mostly EHS compliance), automation (including lean processes), validation/computer validation system (CVS), CQE certification; chemical engineers; electrical engineers (safety, tech. specification, mechatronics - development &amp; integration of mechanical, electrical &amp; software systems; power generation &amp;</li> </ul>



	transmission)	development)
Associate professionals	<ul style="list-style-type: none"> <li>Data analytics (e.g. DB mining, statistics) and business intelligence analytics (incl. BI solutions, ETL design, Data as an Enterprise asset/ERP, big data, data visualisation, etc.); data scientists (e.g. Hadoop eco system &amp; architecture)</li> </ul>	<ul style="list-style-type: none"> <li>Admin secretaries, receptionists</li> </ul>
	<ul style="list-style-type: none"> <li>Business &amp; finance - business intelligence and risk analysts, actuaries, financial and management accountants with expertise in solvency, taxation, IFSR relevant skills including regulatory compliance; fund accountants with client relationship management expertise; accountants for roles in industry with ERP System and reporting tools, as well as language skills</li> </ul>	<ul style="list-style-type: none"> <li>Business/financial: accounts payable/payroll managers, accounts clerks, credit and collections agent, claims officers (with languages), fund/trustee supervisor</li> </ul>
	<ul style="list-style-type: none"> <li>Quantity surveyors, building services/structural/site engineers</li> </ul>	<ul style="list-style-type: none"> <li>Procurement/supply chain/logistics administrative roles (with languages)</li> </ul>
	<ul style="list-style-type: none"> <li>Nurses (ANP in intensive care/theatre, clinical nursing management, RGN, elderly care nursing)</li> </ul>	<ul style="list-style-type: none"> <li>Welders - TIG, MIG, ARC</li> </ul>
	<ul style="list-style-type: none"> <li>Medical practitioners (especially NCHDs/registrars/locums, emergency medicine, psychiatrist, oncology, orthopaedic, CT/MRI radiographers)</li> </ul>	<ul style="list-style-type: none"> <li>Construction craft: scaffolders, steel erectors/fixers, electricians, curtain waller (outer covering of buildings), shift managers/supervisors in construction, carpenters (niche - shuttering)</li> </ul>
	<ul style="list-style-type: none"> <li>Scientists - chemists/analytical scientists (esp. product formulation, and analytical development for roles in biopharma); quality control analyst including pharma co-vigilance roles</li> </ul>	<ul style="list-style-type: none"> <li>Chefs</li> </ul>
	<ul style="list-style-type: none"> <li>Sales and marketing: product/brand management, technical sales (e.g. software B2B) business development, vendor managers/CRM</li> </ul>	<ul style="list-style-type: none"> <li>Butcher/deboner</li> </ul>
	<ul style="list-style-type: none"> <li>Supply chain analysts (demand planning &amp; forecasting, ERP)</li> </ul>	<ul style="list-style-type: none"> <li>Toolmakers (CNC programming, solidworks &amp; CAD/CAM)</li> </ul>
	<ul style="list-style-type: none"> <li>HR recruitment consultants with specialist knowledge</li> </ul>	<ul style="list-style-type: none"> <li>HVAC engineer</li> </ul>
	<ul style="list-style-type: none"> <li>IT technicians: tech support (with language skills, especially German, Nordic and French), administrators (database, cloud support), troubleshooting &amp; quality evaluation; validation and C&amp;Q (commissioning &amp; qualification) technicians/engineers</li> </ul>	<ul style="list-style-type: none"> <li>Electricians</li> </ul>
<ul style="list-style-type: none"> <li>Other technicians: quality assurance/control, process (e.g. injection moulding/polymer engineering)</li> </ul>	<ul style="list-style-type: none"> <li>Personal services</li> </ul>	
<ul style="list-style-type: none"> <li>Financial - assistant accountant, marketing and sales executives (e.g. FMCG business)</li> </ul>	<ul style="list-style-type: none"> <li>Carers - homecare roles/nursing home care roles</li> </ul>	
	<ul style="list-style-type: none"> <li>Sales and marketing: product/brand management, technical sales (e.g. software B2B) business development, vendor managers/CRM</li> </ul>	<ul style="list-style-type: none"> <li>Sales &amp; customer service</li> </ul>
	<ul style="list-style-type: none"> <li>Supply chain analysts (demand planning &amp; forecasting, ERP)</li> </ul>	<ul style="list-style-type: none"> <li>Telesales/telemarketing (multilingual, especially German, Nordic, Dutch)</li> </ul>
	<ul style="list-style-type: none"> <li>HR recruitment consultants with specialist knowledge</li> </ul>	<ul style="list-style-type: none"> <li>Junior Lead Generation roles (including outgoing cold calling and DB updates)</li> </ul>
	<ul style="list-style-type: none"> <li>IT technicians: tech support (with language skills, especially German, Nordic and French), administrators (database, cloud support), troubleshooting &amp; quality evaluation; validation and C&amp;Q (commissioning &amp; qualification) technicians/engineers</li> </ul>	<ul style="list-style-type: none"> <li>Customer service/care/representative and collections specialists (with languages)</li> </ul>
	<ul style="list-style-type: none"> <li>Other technicians: quality assurance/control, process (e.g. injection moulding/polymer engineering)</li> </ul>	<ul style="list-style-type: none"> <li>Operatives</li> </ul>
	<ul style="list-style-type: none"> <li>Financial - assistant accountant, marketing and sales executives (e.g. FMCG business)</li> </ul>	<ul style="list-style-type: none"> <li>Drivers: artic, HGV (E+, CI licence), forklift drivers (e.g. with VNA and/or turret license, Reach Truck)</li> </ul>
		<ul style="list-style-type: none"> <li>Manufacturing, process, production (in high tech manufacturing/Medtech)</li> </ul>



## Section 9 Occupational Employment Profiles

This section provides a statistical analysis of employment at occupational level. Most of the indicators used in the analysis are presented in Table 9.1. Employment profiles are provided for over 130 occupations, which are grouped into 17 broad groups.

**Column 1** (Table 9.1) contains occupational titles; the list of occupations was based on the Standard Occupational Classification (SOC) 2010. In cases where estimated employment was less than 3,000, two or more occupations were merged to form an occupational group. This was done in order to ensure that a sufficiently large number of observations was used for statistical inference.

**Column 2** presents the employment level for each occupation. Employment figures represent the annual average of four quarters in 2016. Source: Analysis by SLMRU (SOLAS) based on data provided by the CSO (QNHS), quarter 1 to quarter 4 2016.

**Column 3** shows the percentage of females employed in an occupation. Source: Analysis by SLMRU (SOLAS) based on data provided by the CSO (QNHS), quarter 4 2016.

**Column 4** shows the percentage of persons who work part-time. Source: Analysis by SLMRU (SOLAS) based on data provided by the CSO (QNHS), quarter 4 2016.

**Column 5** provides an indication of the unemployment level for an occupation. The unemployment rate is calculated by dividing the number of unemployed persons aged 15 to 74 in the occupation by the sum of the

number of employed and unemployed persons aged 15 to 74 in that occupation. As only persons who stated their previous occupation were included in the calculations, the estimates may underestimate the true unemployment rate for an occupation.

The unemployment rate is indicated as follows:

- 'B.A.' for unemployment rates below the national average of 6.7% (quarter 4 2016)
- 'A.' for unemployment rates of 6.7% (quarter 4 2016)
- 'A.A.' for unemployment rates above the national average of 6.7% (quarter 4 2016)

To avoid issues with small sample size at this level of disaggregation, the unemployment rate is only reported for occupations in which at least 1,000 persons were estimated to be unemployed. Source: Analysis by SLMRU (SOLAS) based on data provided by the CSO (QNHS), quarter 4 2016.

**Column 6** shows the percentage of persons aged 55 and over in employment in an occupation. A higher than average share of persons aged 55 and over indicates a higher expected retirement rate in the short to medium-term. Source: Analysis by SLMRU (SOLAS) based on data provided by the CSO (QNHS), quarter 4 2016.

**Column 7** shows the percentage of non-Irish nationals in employment. A higher than average proportion of non-Irish nationals in an occupation indicates employers' reliance on sourcing skills/labour from abroad to fill vacancies. Source: Analysis by SLMRU (SOLAS)

based on data provided by the CSO (QNHS), quarter 4 2016.

**Column 8** shows the percentage of persons who have attained a third level qualification. Source: Analysis by SLMRU (SOLAS) based on data provided by the CSO (QNHS), quarter 4 2016.

**Column 9** shows the annualised rate of employment growth for the period 2011-2016. Source: Analysis by SLMRU (SOLAS) based on data provided by the CSO (QNHS), 2011-2016.

**Column 10** shows the number of new employment permits issued to non-EEA nationals in 2016. This is an indicator of the demand for skills that could not be met from domestic or EEA sources. Source: Department of Jobs, Enterprise and Innovation.

**Column 11** presents the results of the SLMRU (SOLAS) Recruitment Agency Survey conducted in April 2017. The occupations with mentions of difficult-to-fill vacancies reported by recruitment agencies are indicated by an 'X'. Source: SLMRU (SOLAS) Recruitment Agency Survey, May 2017.

**Column 12** presents the expected medium term employment growth rate by occupation. The growth rates are indicated as follows:

- 'B.A.' for employment growth below the expected national average of 19% for the period 2012-2020
- 'A.' for expected employment growth of 19% for the period 2012-2020
- 'A.A.' for employment growth above the expected national average of 19% for the period 2012-2020.

Source: Recovery and competitive manufacturing scenario, Occupational

Employment Projections 2020, SLMRU (SOLAS), February 2014.

**Column 13** shows the estimated replacement rate for each occupation. The replacement rate was based on the number of identified transitions from employment to inactivity (e.g. retirement, home duties, study, etc.) and net losses from inter-occupational movements. The rates were reported only for occupations for which the estimated number of transitions was above 1,000. Source: Analysis by SLMRU (SOLAS) based on data provided by the CSO (QNHS), quarter 4 2015 - quarter 4 2016.

**Column 14** shows the estimated turnover rate for each occupation. The turnover rate was based on the number of identified intra-occupational transitions (changes of employer) and neutral intra-occupational movements (transitions between occupations where exits from an occupation were compensated in full by entries to that occupation). The rates were reported only for occupations for which the estimated number of transitions was above 1,000. Source: Analysis by SLMRU (SOLAS) based on data provided by the CSO (QNHS), quarter 4 2015 - quarter 4 2016.

**Column 15** provides an indication of shortage for each occupation. The following categories were used:

- - for occupations for which there are no shortages
- - where there is an insufficient number of individuals who had the required level of educational attainment, skills set and/or experience to meet the required labour market demand and/or where there is an insufficient number of individuals available to

take up employment opportunities in a particular occupation

● - indicates that there is no overall current shortage, but some issues (e.g. geographical mobility, high turnover), or potential future shortages, have been identified.

For grouped occupations, an indication of shortage does not mean that all occupations in the grouping are in short supply.

The term 'shortage' within this report refers only to the situation whereby the supply of skills or labour from within the Irish workforce is insufficient to meet demand. It may be the case that there is a sufficient supply of skills or labour for the occupation in question within the EEA. Consequently, there may not be a shortage from a European perspective.

Column 16 provides some further elaboration on the shortages or issues identified for the relevant occupation.

Using data from Table 9.1, individual occupations were examined in detail. The analysis covers the following broad occupational groups:

- science occupations
- engineering occupations
- IT occupations
- business and financial occupations
- healthcare occupations
- education occupations
- social and care occupations
- legal and security occupations
- construction professional and associate professional occupations
- construction craft occupations
- other craft occupations

- arts, sports and tourism occupations
- transport and logistics occupations
- administrative and secretarial occupations
- sales and customer service occupations
- operatives
- elementary occupations (labourers).


In general, occupations that are associated with the same sector of employment or occupations with similar duties were grouped together. The following information was provided for each occupational group:

- the level of employment (expressed as an annual average figure for 2016)
- employment growth for the period 2011-2016 and 2015-2016
- age profile – employment was grouped as follows: persons aged 15-24, 25-54, and 55 years and older (quarter 4 2016)
- educational attainment – employment was grouped as follows: persons with lower secondary education or less; higher secondary or further education and training (FET); and third level education (quarter 4 2016).

A summary of the balance between the demand and supply is provided for each occupational group. The estimated recruitment requirement was derived by combining expected expansion and replacement demand. Replacement demand was based on the replacement rates presented in Section 6.

The supply of skills was approximated using the expected output from the formal education and training system<sup>40</sup>. The

<sup>40</sup> A detailed analysis of the supply from the education and training system is published in Monitoring Ireland's Skills Supply: Trends in Education and Training Outputs 2016, EGFSN.



expected output was derived using third level enrolment and graduation data, as well as any available data on further education and training enrolments and certifications. It should be noted that it is possible that individuals do not work in the occupations for which they are educated/trained. In addition, estimates of supply also included job ready job seekers.

Supply data at occupational level is not reported due to the complexity of linking course output to specific occupations (e.g. business courses can be a source of supply for numerous occupations). In addition, for the majority of occupations, there are no mandatory qualification requirements. Thus, the intention is not to provide an exact quantification of the supply for each occupation but rather to obtain a general approximation.

By comparing estimates of demand and supply, an indication of potential shortage was derived. In addition, the other shortage indicators (e.g. employment permits, difficult-to-fill vacancies, etc.) were examined to reinforce the findings. The results also drew on conclusions from previous reports produced by the EGFSN and other qualitative information. The objective was to identify areas of shortages, without quantifying them.

Where possible, a distinction is made between skill or labour shortages. In some cases, an indication of the persistence of shortages is also discussed. Given that the findings are based on current data, future shortages are only indicated in cases where there is clear evidence that the shortages will persist or if current trends in education

provision indicate that future shortages will emerge.

A skills shortage may arise for a number of different reasons. For example, the shortage may reflect a temporary or a sustained increase in the demand for a particular skill, or a reduction in the number of students who are acquiring the relevant qualifications. The most effective way to alleviate a shortage will depend on the reason for which the shortage has arisen. For example, if the shortage is of a temporary nature, it may be more effective to source the scarce skills from abroad, rather than to increase the number of student places in the relevant disciplines.

The purpose of this bulletin is solely to identify occupations for which shortages exist. The identification of the cause of these shortages and the appropriate (if any) policy response requires further research. The EGFSN's research programme includes a number of such studies.

Table 9.1 Demand and Shortage Indicators for Selected Occupations

Occupation	Number Employed, 2016 (Annual Average - '000s)	% Female	% Part-Time	Unemployment Rate (%)	% Aged 55 years and over	% Non-Irish Nationals	% Third Level Graduates	Annualised Employment Growth Rate, 2011-2016 (%)	New Employment Permits Issued, 2016 (Number)	SLMRU Recruitment Agency Survey	Projected Medium-Term Growth Rate (%)	Replacement Rate (%)	Turnover Rate (%)	Shortage Indicator	Comment
Functional managers & directors	45.7	21.0%	6.0%	26.1%	9.4%	62.2%	4.0%	94	X	A.A.	3.5%	3.4%	●		
Production managers in manufacturing, mining & energy	14.6	22.5%	4.4%	11.6%	13.1%	69.2%	5.2%	40		A.A.		21.6%	●		
Financial managers & directors	6.1	43.9%	11.1%	12.5%	16.4%	80.7%	5.8%	31		A.		15.7%	●		
Advertising, marketing & sales directors	6.4	30.5%	1.3%	6.0%	15.4%	82.8%	7.8%	48	X	A.A.			●		
Human resource managers	5.4	71.9%	10.3%	8.3%	7.9%	84.6%	5.7%	24		A.A.			●		
ICT specialist & project managers	13.3	24.7%	4.0%	4.8%	16.6%	89.8%	0.1%	271	X	A.A.		14.9%	●	Niche areas	
Financial institution managers & directors	6.6	54.7%	4.0%	17.9%	4.1%	73.2%	1.1%	11		A.A.			●		
Managers & directors in transport & logistics	8.3	20.8%	3.7%	12.3%	11.7%	29.4%	3.2%	8	X	A.A.		19.6%	●	Niche areas	
Managers & directors in retail & wholesale	20.1	45.2%	8.0%	8.0%	21.3%	44.8%	4.1%	8		A.A.		10.5%	●		
Hotel & accommodation managers	7.6	60.1%	13.0%	28.0%	23.2%	48.0%	5.8%			A.	14.3%	11.1%	●		
Restaurant managers	9.2	54.3%	10.3%	13.5%	45.0%	50.8%	6.9%			A.A.		39.6%	●		

Occupation	Number Employed, 2016 (Annual Average - '000s)	% Female	% Part-Time	Unemployment Rate (%)	% Aged 55 years and over	% Non-Irish Nationals	% Third Level Graduates	Annualised Employment Growth Rate, 2011-2016 (%)	New Employment Permits Issued, 2016 (Number)	SLMRU Recruitment Agency Survey	Projected Medium-Term Growth Rate (%)	Replacement Rate (%)	Turnover Rate (%)	Shortage Indicator	Comment
Publicans	4.7	28.6%	7.4%	7.4%	29.2%	0.0%	20.4%	-2.1%			B.A.			●	
Leisure & sports managers	2.6	45.2%	6.7%	6.7%	17.8%	19.1%	80.8%	-5.9%			A.			●	
Managers & proprietors in other services	27.7	36.2%	7.5%	7.5%	33.1%	8.9%	43.5%	2.4%	6		A.A.	5.7%		●	
Chemical, biological & physical scientists; R&D managers	8.5	53.9%	5.8%	5.8%	6.6%	11.4%	100.0%	-1.2%	66	X	B.A.	19.3%		●	Niche areas
Other natural & social scientists	4.6	49.7%	10.8%	10.8%	9.2%	13.8%	90.9%	-3.4%	15		B.A.			●	
Civil engineers	7.5	8.6%	5.2%	5.2%	11.4%	4.2%	95.7%	0.1%	15	X	B.A.			●	
Electrical & electronic engineers	4.2	0.0%	2.6%	2.6%	23.5%	11.9%	85.8%	3.5%	77	X	A.A.	31.0%		●	Niche areas
Production, process, design & development engineers	4.5	19.7%	0.0%	0.0%	9.1%	5.5%	85.9%	4.0%	228	X	A.A.			●	
Quality control engineers; other regulatory professionals	5.4	50.5%	3.9%	3.9%	4.0%	13.1%	90.2%	7.0%	76		A.A.	17.1%		●	
Engineering professionals n.e.c.	5.5	7.8%	0.0%	0.0%	8.1%	25.0%	92.7%	6.5%	91	X	A.A.			●	
IT Business analysts & systems designers	4.0	14.4%	2.6%	2.6%	2.7%	43.8%	93.6%	8.8%	499	X	A.A.			●	
Programmers & software developers	22.2	16.4%	4.6%	4.6%	4.5%	42.0%	91.8%	7.4%	1,311	X	A.A.	10.7%	13.8%	●	

Occupation	Number Employed, 2016 (Annual Average - '000s)	% Female	% Part-Time	Unemployment Rate (%)	% Aged 55 years and over	% Non-Irish Nationals	% Third Level Graduates	Annualised Employment Growth Rate, 2011-2016 (%)	New Employment Permits Issued, 2016 (Number)	SLMRU Recruitment Agency Survey	Projected Medium-Term Growth Rate (%)	Replacement Rate (%)	Turnover Rate (%)	Shortage Indicator	Comment
Web designers & developers	2.8	28.9%	18.4%	0.0%	0.0%	20.1%	83.7%	3.4%	97	X	A.A.			●	
ICT professionals n.e.c.	8.5	20.7%	5.8%	10.9%	10.9%	23.1%	95.7%	3.9%	459	X	A.A.			●	
Medical practitioners	10.9	44.6%	6.4%	15.5%	15.5%	29.0%	98.0%	-2.5%	1,447	X	B.A.		19.6%	●	
Pharmacists	3.5	59.2%	15.0%	18.1%	18.1%	11.9%	96.6%	0.8%	2		A.A.			●	
Physiotherapists	3.3	65.3%	27.6%	9.5%	9.5%	7.7%	100.0%	-2.3%	3		A.A.	10.0%		●	
Occupational & other therapy professionals	5.6	88.8%	36.8%	24.1%	24.1%	13.3%	93.5%	6.4%	8		B.A.			●	
Nurses & midwives	52.2	92.1%	22.7%	18.1%	18.1%	12.3%	96.6%	-1.8%	669	X	B.A.	3.6%	7.3%	●	
Other health professionals n.e.c.	11.5	62.9%	21.6%	18.1%	18.1%	18.6%	99.1%	2.7%	47	X	B.A.			●	Niche areas
Higher & further education teaching profs.	13.8	46.8%	13.4%	25.8%	25.8%	14.4%	95.9%	1.8%	39		B.A.			●	
Secondary teachers	27.3	71.2%	14.5%	13.9%	13.9%	3.2%	99.3%	-0.4%	0		B.A.	4.4%	5.2%	●	
Primary & nursery teachers	40.7	83.5%	9.9%	10.0%	10.0%	0.9%	96.7%	0.8%	1		B.A.		6.2%	●	
Teaching & other educational professionals	15.1	73.9%	33.1%	25.7%	25.7%	6.2%	84.9%	-0.3%	7		B.A.	14.6%	8.3%	●	



Occupation	Number Employed, 2016 (Annual Average - '000s)	% Female	% Part-Time	Unemployment Rate (%)	% Aged 55 years and over	% Non-Irish Nationals	% Third Level Graduates	Annualised Employment Growth Rate, 2011-2016 (%)	New Employment Permits Issued, 2016 (Number)	SLMRU Recruitment Agency Survey	Projected Medium-Term Growth Rate (%)	Replacement Rate (%)	Turnover Rate (%)	Shortage Indicator	Comment
Barristers, judges, solicitors & related professionals	11.9	56.9%	7.2%		26.2%	5.6%	99.1%	1.2%	4		A.A.		9.7%	●	
Accountants & tax experts	36.8	44.8%	9.8%		11.2%	13.0%	95.6%	1.1%	133	X	A.A.	2.9%	11.3%	●	
Mgt. consultants, business analysts & project managers	11.4	36.3%	11.2%		16.3%	16.6%	90.4%	9.8%	343	X	A.A.		19.2%	●	
Actuaries, economists & statisticians; other business professionals	6.6	63.9%	8.9%		25.0%	13.3%	88.2%	1.1%	51	X	A.A.		19.1%	●	
Architects & town planners	4.3	34.2%	6.0%		13.8%	11.7%	95.4%	4.4%	9		B.A.			●	
Architectural technologists, construction project managers & surveyors	5.1	9.7%	7.4%		4.7%	9.6%	89.3%	1.4%	9	X	A.A.			●	
Social workers & welfare professionals	8.3	52.1%	14.3%		30.7%	9.9%	91.6%	5.5%	2		B.A.	19.0%		●	
Media professionals	6.2	35.5%	14.0%		28.0%	2.4%	91.7%	3.0%	7		A.A.			●	
Laboratory technicians	6.3	61.7%	14.3%		4.3%	23.5%	72.6%	-2.2%	8		B.A.	26.2%	19.7%	●	
Electrical, electronic & engineering technicians	7.8	9.1%	8.2%		16.5%	10.0%	71.7%	9.0%	12	X	A.A.			●	Niche areas
Process & quality assurance technicians	6.9	41.7%	5.2%		9.7%	15.3%	74.8%	16.0%	3	X	A.A.	25.2%	25.9%	●	
Other technicians n.e.c.	6.4	11.7%	4.7%		16.4%	6.9%	59.9%	5.5%	8		A.A.		23.4%	●	

Occupation	Number Employed, 2016 (Annual Average - '000s)	% Female	% Part-Time	Unemployment Rate (%)	% Aged 55 years and over	% Non-Irish Nationals	% Third Level Graduates	Annualised Employment Growth Rate, 2011-2016 (%)	New Employment Permits Issued, 2016 (Number)	SLMRU Recruitment Agency Survey	Projected Medium-Term Growth Rate (%)	Replacement Rate (%)	Turnover Rate (%)	Shortage Indicator	Comment
IT operations technicians	8.2	17.7%	5.6%		7.3%	24.0%	70.9%	0.3%	42		A.A.		18.5%	●	Multilingual
IT user support technicians	7.8	21.4%	5.3%		6.0%	25.5%	79.5%	17.4%	24	X	A.A.		20.9%	●	Multilingual
Health associate professionals	13.1	76.2%	28.8%		15.0%	8.8%	73.8%	6.2%	6		B.A.		10.3%	●	
Youth & community workers	4.8	77.6%	31.3%		21.7%	10.7%	80.7%	-6.4%	0		B.A.			●	
Welfare & housing associate professionals	3.5	66.0%	19.6%		13.4%	28.6%	68.8%	-6.2%	2		B.A.			●	
Army personnel	6.1	6.8%	3.8%		19.6%	0.0%	41.8%	-5.3%	0		B.A.			●	
Gardaí	11.7	28.4%	2.1%		3.8%	0.0%	91.2%	-4.7%	0		B.A.			●	
Protective service occupations	7.8	9.8%	14.7%		15.0%	8.3%	53.3%	-0.2%	1		B.A.			●	
Artistic, literary & media occupations	16.3	42.0%	28.4%		18.1%	20.6%	74.4%	1.9%	32		A.A.	11.2%	8.3%	●	
Design occupations	6.4	56.2%	21.3%		15.6%	29.6%	82.4%	2.0%	20		B.A.			●	
Sports & fitness occupations	9.0	44.1%	42.5%		4.9%	19.2%	57.0%	4.5%	31		A.A.	19.3%	10.4%	●	
Brokers & insurance underwriters	4.6	40.5%	8.7%		13.7%	15.6%	79.1%	-2.6%	8		A.A.			●	

Occupation	Number Employed, 2016 (Annual Average - '000s)	% Female	% Part-Time	Unemployment Rate (%)	% Aged 55 years and over	% Non-Irish Nationals	% Third Level Graduates	Annualised Employment Growth Rate, 2011-2016 (%)	New Employment Permits Issued, 2016 (Number)	SLMRU Recruitment Agency Survey	Projected Medium-Term Growth Rate (%)	Replacement Rate (%)	Turnover Rate (%)	Shortage Indicator	Comment
Finance & investment analysts	8.6	44.1%	4.1%	8.2%	12.6%	84.1%	5.0%	28			A.A.	10.3%		●	
Financial & accounting technicians	3.7	45.9%	9.4%	11.5%	8.3%	93.3%	-1.8%	82	X		A.A.			●	
Financial accounts managers	11.0	56.4%	7.6%	11.4%	11.8%	75.0%	8.8%	18			A.A.			●	
Other business associate profs.	8.8	54.4%	5.4%	10.1%	14.7%	77.8%	9.9%	51			A.A.			●	
Buyers & procurement officers	3.6	53.5%	10.1%	17.1%	17.3%	68.9%	0.6%	6	X		A.A.			●	
Business sales executives	21.4	21.8%	8.3%	12.6%	9.7%	46.9%	1.1%	265	X		A.A.	13.5%		●	Multilingual
Marketing associate professionals	6.1	66.3%	12.9%	2.1%	7.1%	81.7%	5.5%	117			A.A.	23.4%		●	Multilingual
Sales accounts & bus. dev. managers	19.9	40.7%	3.8%	7.4%	12.8%	78.3%	2.3%	68	X		A.A.			●	
Estate agents etc.; conference & exhibition managers	4.2	56.3%	18.5%	21.8%	5.9%	75.5%	-2.2%	2			B.A.			●	
Environmental & other public services associate professionals	4.9	68.1%	11.9%	41.5%	1.9%	55.4%	6.4%	0			B.A.			●	
Human resources & industrial relations officers	7.2	67.8%	16.6%	7.1%	17.5%	90.8%	8.2%	9			B.A.			●	
Vocational & industrial trainers & instructors	8.3	46.4%	16.3%	19.3%	12.4%	71.0%	0.8%	2			B.A.	13.6%		●	

Occupation	Number Employed, 2016 (Annual Average - '000s)	% Female	% Part-Time	Unemployment Rate (%)	% Aged 55 years and over	% Non-Irish Nationals	% Third Level Graduates	Annualised Employment Growth Rate, 2011-2016 (%)	New Employment Permits Issued, 2016 (Number)	SLMRU Recruitment Agency Survey	Projected Medium-Term Growth Rate (%)	Replacement Rate (%)	Turnover Rate (%)	Shortage Indicator	Comment
Regulations inspectors; health & safety officers	4.4	38.9%	5.4%		25.2%	10.6%	48.2%	8.8%	0		A.A.			●	
Government admin. occupations	36.2	76.0%	15.9%		24.2%	2.5%	39.7%	-3.2%	0		B.A.	4.2%	6.3%	●	
Financial administrative occupations	51.8	73.9%	26.7%		15.3%	11.6%	56.2%	-3.4%	25		A.A.	5.1%	10.4%	●	
Records & library clerks etc.	3.9	68.7%	15.7%		13.8%	14.2%	50.7%	4.4%	1		B.A.			●	
Stock control, transport & distribution admin. occupations	7.0	37.9%	20.4%		11.0%	15.5%	45.7%	3.4%	1		A.A.			●	
Other administrators n.e.c.	57.8	83.5%	30.7%		16.8%	6.6%	42.2%	1.7%	8		B.A.	9.8%	15.7%	●	
Office managers & supervisors admin. occupations	9.2	57.7%	15.9%		18.0%	11.6%	57.0%	6.4%	0		A.A.			●	
P.A.s & other secretaries, etc.	30.5	93.3%	40.0%		29.2%	4.4%	30.6%	-2.1%	2		B.A.	6.0%	8.1%	●	
Receptionists	13.5	94.3%	48.5%		15.7%	16.9%	25.9%	4.2%	0		B.A.	17.9%	10.6%	●	
Farmers	83.9	6.8%	12.5%		53.0%	1.1%	11.7%	6.4%	0		B.A.	8.0%	2.8%	●	
Horticultural, agricultural & fishing trades n.e.c.	17.6	9.6%	26.4%	A.A.	27.0%	12.5%	22.8%	6.0%	0		B.A.		11.9%	●	
Metal forming, welding & related trades	11.1	0.8%	6.6%		13.2%	8.1%	11.2%	8.8%	0		A.A.		20.4%	●	Niche areas

Occupation	Number Employed, 2016 (Annual Average - '000s)	% Female	% Part-Time	Unemployment Rate (%)	% Aged 55 years and over	% Non-Irish Nationals	% Third Level Graduates	Annualised Employment Growth Rate, 2011-2016 (%)	New Employment Permits Issued, 2016 (Number)	SLMRU Recruitment Agency Survey	Projected Medium-Term Growth Rate (%)	Replacement Rate (%)	Turnover Rate (%)	Shortage Indicator	Comment
Metal machining, fitting & instrument making trades	25.8	1.8%	3.8%		16.5%	7.8%	35.3%	3.9%	5		A.A.		27.8%	●	Niche areas
Vehicle trades	16.7	2.7%	9.3%		16.5%	18.0%	12.8%	-2.2%	3		B.A.		10.3%	●	
Electrical & electronic trades, etc.	34.6	3.1%	2.7%		18.8%	9.1%	29.3%	-2.3%	31	X	A.A.	18.1%	13.2%	●	
Bricklayers	4.9	0.0%	15.9%		14.1%	16.3%	10.9%	8.7%	0		B.A.		24.0%	●	
Plumbers	9.9	0.0%	5.9%		16.5%	8.8%	7.1%	0.0%	0	X	A.A.			●	
Carpenters & joiners	18.5	1.3%	4.3%		10.7%	10.8%	10.0%	3.9%	0	X	A.A.		20.6%	●	
Plasterers	3.2	4.1%	15.4%	A.A.	13.2%	26.7%	9.7%	0.0%	0		A.A.			●	
Painters & decorators	7.9	3.2%	12.8%	A.A.	18.9%	27.5%	7.1%	6.8%	0		A.A.		19.8%	●	
Other construction trades	23.8	0.6%	9.5%		19.7%	17.4%	15.9%	3.6%	0	X	A.A.		15.1%	●	Niche areas
Printing trades	3.7	13.9%	3.3%		12.1%	16.6%	18.2%	1.8%	1		B.A.		32.2%	●	
Butchers, fishmongers, etc.	6.8	5.0%	10.1%	A.A.	20.6%	43.5%	8.7%	-5.0%	160	X	A.A.			●	
Bakers & flour confectioners	3.2	47.1%	29.8%		22.6%	24.5%	29.8%	4.6%	0		B.A.			●	

Occupation	Number Employed, 2016 (Annual Average - '000s)	% Female	% Part-Time	Unemployment Rate (%)	% Aged 55 years and over	% Non-Irish Nationals	% Third Level Graduates	Annualised Employment Growth Rate, 2011-2016 (%)	New Employment Permits Issued, 2016 (Number)	SLMRU Recruitment Agency Survey	Projected Medium-Term Growth Rate (%)	Replacement Rate (%)	Turnover Rate (%)	Shortage Indicator	Comment
Chefs & cooks	32.0	39.5%	19.7%	12.3%	12.3%	40.4%	38.1%	8.2%	205	X	A.	20.2%	20.2%	●	
Catering & bar managers	5.6	67.8%	26.0%	12.1%	12.1%	8.6%	37.3%	-0.4%	2		A.			●	
Other skilled trades	9.4	39.3%	27.6%	21.1%	21.1%	25.1%	35.2%	0.9%	2		B.A.	13.0%	13.0%	●	
Nursery nurses & assistants	4.2	100.0%	54.0%	16.8%	16.8%	4.2%	26.7%	-3.1%	5		B.A.	29.5%	29.5%	●	
Childminders, etc.	18.7	98.3%	51.2%	A.A.	9.6%	16.9%	32.1%	-0.3%	1		B.A.	8.1%	19.9%	●	
Educational support assistants	16.5	96.2%	27.3%	22.2%	22.2%	4.2%	49.1%	5.6%	1		B.A.	6.6%	6.3%	●	
Animal carers & pest controllers	2.9	80.1%	29.0%	9.1%	9.1%	3.6%	42.6%	6.6%	1		B.A.			●	
Caring personal services occupations	12.7	71.6%	21.6%	12.4%	12.4%	15.3%	30.3%	3.0%	21		B.A.	10.6%	10.6%	●	
Care workers, home workers, etc.	57.9	89.8%	40.9%	26.3%	26.3%	14.4%	33.5%	2.7%	48	X	B.A.	10.2%	8.9%	●	
Leisure & travel service occupations	7.9	58.4%	38.8%	12.1%	12.1%	19.0%	36.0%	-1.8%	1		A.	12.1%	16.9%	●	
Hairdressers & beauticians, etc.	24.2	88.9%	40.6%	5.4%	5.4%	14.3%	33.4%	3.1%	2		A.	5.4%	15.8%	●	
Housekeepers & caretakers, etc.	18.2	47.9%	53.1%	A.A.	38.8%	21.9%	16.7%	5.4%	1		B.A.	14.5%	14.5%	●	

Occupation	Number Employed, 2016 (Annual Average - '000s)	% Female	% Part-Time	Unemployment Rate (%)	% Aged 55 years and over	% Non-Irish Nationals	% Third Level Graduates	Annualised Employment Growth Rate, 2011-2016 (%)	New Employment Permits Issued, 2016 (Number)	SLMRU Recruitment Agency Survey	Projected Medium-Term Growth Rate (%)	Replacement Rate (%)	Turnover Rate (%)	Shortage Indicator	Comment
Sales assistants	126.5	67.9%	53.2%	A.A.	8.7%	16.9%	19.9%	-0.3%	10	X	A.A.	14.8%	18.4%	●	
Sales related occupations	10.1	36.9%	26.9%		27.3%	10.2%	37.8%	-3.9%	1		A.A.	9.0%	11.3%	●	
Sales supervisors	5.0	48.6%	14.9%		9.5%	39.6%	40.7%	6.3%	1		A.A.		22.1%	●	
Customer service occupations	23.1	57.0%	20.6%		10.7%	22.5%	58.0%	5.9%	16	X	A.A.	15.2%	28.6%	●	Multilingual
Food, drink & tobacco process operatives	10.3	35.2%	16.1%		10.0%	22.9%	18.8%	-8.5%	2		A.A.	21.0%	10.5%	●	
Chemical & related process operatives	6.5	20.6%	9.9%		11.5%	13.3%	30.8%	-2.8%	0		A.A.			●	CNC
Other process operatives	3.0	6.9%	10.2%		7.8%	38.3%	12.2%	-7.6%	1		A.A.			●	CNC
Plant & machine operatives	8.0	11.7%	14.6%		10.3%	15.4%	18.3%	3.4%	1		B.A.		24.4%	●	CNC
Assemblers	4.9	42.8%	6.7%		6.3%	15.9%	38.5%	-7.4%	1		A.A.		20.8%	●	
Routine operatives	24.6	40.2%	7.6%		10.0%	24.9%	27.5%	2.7%	3		A.A.		18.6%	●	
Construction operatives	14.3	2.2%	26.5%	A.A.	31.3%	9.5%	13.1%	5.2%	1	X	A.A.		18.5%	●	
Road transport operatives	66.0	2.7%	18.7%		28.4%	14.0%	10.9%	1.4%	2	X	A.A.	7.5%	11.2%	●	Niche



Occupation	Number Employed, 2016 (Annual Average - '000s)	% Female	% Part-Time	Unemployment Rate (%)	% Aged 55 years and over	% Non-Irish Nationals	% Third Level Graduates	Annualised Employment Growth Rate, 2011-2016 (%)	New Employment Permits Issued, 2016 (Number)	SLMRU Recruitment Agency Survey	Projected Medium-Term Growth Rate (%)	Replacement Rate (%)	Turnover Rate (%)	Shortage Indicator	Comment
Mobile machine drivers & operatives	13.3	0.6%	8.0%	A.A.	20.9%	9.1%	4.6%	3.2%	0	X	A.A.	16.7%	16.7%	●	
Other drivers & transport operatives	3.4	0.0%	7.6%	A.A.	12.9%	4.5%	24.8%	-8.2%	0		A.A.			●	
Elementary agricultural occupations	11.3	23.7%	27.6%	A.A.	16.9%	25.9%	9.0%	-2.2%	1		B.A.	31.4%	34.2%	●	
Elementary construction occupations	34.8	12.8%	19.3%	A.A.	14.1%	23.4%	11.4%	8.3%	1		B.A.	7.9%	28.9%	●	
Elementary process plant occupations	10.5	37.2%	13.9%	A.A.	9.2%	36.8%	19.6%	-1.1%	0		B.A.	18.7%	21.2%	●	
Elementary administration occupations	8.0	15.4%	9.7%	A.A.	29.0%	6.1%	7.6%	-8.9%	0		B.A.	24.8%	13.0%	●	
Elementary cleaning occupations	40.8	63.6%	54.9%	A.A.	22.1%	45.9%	15.5%	-0.4%	7		B.A.	22.4%	17.8%	●	
Elementary security occupations	12.8	19.2%	31.5%	A.A.	23.8%	21.8%	36.1%	-2.6%	2		B.A.	33.1%	22.0%	●	
Elementary sales & storage occupations	21.6	13.5%	17.9%	A.A.	10.8%	25.9%	25.3%	-2.2%	0		B.A.	22.2%	24.5%	●	
Kitchen & catering assistants	27.3	69.6%	51.5%	A.A.	11.2%	40.0%	28.3%	4.2%	10		B.A.	27.2%	19.1%	●	
Waiters & waitresses	30.0	74.0%	64.0%	A.A.	3.9%	33.9%	26.0%	10.3%	3		B.A.	19.7%	26.1%	●	
Bar staff	17.9	27.7%	46.0%	A.A.	11.2%	18.9%	24.0%	-1.1%	3		B.A.	22.7%	19.8%	●	

Occupation	Number Employed, 2016 (Annual Average - '000s)	% Female	% Part-Time	Unemployment Rate (%)	% Aged 55 years and over	% Non-Irish Nationals	% Third Level Graduates	Annualised Employment Growth Rate, 2011-2016 (%)	New Employment Permits Issued, 2016 (Number)	SLMRU Recruitment Agency Survey	Projected Medium-Term Growth Rate (%)	Replacement Rate (%)	Turnover Rate (%)	Shortage Indicator	Comment
Other elementary services occupations	4.9	20.5%	45.4%	15.7%	14.1%	15.7%	-0.7%	0	B.A.	29.3%	18.2%	●			
Other/not stated	20.0	46.7%	17.5%	10.3%	20.0%	58.1%	19.9%	4				●			
<b>Total</b>	<b>2,020</b>	<b>45.7%</b>	<b>21.7%</b>	<b>17.5%</b>	<b>15.4%</b>	<b>47.2%</b>	<b>1.8%</b>	<b>7,698</b>	<b>National Average</b>	<b>6.4%</b>	<b>14.2%</b>				

Table 9.2 Occupation by Sector: Employment Distribution

Occupation/sector	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	Total
Functional managers & directors	*	*	18%	*	*	14%	19%	*	*	7%	*	*	11%	*	*	*	5%	*	*	*	*	100%
Production managers in manufacturing, mining & energy	*	*	46%	*	*	*	8%	*	*	13%	6%	*	6%	*	*	*	*	*	*	*	*	100%
Financial managers & directors	*	*	10%	*	*	*	9%	*	*	15%	40%	*	9%	5%	*	*	*	*	*	*	*	100%
Advertising, marketing & sales directors	*	*	21%	*	*	*	25%	*	*	14%	*	*	24%	*	*	*	*	*	*	*	*	100%
Human resource managers	*	*	12%	8%	*	*	14%	*	6%	14%	5%	*	6%	6%	6%	11%	*	*	*	*	100%	
ICT specialist & project managers	*	*	8%	*	*	*	*	*	*	58%	14%	*	*	*	*	*	*	*	*	*	*	100%
Financial institution managers & directors	*	*	*	*	*	*	*	*	*	*	96%	*	*	*	*	*	*	*	*	*	*	100%
Managers & directors in transport & logistics	*	*	12%	*	*	*	38%	39%	*	*	*	*	*	*	*	*	*	*	*	*	*	100%
Managers & directors in retail & wholesale	*	*	7%	*	*	*	83%	*	*	*	*	*	*	*	*	*	*	*	*	*	*	100%
Hotel & accommodation managers	*	*	*	*	*	*	*	*	90%	*	*	*	*	*	*	*	*	*	*	*	*	100%
Restaurant managers	*	*	*	*	*	*	*	*	98%	*	*	*	*	*	*	*	*	*	*	*	*	100%
Publicans	*	*	*	*	*	*	*	*	96%	*	*	*	*	*	*	*	*	*	*	*	*	100%
Leisure & sports managers	*	*	*	*	*	*	*	*	7%	*	*	*	6%	*	*	*	6%	82%	*	*	*	100%
Managers & proprietors in other services	10%	*	8%	*	*	6%	38%	*	*	*	*	*	*	*	10%	*	5%	*	5%	*	*	100%
Chemical, biological & physical scientists	6%	*	52%	*	*	*	*	*	*	*	*	*	11%	*	8%	*	21%	*	*	*	*	100%
Other natural & social scientists; R&D managers	*	*	14%	*	*	*	*	*	*	*	*	*	28%	*	21%	16%	*	*	*	*	*	100%
Civil engineers	*	*	*	*	*	15%	*	*	*	*	*	*	59%	*	11%	*	*	*	*	*	*	100%
Electrical & electronic engineers	*	*	32%	*	*	5%	*	*	*	10%	*	*	36%	*	*	*	*	*	*	*	*	100%
Production, process, design & development engineers	*	*	54%	*	*	*	9%	*	*	*	*	*	22%	*	*	*	*	*	*	*	*	100%
Quality control engineers; other regulatory professionals	*	*	65%	*	*	*	*	*	*	*	5%	*	16%	*	*	*	*	*	*	*	*	100%
Engineering professionals n.e.c.	*	*	30%	5%	*	*	6%	*	*	12%	*	*	42%	*	*	*	*	*	*	*	*	100%
IT Business analysts & systems designers	*	*	*	*	*	*	6%	6%	*	50%	12%	*	12%	6%	*	*	*	*	*	*	*	Total
Programmers & software developers	*	*	20%	*	*	*	*	*	*	53%	14%	*	*	*	*	*	*	*	*	*	*	100%

Occupation/sector	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	Total
Web designers & developers	*	*	*	*	*	*	10%	*	*	67%	*	*	10%	*	*	6%	*	*	*	*	*	100%
ICT professionals n.e.c.	*	*	6%	*	*	*	*	*	*	72%	9%	*	8%	*	*	*	*	*	*	*	*	100%
Medical practitioners	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	96%	*	*	*	*	100%
Pharmacists	*	*	6%	*	*	*	71%	*	*	*	*	*	*	*	*	*	23%	*	*	*	*	100%
Physiotherapists	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	93%	*	*	*	*	100%
Occupational & other therapy professionals	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	5%	88%	*	*	*	*	100%
Nurses & midwives	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	97%	*	*	*	*	100%
Other health professionals n.e.c.	*	*	*	*	*	*	*	*	*	*	*	*	17%	*	9%	*	63%	*	*	*	*	100%
Higher & further education teaching profs.	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	95%	*	*	*	*	*	100%
Secondary teachers	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	97%	*	*	*	*	*	100%
Primary & nursery teachers	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	97%	*	*	*	*	*	100%
Teaching & other educational professionals	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	72%	16%	5%	*	*	*	100%
Barristers, judges, solicitors & related professionals	*	*	*	*	*	*	*	*	*	*	6%	*	82%	*	7%	*	*	*	*	*	*	100%
Accountants & tax experts	*	*	9%	*	*	*	6%	*	*	*	18%	*	49%	*	*	*	*	*	*	*	*	100%
Mgt. consultants, business analysts & project managers	*	*	7%	*	*	*	*	*	*	9%	35%	*	28%	*	*	*	*	*	*	*	*	100%
Actuaries, economists & statisticians; other business professionals	*	*	*	*	*	*	*	*	*	*	18%	*	20%	*	10%	21%	*	24%	*	*	*	100%
Architects & town planners	*	*	*	*	*	7%	*	*	*	*	*	*	73%	*	11%	*	*	*	*	*	*	100%
Architectural technologists, construction project managers & surveyors	*	*	*	*	*	19%	*	*	*	*	*	*	66%	*	8%	*	*	*	*	*	*	100%
Social workers & welfare professionals	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	9%	52%	*	36%	*	*	100%
Media professionals	*	*	8%	*	*	*	*	*	*	38%	*	*	12%	*	*	*	*	28%	*	*	*	100%
Laboratory technicians	*	*	41%	*	*	*	7%	*	*	*	*	*	8%	*	5%	11%	23%	*	*	*	*	100%
Electrical, electronic & engineering technicians	*	*	46%	*	*	6%	*	*	*	7%	*	*	15%	*	7%	*	*	*	*	*	*	100%
Process & quality assurance technicians	*	*	65%	*	*	*	*	*	*	10%	*	*	5%	*	*	*	6%	*	*	*	*	Total
Other technicians n.e.c.	*	*	26%	*	*	6%	9%	*	*	9%	*	*	26%	*	*	11%	*	*	*	*	*	100%

Occupation/sector	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	Total
IT operations technicians	*	*	13%	6%	*	*	5%	*	*	34%	*	*	6%	7%	*	7%	*	*	*	*	*	100%
IT user support technicians	*	*	17%	*	*	*	*	*	*	43%	7%	*	9%	5%	*	*	5%	*	*	*	*	100%
Health associate professionals	*	*	6%	*	*	*	18%	*	*	*	*	*	*	*	*	*	63%	*	8%	*	*	100%
Youth & community workers	*	*	*	*	*	*	*	*	*	*	*	*	*	*	13%	*	73%	*	6%	*	*	100%
Welfare & housing associate professionals	*	*	*	*	*	*	*	19%	*	*	*	*	*	*	6%	14%	44%	*	5%	*	*	100%
Army personnel	*	*	*	*	*	*	*	*	*	*	*	*	*	*	94%	*	*	*	*	*	*	100%
Gardai	*	*	*	*	*	*	*	*	*	*	*	*	*	*	99%	*	*	*	*	*	*	100%
Protective service occupations	*	*	*	*	*	*	*	*	*	*	*	*	*	11%	73%	*	*	*	*	*	*	100%
Artistic, literary & media occupations	*	*	*	*	*	*	*	*	*	20%	*	*	11%	*	*	6%	*	47%	*	*	*	100%
Design occupations	*	*	18%	*	*	*	8%	*	*	12%	*	*	42%	*	*	*	*	*	*	*	*	100%
Sports & fitness occupations	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	17%	*	71%	6%	*	*	100%
Brokers & insurance underwriters	*	*	*	*	*	*	*	*	*	*	98%	*	*	*	*	*	*	*	*	*	*	100%
Finance & investment analysts	*	*	5%	*	*	*	*	*	*	*	78%	*	6%	*	*	*	*	*	*	*	*	100%
Financial & accounting technicians	*	*	23%	*	*	5%	10%	*	*	6%	14%	*	28%	*	*	*	*	5%	*	*	*	100%
Financial accounts managers	*	*	7%	*	*	*	18%	*	*	10%	30%	*	11%	*	*	*	*	*	*	*	*	100%
Other business associate profs.	*	*	11%	*	*	*	6%	9%	*	11%	26%	*	23%	5%	*	*	*	*	*	*	*	100%
Buyers & procurement officers	*	*	28%	5%	*	8%	23%	8%	*	*	*	7%	*	14%	*	*	*	*	*	*	*	100%
Business sales executives	*	*	23%	*	*	*	43%	*	*	14%	*	6%	*	*	*	*	*	*	*	*	*	100%
Marketing associate professionals	*	*	12%	*	*	*	*	*	*	13%	17%	*	29%	*	*	*	6%	*	*	*	*	100%
Sales accounts & bus. dev. managers	*	*	19%	*	*	*	30%	*	*	11%	9%	*	9%	5%	*	*	*	*	*	*	*	100%
Estate agents etc.; conference & exhibition managers	*	*	*	*	*	*	*	8%	*	*	*	58%	18%	*	*	*	*	6%	*	*	*	100%
Environmental & other public services associate professionals	*	*	*	*	*	*	*	*	*	*	*	*	*	63%	*	*	11%	*	*	*	*	100%
Human resources & industrial relations officers	*	*	13%	*	*	*	*	*	*	9%	9%	*	10%	27%	6%	8%	6%	*	*	*	*	100%
Vocational & industrial trainers & instructors	*	*	14%	*	*	*	10%	*	*	11%	*	*	*	5%	9%	26%	11%	*	*	*	*	Total

Occupation/sector	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	Total
Regulations inspectors; health & safety officers	*	*	9%	6%	*	*	9%	*	*	*	*	*	12%	26%	24%	*	*	*	*	*	*	100%
Government admin. occupations	*	*	*	*	*	*	*	*	*	*	*	*	*	*	75%	5%	12%	*	*	*	*	100%
Financial administrative occupations	*	*	6%	*	*	*	10%	7%	*	*	37%	*	13%	*	*	*	*	6%	*	*	*	100%
Records & library clerks etc.	*	*	20%	*	*	*	6%	*	*	*	*	*	*	6%	7%	5%	29%	10%	5%	*	*	100%
Stock control, transport & distribution admin. occupations	*	*	23%	*	*	*	22%	23%	7%	*	*	*	6%	*	6%	*	*	*	*	*	*	100%
Other administrators n.e.c.	*	*	9%	*	*	*	14%	7%	*	*	6%	*	5%	*	14%	7%	12%	*	*	*	*	100%
Office managers & supervisors admin. occupations	*	*	11%	5%	*	9%	11%	6%	*	7%	*	*	13%	*	8%	6%	7%	5%	*	*	*	100%
P.A.s & other secretaries, etc.	*	*	7%	*	*	*	7%	*	*	*	5%	*	17%	10%	5%	17%	19%	*	*	*	*	100%
Receptionists	*	*	7%	*	*	*	7%	*	31%	*	*	*	7%	*	*	*	22%	5%	5%	*	*	100%
Farmers	99%	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	100%
Horticultural, agricultural & fishing trades n.e.c.	43%	*	*	*	*	*	*	*	*	*	*	*	*	24%	*	*	*	13%	*	*	*	100%
Metal forming, welding & related trades	*	*	64%	*	*	19%	*	*	*	*	*	*	12%	*	*	*	*	*	*	*	*	100%
Metal machining, fitting & instrument making trades	*	*	45%	*	*	15%	5%	*	*	*	*	17%	*	*	*	*	*	*	*	*	*	100%
Vehicle trades	*	*	14%	*	*	*	76%	*	*	*	*	*	*	*	*	*	*	*	*	*	*	100%
Electrical & electronic trades, etc.	*	*	14%	*	*	41%	5%	*	14%	*	*	7%	5%	*	*	*	*	*	*	*	*	100%
Bricklayers	*	*	7%	*	*	90%	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	100%
Plumbers	*	*	*	*	*	93%	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	100%
Carpenters & joiners	*	*	8%	*	*	87%	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	100%
Plasterers	*	*	*	*	*	100%	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	100%
Painters & decorators	*	*	5%	*	*	89%	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	100%
Other construction trades	*	*	9%	*	*	74%	*	*	*	*	*	*	5%	*	*	*	*	*	*	*	*	100%
Printing trades	*	*	79%	*	*	*	*	*	*	8%	*	*	7%	*	*	*	*	*	*	*	*	100%
Butchers, fishmongers, etc.	*	*	51%	*	*	48%	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Total
Bakers & flour confectioners	*	*	77%	*	*	13%	*	5%	*	*	*	*	*	*	*	*	*	*	*	*	*	100%

Occupation/sector	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	Total
Chefs & cooks	*	*	*	*	*	*	*	*	76%	*	*	*	*	*	*	*	10%	*	*	*	*	100%
Catering & bar managers	*	*	5%	*	*	*	*	*	70%	*	*	*	*	*	*	6%	11%	*	*	*	*	100%
Other skilled trades	*	*	67%	*	*	*	19%	*	*	*	*	*	*	*	*	*	*	*	*	*	*	100%
Nursery nurses & assistants	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	39%	57%	*	*	*	*	100%
Childminders, etc.	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	5%	78%	*	*	*	15%	100%
Educational support assistants	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	90%	7%	*	*	*	*	100%
Animal carers & pest controllers	31%	*	*	*	*	*	*	*	*	*	*	*	41%	*	*	*	*	9%	16%	*	*	100%
Caring personal services occupations	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	93%	*	5%	*	*	100%
Care workers, home workers, etc.	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	92%	*	*	*	*	100%
Leisure & travel service occupations	*	*	*	*	*	*	*	29%	*	*	*	*	*	34%	*	*	*	24%	*	*	*	100%
Hairdressers & beauticians, etc.	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	91%	*	*	100%
Housekeepers & caretakers, etc.	*	*	*	*	*	*	6%	*	23%	*	*	*	*	7%	6%	21%	12%	5%	9%	*	*	100%
Sales assistants	*	*	*	*	*	*	88%	*	*	*	*	*	*	*	*	*	*	*	*	*	*	100%
Sales related occupations	*	*	6%	*	*	*	26%	*	5%	*	21%	17%	7%	*	*	*	*	*	*	*	*	100%
Sales supervisors	*	*	8%	*	*	*	89%	*	*	*	*	*	*	*	*	*	*	*	*	*	*	100%
Customer service occupations	*	*	*	*	*	*	18%	7%	*	14%	18%	*	6%	16%	*	*	5%	*	*	*	*	100%
Food, drink & tobacco process operatives	*	*	82%	*	*	*	8%	*	8%	*	*	*	*	*	*	*	*	*	*	*	*	100%
Chemical & related process operatives	*	*	88%	*	*	*	6%	*	*	*	*	*	*	*	*	*	*	*	*	*	*	100%
Other process operatives	*	*	74%	*	*	*	14%	*	*	*	*	*	5%	*	*	*	*	*	*	*	*	100%
Plant & machine operatives	*	6%	53%	*	6%	11%	6%	8%	*	*	*	*	*	*	*	*	*	*	*	*	*	100%
Assemblers	*	*	93%	*	*	*	*	*	*	*	*	*	5%	*	*	*	*	*	*	*	*	100%
Routine operatives	*	*	77%	*	*	*	10%	*	*	*	*	*	*	*	*	*	*	*	*	*	*	100%
Construction operatives	*	*	5%	*	*	54%	*	*	6%	*	*	*	*	*	*	*	11%	*	*	*	*	100%
Road transport operatives	*	*	6%	*	*	5%	12%	63%	*	*	*	*	*	*	*	*	*	*	*	*	*	100%
Mobile machine drivers & operatives	14%	7%	23%	*	*	32%	6%	10%	*	*	*	*	*	*	*	*	*	*	*	*	*	100%



Occupation/sector	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	Total
Other drivers & transport operatives	*	*	6%	*	*	*	*	88%	*	*	*	*	*	*	*	*	*	*	*	*	*	100%
Elementary agricultural occupations	75%	*	6%	*	*	*	12%	*	*	*	*	*	*	*	*	*	*	*	*	*	*	100%
Elementary construction occupations	*	*	27%	*	*	39%	7%	*	*	*	*	*	*	*	5%	*	*	*	*	*	*	100%
Elementary process plant occupations	*	*	71%	*	*	*	14%	*	*	*	*	*	*	*	*	*	*	*	*	*	*	100%
Elementary administration occupations	*	*	*	*	*	*	*	92%	*	*	*	*	*	*	*	*	*	*	*	*	*	100%
Elementary cleaning occupations	*	*	*	*	*	*	12%	*	7%	*	*	*	*	40%	*	8%	8%	*	6%	*	*	100%
Elementary security occupations	*	*	*	*	*	*	*	9%	*	*	*	*	*	53%	8%	5%	*	*	*	*	*	100%
Elementary sales & storage occupations	*	*	22%	*	*	*	35%	19%	9%	*	*	*	*	*	*	*	5%	*	*	*	*	100%
Kitchen & catering assistants	*	*	*	*	*	*	*	*	70%	*	*	*	*	*	*	5%	13%	*	*	*	*	100%
Waiters & waitresses	*	*	*	*	*	*	*	*	92%	*	*	*	*	*	*	*	*	*	*	*	*	100%
Bar staff	*	*	*	*	*	*	*	*	90%	*	*	*	*	*	*	*	*	*	*	*	*	100%
Other elementary services occupations	*	*	*	*	*	*	*	*	45%	5%	*	*	*	5%	*	*	28%	11%	*	*	*	100%
Other/not stated	*	*	9%	*	*	6%	*	16%	5%	10%	7%	*	8%	*	*	6%	10%	7%	*	*	*	100%
<b>Total</b>	<b>5.4%</b>	<b>0.2%</b>	<b>11.5%</b>	<b>0.5%</b>	<b>0.5%</b>	<b>6.8%</b>	<b>13.9%</b>	<b>4.7%</b>	<b>7.3%</b>	<b>4.4%</b>	<b>4.4%</b>	<b>0.6%</b>	<b>6.2%</b>	<b>3.3%</b>	<b>5.0%</b>	<b>7.6%</b>	<b>12.6%</b>	<b>2.3%</b>	<b>2.5%</b>	<b>0.3%</b>	<b>0.0%</b>	<b>100%</b>

\*less than 5%

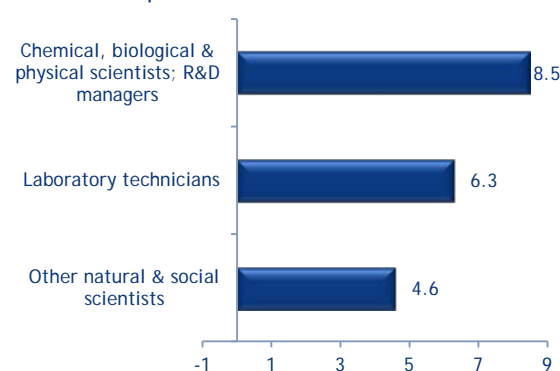
- |   |  |   |
|---|--|---|
| A: agriculture, forestry and fishing                                    | H: transportation and storage                        | O: public admin and defence                                 |
| B: mining and quarrying   | I: accommodation and food service activities         | P: education  |
| C: manufacturing  | J: information and communication                     | Q: human health and social work activities                  |
| D: electricity, gas, steam and air conditioning supply                  | K: financial and insurance activities                | R: arts, entertainment and recreation                       |
| E: water supply, sewerage, waste management and remediation activities  | L: real estate activities                            | S: other service activities                                 |
| F: construction   | M: professional, scientific and technical activities | T: activities of households as employers                    |
| G: wholesale and retail trade, repair of motor vehicles and motorcycles | N: administrative and support service activities     | U: activities of extra territorial organisations and bodies |

## 9.1 Science Occupations

- In 2016, there were approximately 19,500 persons employed in the selected science occupations, representing 1% of national employment (Figure 9.1.1)
- Three quarters of employment was concentrated in three sectors: manufacturing (predominantly pharmaceuticals), professional, scientific and technical activities (mostly scientific R&D) and human health and social activities
- Over two thirds of total employment in the selected occupations was at professional level; the remainder was at technician level
- While the national annual average employment rate grew by 1.8% over the period 2011 to 2016, overall average growth rates for science occupations decreased by 2%; negative growth rates were observed across all science occupations over this period with employment of natural and social scientists declining by 3.4% on average annually
- Over the period 2015 to 2016, overall employment for science occupations decreased by 6.2%; however, employment of chemical, biological & physical scientists increased by 5.3%, above the national growth rate of 2.9% (Figure 9.1.2)
- 85% of science professionals were aged 25-54; the corresponding share was almost 87% for laboratory technicians (Figure 9.1.3)
- At 97%, the majority of science professionals had attained third level qualifications; the corresponding share was 73% for laboratory technicians (Figure 9.1.4)

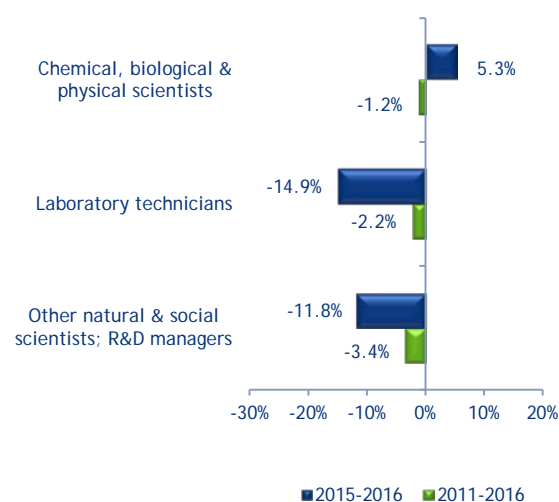
- Females accounted for a higher share of those employed for laboratory technicians (62%) and chemical, biological and physical scientists, while there was a gender balance for other natural and social scientist
- The vast majority of employed science professionals and technicians worked full-time (90%) and were Irish-nationals (84%).

Figure 9.1.1 Numbers Employed (000s) in Selected Science Occupations, 2016



Source: SLMRU (SOLAS) analysis of CSO data

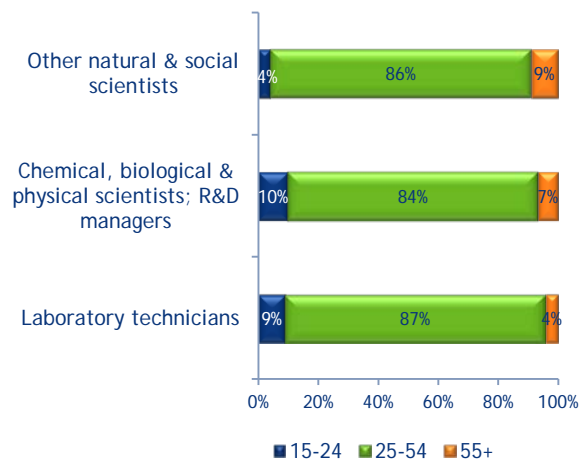
Figure 9.1.2 Average Annual Growth (%) in Selected Science Occupations



Source: SLMRU (SOLAS) analysis of CSO data

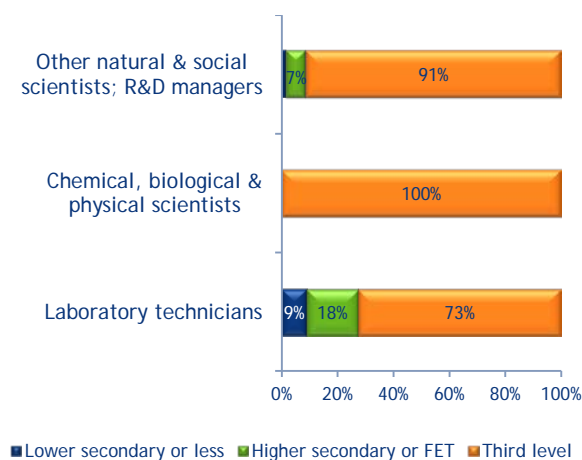
Note: Growth rates associated with occupations where employment is comparatively small are less reliable due to a greater risk of sampling error.

Figure 9.1.3 Age Profile of Selected Science Occupations, Quarter 4 2016



Source: SLMRU (SOLAS) analysis of CSO data

Figure 9.1.4 Education Profile of Selected Science Occupations, Quarter 4 2016



Source: SLMRU (SOLAS) analysis of CSO data

### Shortage Indicators

Although science occupations account for a small share of overall employment (approximately 1% of national employment), these skills play a critical role in the performance and future growth of the high value added and exporting sectors of the economy, such as pharmaceuticals as well as in food processing. Although shortages have been identified in this area, they are small in number and are in niche areas.

Recruitment of scientists in 2016 was reflected in vacancy data for roles such as chemists (analytical, process, QA), microbiologists and lab technicians. There were 2,500 recent job hires in 2016 for professional scientist roles, all with third-level qualifications. Nonetheless, the high rates of turnover and the lack of employment growth for these occupations suggests that much of the demand is arising due to movements of those already in employment.

In terms of supply, there were almost 4,300 science graduates at level 8 and above in 2015, of which 700 were in biochemistry or chemistry. In addition, there were over 900 science graduates at levels 6 and 7. There were also over 300 third level qualified scientists who were job ready job seekers in April 2017. Over 80 employment permits were issued in 2016, primarily for chemists.

The skills in short supply chiefly related to experienced candidates (e.g. five years or more) and niche scientific areas typically associated with the pharmaceutical, bio-pharma and food innovation industries. In particular, there was a demand for scientists with experience in compliance, regulatory affairs and new product development. Shortages in relation to the following job titles were identified:

- chemists/analytical scientists (especially product formulation, and analytical development for roles in biopharma)
- quality control analyst including pharma co-vigilance (i.e. drug safety) roles.

In summary, despite a lack of employment growth, these occupations are still in demand with some shortages occurring, albeit small in number.

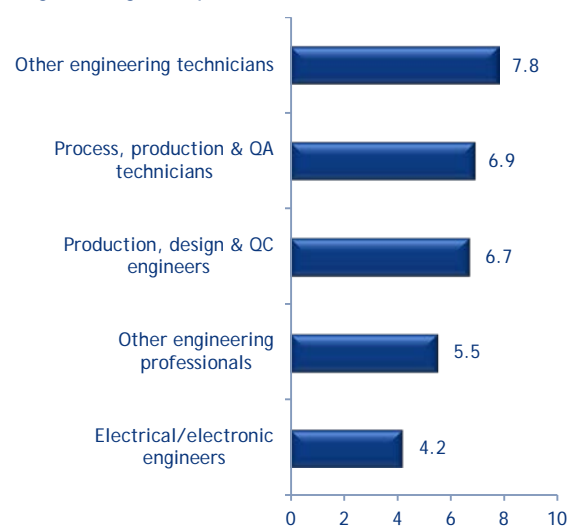
## 9.2 Engineering Occupations

- In 2016, there were approximately 31,000 persons employed in the selected engineering occupations, representing 1.5% of national employment (Figure 9.2.1)
- Over 70% of overall employment was concentrated in two sectors: 52% in manufacturing (mostly pharmaceuticals and machinery/equipment), with more than 21% in professional, scientific and technical activities (mostly architectural/engineering activities)
- Just over 52% of total employment was at professional level (i.e. engineers); the remainder was at technician level
- Between 2011 and 2016, employment growth in engineering occupations was the strongest recorded amongst the 17 broad occupational groups examined (8.2% on average annually); the strongest growth rates were observed for process, production and QA technicians (16% on average annually) and other engineering technicians (9%); in contrast, the weakest growth rates were observed for electrical/electronic engineers and production, design and QC engineers (3.5% and 5.6% respectively) (Figure 9.2.2)
- Over the same five-year period, in absolute terms, employment expanded by over 10,000; the largest increases were observed for process, production and QA technicians and other engineering technicians (by approximately 3,500 and 3,000 respectively); in contrast, employment levels of electrical/electronic engineers remained static
- Between 2015 and 2016, overall employment in engineering occupations expanded by 14% (compared with 2.9% nationally), or approximately 4,000; the

largest increases were observed for other engineering technicians

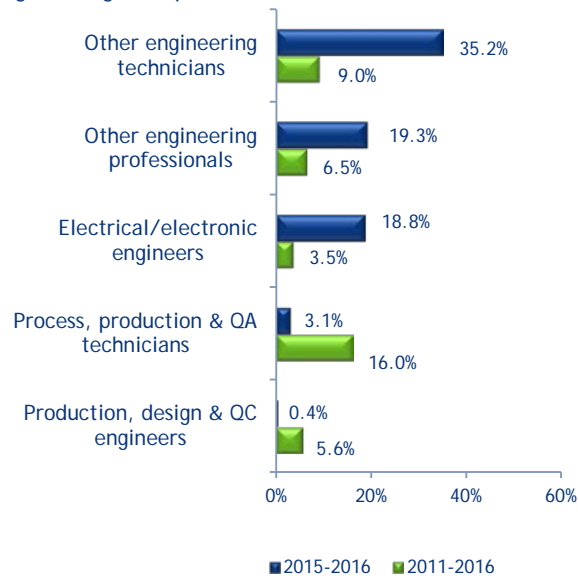
- With the exception of electrical/electronic engineers, over three quarters of persons employed in each occupation was aged 25-54 (Figure 9.2.3); almost a quarter of those employed as electrical/electronic engineers was aged 55 or older
- 93% of other engineering professionals and almost 90% of employed production, design and QC engineers were third level graduates; the lowest share was observed for engineering technicians (72%)(Figure 9.2.4)
- Over four fifths of those employed in engineering professional occupations were male; there were no female electrical/electronic engineers; two fifths of employed process, production and QA technicians were female - the highest share of females among the selected occupations
- The vast majority of employed engineering professionals and technicians worked full-time (96%) and were Irish-nationals (86%).

Figure 9.2.1 Numbers Employed (000s) in Selected Engineering Occupations, 2016



Source: SLMRU (SOLAS) analysis of CSO data

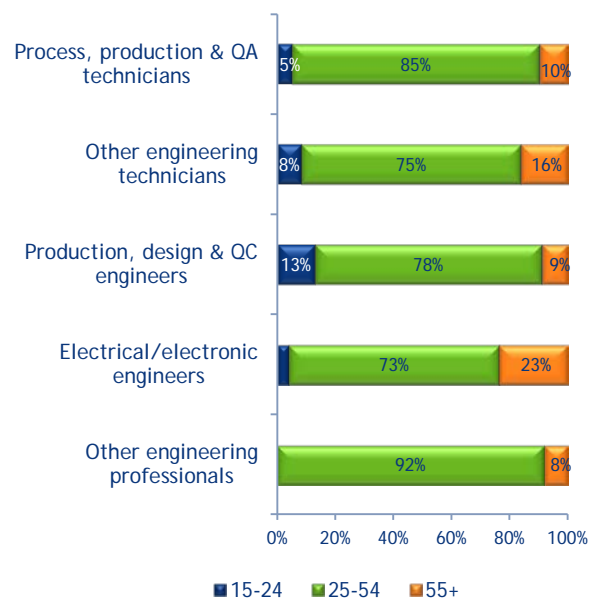
Figure 9.2.2 Average Annual Growth (%) in Selected Engineering Occupations



Source: SLMRU (SOLAS) analysis of CSO data

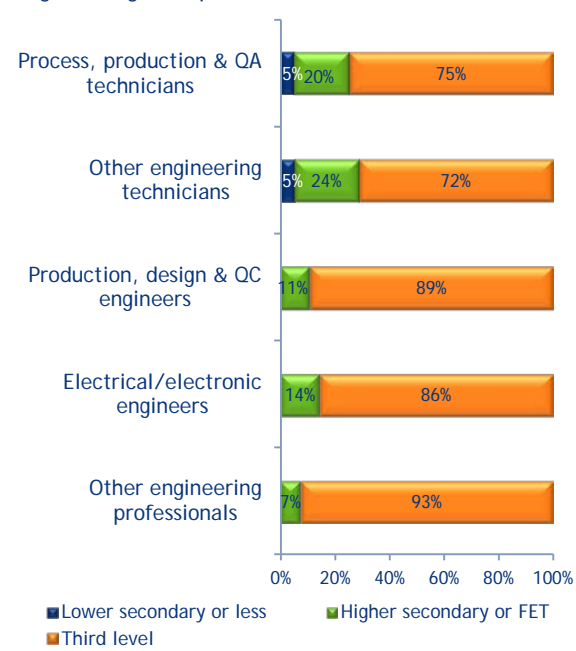
\*Note: Growth rates associated with occupations where employment is comparatively small are less reliable due to a greater risk of sampling error.

Figure 9.2.3 Age Profile of Selected Engineering Occupations, Quarter 4 2016



Source: SLMRU (SOLAS) analysis of CSO data

Figure 9.2.4 Education Profile of Selected Engineering Occupations, Quarter 4 2016



Source: SLMRU (SOLAS) analysis of CSO data

### Shortage Indicators

Employment has been growing strongly in the selected engineering occupations in recent years. Over a half of those were working in the manufacturing sector, where employment growth in high-tech and medium high-tech manufacturing has been particularly strongly over the most recent five-year period. Job announcements in the media in 2016 were most frequent in industry, primarily in the manufacture of medical devices, biotech, pharmaceutical, food/beverages and machinery/equipment with engineering roles announced including in R&D design, quality control and process engineers along with engineering technicians involved in testing.

Replacement demand in these occupations tends to be low, primarily due to a younger age cohort than the national average; turnover, however, is above average, particularly in relation to electrical and quality control engineers along with quality assurance technicians. Expansion demand,

combined with a high level of movement between employers, is accounting for frequent vacancy notifications primarily for process, quality and project engineers. There were approximately 2,100 recent new hires in 2016 for professional engineers and a further 2,300 for technicians (two thirds of all engineering new hires held a third level honours degree or higher).

Employers are competing internationally for some niche engineering roles (primarily process and equipment engineers but also automation, project and mechanical engineers) with 434 new employment permits issued in 2016 for professionals in both industry and the ICT sector.

The number of third level engineering graduates is estimated at 5,000, more than half of which were at NFQ level 8 or higher; graduate output has been increasing in recent years (up by more than a half since 2010). There are also two new NFQ level 7 apprenticeships in industrial electrical engineering and polymer processing technology. In addition, in April 2017, there were over 600 engineers (over half of whom held at least a degree-level (NFQ 7) qualification) and almost 700 engineering technicians (a third of whom held at least a degree-level (NFQ 7) qualification) who were job ready job seekers.

The demand for engineers, typically for roles in pharmaceutical and medical devices manufacturing, relates largely to those with significant experience (at least five years) in industry specific settings. Shortages include

- process and design (including R&D)
- quality control/quality assurance (including standards, compliance and

regulatory affairs, mostly EHS<sup>41</sup> compliance)

- automation (including lean processes)
- validation/computer validation system (CVS), CQE (certified quality engineer) certification
- chemical engineers
- electrical engineers (safety, tech. specification, mechatronics - development and integration of mechanical, electrical and software systems; power generation and transmission)
- mechanical engineers: with skills and experience in polymer engineering and injection moulding
- technicians: quality assurance/control, process (e.g. injection moulding/polymer engineering), extrusion and maintenance.

There also appears to be an issue with geographical mobility and the ability to attract candidates to certain locations.

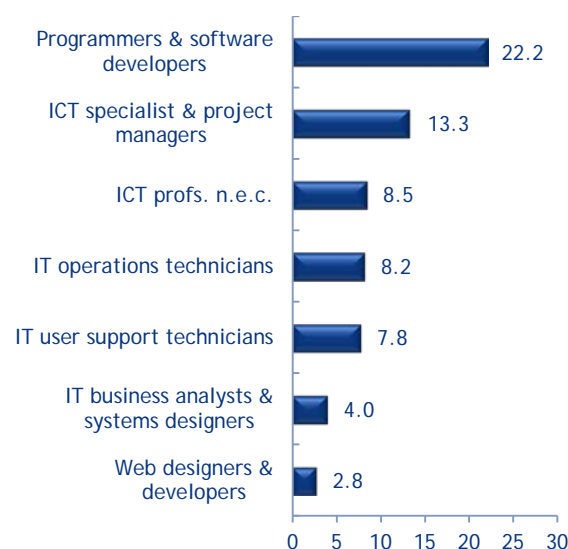
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<sup>41</sup> Environmental Health and Safety

### 9.3 IT Occupations

- In 2016, there were approximately 67,000 persons employed in the selected IT occupations, representing 3.3% of national employment (Figure 9.3.1)
- Almost four fifths of overall employment was concentrated in three sectors: just over a half in IT (mostly in computer programming and telecommunications), with an additional 15% in industry (mostly in computer, electronic and optical manufacturing) and 10% in financial, insurance and real estate
- Three quarters of total employment was in professional level occupations (of which, two fifths were programmers and software developers); the remainder was at technician level
- Between 2011 and 2016, total employment in IT occupations expanded by 5% on average annually – the second strongest average annual rate of growth amongst the 17 occupational groups examined; growth was observed for all occupations, with the strongest rates recorded for IT user support technicians (17.4% on average annually) and IT business analyst and system designers (8.8% on average annually) (Figure 9.3.2)
- Over the same five-year period, a net 14,400 additional jobs were created; the largest employment increases (in absolute terms) were observed for programmers & software developers (6,600) and ICT user support technicians (4,300)
- Between 2015 and 2016, overall employment expanded by 13.9% with an additional 8,200 jobs; the change in employment varied significantly by occupation, from a 134.7% jump observed for web designers and developers to a 19% decrease for IT operations technicians
- The majority of those employed in IT occupations were aged 25-54 years (Figure 9.3.3)
- 92% of employed IT professionals had third level qualifications; the corresponding share was 76% for technicians (Figure 9.3.4)
- Most of those employed in IT occupations were male and worked full-time; web designers and developers and ICT specialist and project managers had the highest share of females at 29% and 25% respectively
- At 42%, employed programmers and software developers had over double the national average share of non-Irish nationals (15.4%); the share of non-Irish IT business analysts & systems designers was even higher at 44%.
- In quarter 4 2016, the overall unemployment rate (15-74 year olds) for IT occupations was well below the national rate (2.9% compared to 6.7%), with both figures decreasing since quarter 4 2015.

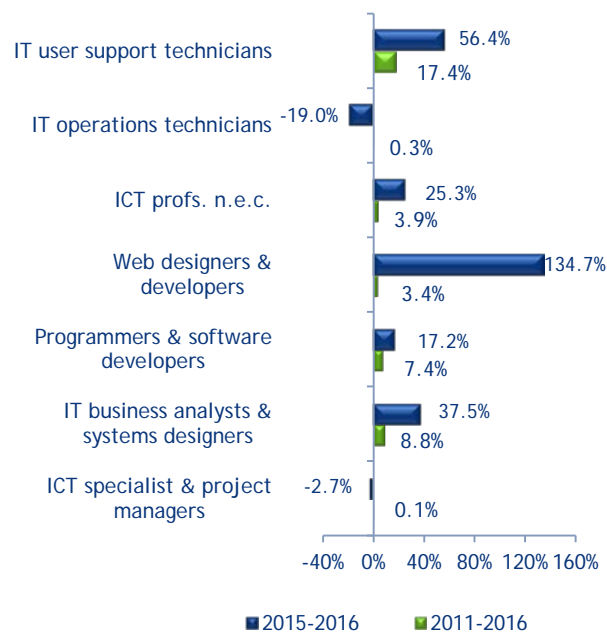
Figure 9.3.1 Numbers Employed (000s) in Selected IT Occupations, 2016



Source: SLMRU (SOLAS) analysis of CSO data



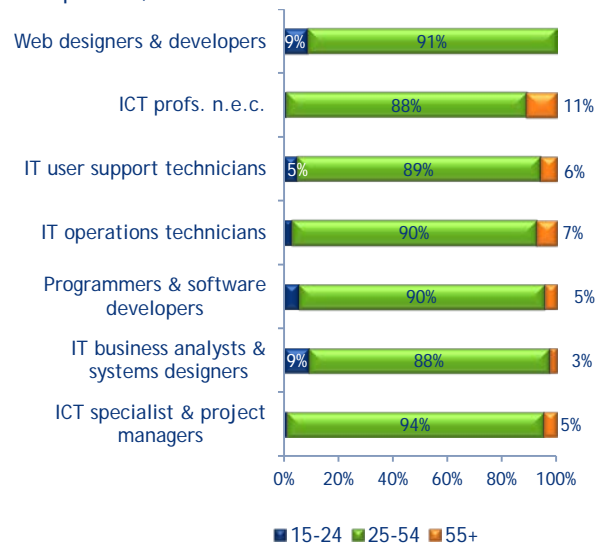
Figure 9.3.2 Average Annual Growth (%) in Selected IT Occupations



Source: SLMRU (SOLAS) analysis of CSO data

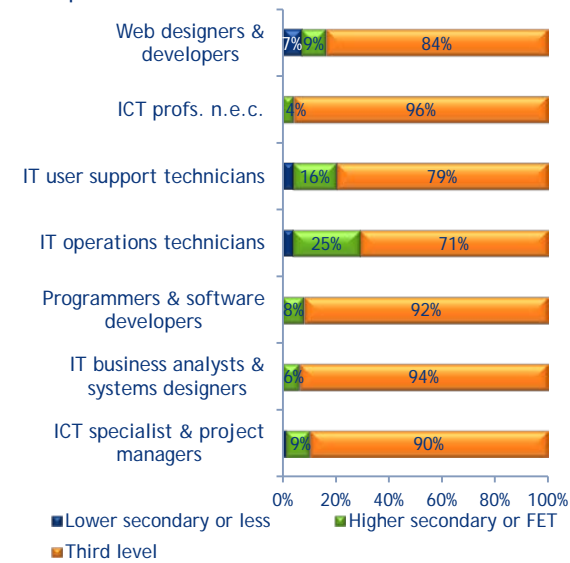
Note: Growth rates associated with occupations where employment is comparatively small are less reliable due to a greater risk of sampling error.

Figure 9.3.3 Age Profile of Selected IT Occupations, Quarter 4 2016



Source: SLMRU (SOLAS) analysis of CSO data

Figure 9.3.4 Education Profile of Selected IT Occupations, Quarter 4 2016



Source: SLMRU (SOLAS) analysis of CSO data

### Shortage Indicators

Almost a half of those employed in IT occupations were employed outside of the ICT sector, primarily in industry and financial activities. Employment in IT occupations is characterised by low replacement demand (the young age cohort means few are retiring and the occupations have a relatively low number of exits to study and home duties): these occupations also have a higher than average turnover rate, with movement between employers occurring more frequently than for professionals and associate professional occupations in general. While many IT occupations experienced little or no growth in recent years, employment growth was strong for programmers and software developers along with IT user support technicians.

The ICT sector accounted for approximately a quarter of all job announcements made in the media in 2016, with roles including IT security, data analytics, cloud computing, e-commerce (financial transactions/payments), telecommunications and Software as a Service

(SaaS), along with a significant number of roles in IT contact centres. In addition, a number of job announcements in the financial sector were for IT roles such as cyber security and data/business analytics.

While employment expanded by 8,200 for the selected IT occupations over a five-year period, there were over 11,000 recent job hires in 2016, two thirds of which were for professional roles. Those recently hired tended to have third level qualifications (80%) and young (55% were aged less than 35 years).

Over 2,700 employment permits were issued to IT workers from outside the EEA in 2016, accounting for over a third of all new permits issued; of those issued to IT workers, 2,300 were for professionals and the remainder for managers or technicians.

In 2016, there were more than 4,600 third level graduates (comprised of HEA and private/independent third level institutions); of these, more than two thirds were at levels 8-10. In the FET sector, apprenticeships in development include network engineer, software developer and fintech associate professional, all at NFQ level 6. Total ICT apprenticeship enrolment over the coming years is expected to be 280. In April 2017, there were 1,245 job ready job seekers with previous experience in IT professional or managerial roles; of these, a half held at least a degree (NFQ 7). A further 1,000 job seekers had previous experience in IT technician roles, a third of whom held third level qualifications.

Despite significant graduate supply and a number of job ready job seekers with IT skills (many of whom, given the comparatively high turnover estimates, are likely to be only in

frictional unemployment), shortages of IT skills continue to exist. IT skills are in demand across all economic sectors. Furthermore, the situation is not unique to Ireland as there is a shortage of IT skills internationally.

Shortages of the following skills have been identified:

- software developers: mobile (iOS/Android), database (with Oracle/SQL), web, cloud; with skills in Java, JavaScript, C++, .Net, PHP, CSS, F#, Python, and Ruby on Rails the most frequently mentioned
- engineers: network (Linux, Open Source), database, QA, automated performance testers, DevOps (developing/testing, process re-engineering and communication skills)
- systems/solutions architects, database architects (e.g. data centres/data warehousing)
- web design (niche areas only): particularly web related applications focusing on enhancing users' online experience (UX) and supporting user interaction (UI) with 3-5 years' experience
- InfoSec (IT security), IoT (internet of things), cyber security analyst, data/information security, network security
- business intelligence: BI solutions, big data analysts (e.g. Hadoop, Cassandra, SQL), ERP (enterprise resource planning) with SAP
- IT managers and business analysts (especially systems migration and IT project management e.g. waterfall and agile)
- IT technicians: troubleshooting, tech support with languages, particularly German and database administrators.

## 9.4 Business and Financial Occupations

- In 2016, approximately 169,000 persons were employed in the selected business and financial occupations, representing 8.4% of Ireland's workforce (Figure 9.4.1)
- Almost 60% of overall employment was concentrated in two sectors: financial, insurance and real estate activities (35%), and professional, scientific and technical activities (21%)
- Administrative occupations (mostly book-keepers, payroll managers and wages clerks; bank and post office clerks) accounted for almost one third of overall employment; an additional one third was at professional level (mostly accountants and tax experts), while one quarter was at associate professional level with the remainder at managerial level
- Between 2011 and 2016, the magnitude of change in the overall employment in business and financial occupations was similar to the national average (1.2% compared to 1.8% increase on average annually); however, strong growth rates were observed for other business associate professionals (9.9% on average annually) and management consultants, business analysts and project managers (9.8%); in contrast, negative growth rates were observed for financial administrative occupations (3.4% on average annually), brokers and insurance underwriters (2.6% on average annually) and financial accounting technicians (1.8% on average annually) (Figure 9.4.2)
- Between 2015 and 2016, overall employment reduced by 0.6% (a net 1,100 jobs); the largest employment increases were observed for financial accounts managers (24.9%); in contrast, the largest decline was observed for other business associate professionals (25.9%)

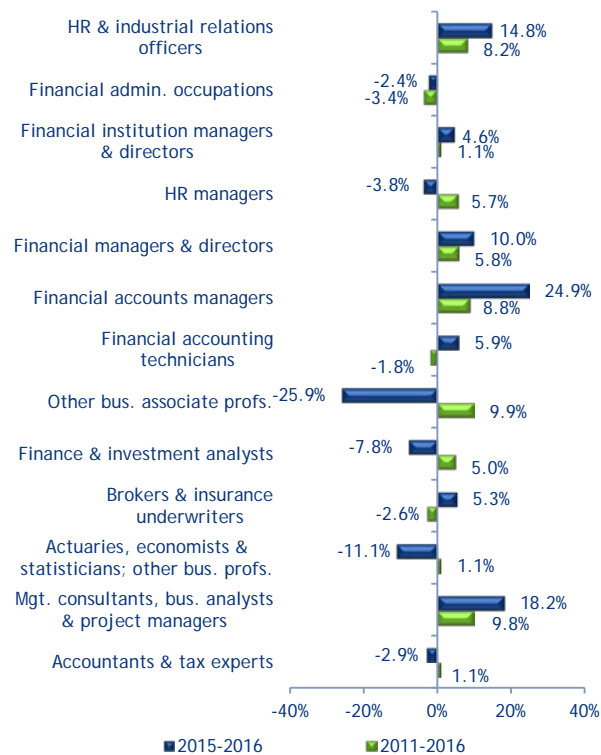
- Over four fifths of persons employed in business and financial occupations were aged 25-54 years, with 13% employed aged 55 or older; actuaries, economists and statisticians had the highest share in the 55+ age cohort at 25% (Figure 9.4.3)
- Almost 95% of those employed at professional level and approximately 80% at associate professional level and in management were third level graduates; the share was 56% for those employed in administrative occupations
- Approximately three quarters of those employed in financial administrative occupations as well as HR and industrial officers and HR managers were female - the highest share of females among the selected occupations; those employed in the former two occupations had the highest propensity to work part-time
- In quarter 4 2016, at 2.5%, the overall unemployment rate (15-74 year olds) for the selected occupations was below the national rate (6.7%).

Figure 9.4.1 Numbers Employed (000s) in Selected Business and Financial Occupations, 2016



Source: SLMRU (SOLAS) analysis of CSO data

Figure 9.4.2 Average Annual Growth (%) in Selected Business and Financial Occupations



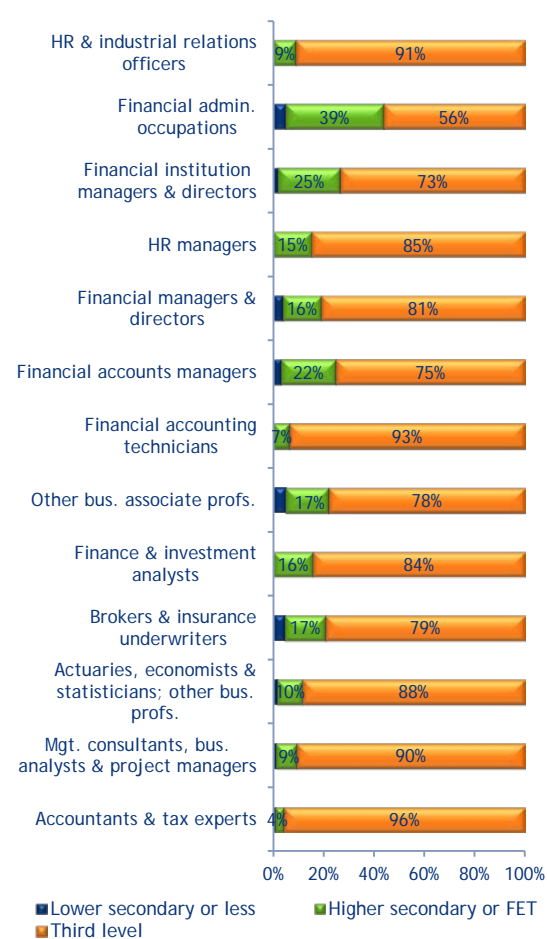
Source: SLMRU (SOLAS) analysis of CSO data  
 Note: Growth rates associated with occupations where employment is comparatively small are less reliable due to a greater risk of sampling error.

Figure 9.4.3 Age Profile of Selected Business and Financial Occupations, Quarter 4 2016



Source: SLMRU (SOLAS) analysis of CSO data

Figure 9.4.4 Education Profile of Selected Business and Financial Occupations, Quarter 4 2016



Source: SLMRU (SOLAS) analysis of CSO data

### Shortage Indicators

The future demand for business and financial skills is likely to be particularly affected by the impact of Brexit. On the one hand, numerous financial institutions are expanding their business or setting up in Ireland, including JP Morgan, Bank of America and Goldman Sachs, with IDA announcing in July 2017 that they have secured deals with more than a dozen London-based banks and finance houses to move some of their operations to Dublin in preparation for Brexit<sup>42</sup>. On the other hand, a report by the Department of Finance (2016) states that insurance/financial services are one of the three services sectors

<sup>42</sup> <http://www.idaireland.com/newsroom/ida-ireland-confirms-a-st/>

considered to be the most exposed in terms of exports to the UK. As such, the overall impact on skills requirements in the financial sector is yet unclear.

Employment growth for the selected occupations in the most recent five-years was below the national average, although this is primarily due to a continued fall in the numbers employed in financial administrative occupations. There were a relatively high number of movements between employers in 2016, particularly for business analysts, accountants and financial administration. Vacancy notifications were also occurring frequently in 2016, for roles such as financial project managers, compliance/regulatory reporting and financial analysts. Despite the lack of employment growth, there were over 22,000 recent job hires in 2016, half of which related to accountants and financial administrative occupations; three quarters of those recently hired held third level qualifications.

While demand for general accounting skills is in decline with many tasks now being automated, there are increasing requirements in specific areas of accountancy and for those with crossover skills such as corporate resource managers. In terms of financial administrative occupations, current indicators point to an easing of shortages with little sign of employment growth. Although some employers have reported difficulty in sourcing suitable candidates for these roles, turnover appears to be a greater issue. However, financial administrators with multilingual skills appear to be still in demand. The demand for HR officers also appears to be easing with very little evidence of growth in employment numbers despite a high volume of vacancy notifications, suggesting that most

vacancies are arising due to replacement, such as maternity cover.


There were 814 new employment permits issued to non-EEA nationals for work in the selected financial occupations (primarily in roles as business analysts/project managers and accountants) in 2016. The supply of skills from the education and training system is significant: in 2016, there were almost 22,000 further and higher education graduates from business and administrative courses, of which more than 12,000 were at NFQ level 8 or above. In addition, there are a number of new apprenticeships including insurance practitioner, accounting technician and international financial services associate spanning levels 6-8 on the NFQ, with a further three financial-related apprenticeships in development. Approximately 1,400 persons previously employed in financial administrative occupations were job ready job seekers in April 2017; a further 1,900 financial professionals and technicians job seekers were on the Live Register, although only 670 held NFQ level 8 qualifications or higher.

Shortages have been identified in the following areas:

- accounting: financial and management accountants with expertise in solvency, taxation, IFSR<sup>43</sup> relevant skills and regulatory compliance; accountants for roles in industry with ERP system and reporting tools, as well as language skills; actuaries
- business intelligence and risk analysis; financial systems analysts; entry level and experienced revenue managers (specific sectors, e.g. hospitality)

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<sup>43</sup> International Financial Reporting Standards

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- data analytics: experienced (5 years+) statisticians; economists and data scientists (big data, data visualisations and quantitative modelling)
  - FinTech: business and financial professionals with skills in specific software packages and experience (including international)
  - financial management/financial analysis: trustee managers; deposit managers; payroll managers
  - multilingual financial clerks: credit controllers; accounts payable/receivable; payroll specialists; fund accounting and transfer pricing specialists.

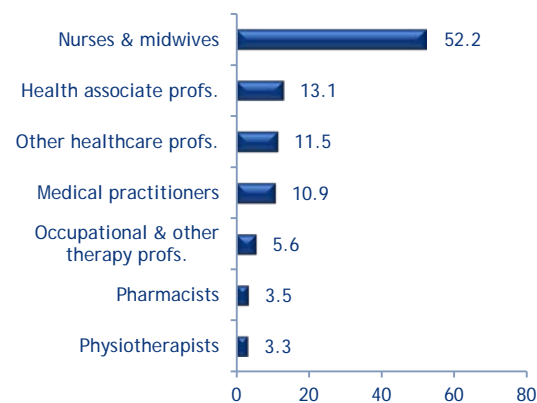


## 9.5 Healthcare Occupations

- In 2016, there were approximately 100,000 persons employed in healthcare occupations, representing 5% of Ireland's workforce (Figure 9.5.1)
- Almost 87% of overall employment was at professional level (approximately 87,000 persons)
- There were 52,000 employed nurses and midwives, accounting for almost half of overall employment in healthcare occupations;
- Over the period 2011 to 2016, overall employment levels in the selected occupations remained relatively static; however, employment growth was observed particularly for health associate professionals (6.2% on average annually) and occupational and other therapy professionals (6.4% on average annually); in contrast, average annual employment rates contracted for medical practitioners (2.5%), physiotherapists (2.3%), and nurses and midwives (1.8%)
- Between 2015 and 2016, overall employment declined by 3.3% (or 3,400 persons in absolute terms); employment levels remained relatively static for most occupations with the largest absolute decline for nurses and midwives of 3,600 net jobs (Figure 9.5.2)
- Four fifths of those employed in healthcare occupations was aged 25-54; almost one quarter of occupational and other therapy professionals was 55 years or older (Figure 9.5.3); the share of mature workers was almost one fifth for pharmacists, other healthcare professionals, and nurses and midwives
- Almost 95% of employed healthcare professionals had attained third level qualifications; the share was 74% for associate professionals

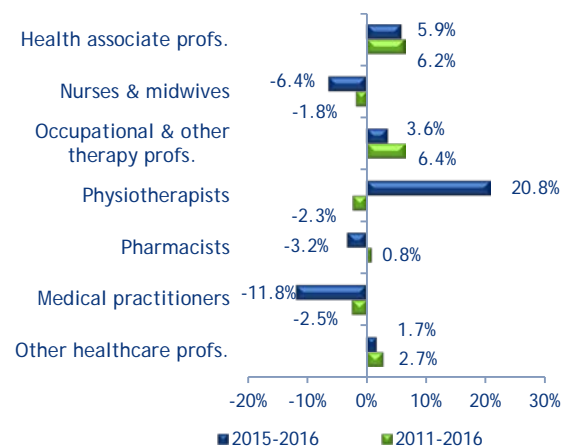
- While most persons employed in healthcare occupations were female, employment of medical practitioners was gender balanced
- Occupational and other therapy professionals had the highest share of persons in healthcare occupations working part-time, at over one third
- Almost 30% of employed medical practitioners were non-Irish nationals, while the average share for the selected healthcare occupations was close to the national average (14% compared to 15%).

Figure 9.5.1 Numbers Employed (000s) in Selected Healthcare Occupations, 2016



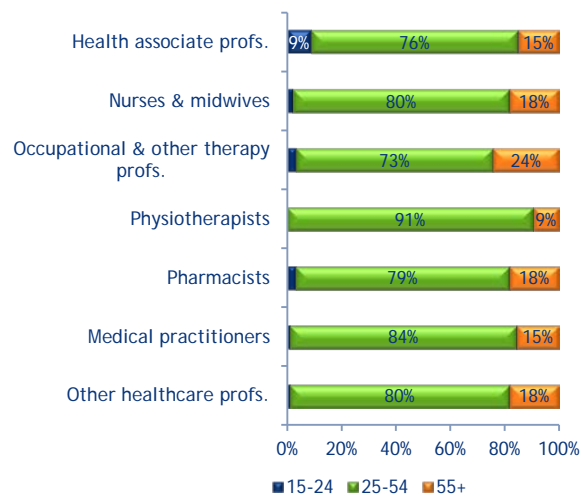
Source: SLMRU (SOLAS) analysis of CSO data

Figure 9.5.2 Average Annual Growth (%) in Selected Healthcare Occupations



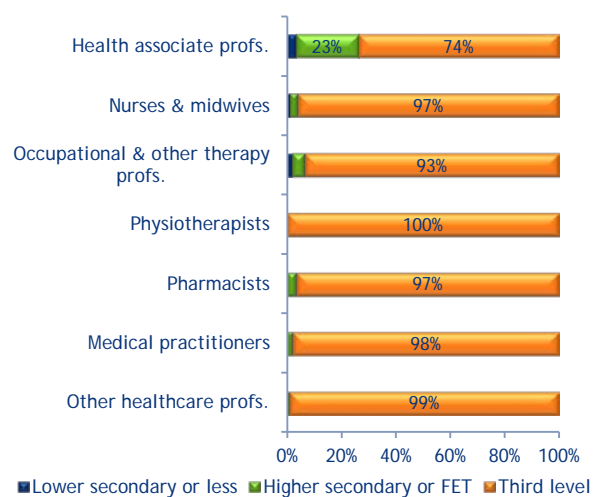
Source: SLMRU (SOLAS) analysis of CSO data  
 Note: Growth rates associated with occupations where employment is comparatively small are less reliable due to a greater risk of sampling error.

Figure 9.5.3 Age Profile of Selected Healthcare Occupations, Quarter 4 2016



Source: SLMRU (SOLAS) analysis of CSO data

Figure 9.5.4 Education Profile of Selected Healthcare Occupations, Quarter 4 2016



Source: SLMRU (SOLAS) analysis of CSO data

### Shortage Indicators

Recruitment in the health sector is driven primarily by government policy and funding. Overall employment numbers are unchanged compared to 2011. Despite this lack of growth, there is evidence of a significant demand for healthcare professionals.

Healthcare professionals (and in particular nurses and doctors) account for a relatively

high share of persons hired in 2016. Most recruitment occurred due to replacement demand (with approximately 3,000 exits to inactivity recorded for the selected occupations). Frequent movement of doctors and nurses between employers is also evident, with over 2,000 intra-occupational transitions identified for medical practitioners and a further 3,800 for nurses. A large number of skilled personnel were sourced from outside the EU with over 2,100 new employment permits issued. The number of job ready job seekers previously employed in these occupations was negligible. In 2015 there were over 4,000 third level graduates (levels 8-10).

Demand for healthcare professionals is expected to persist, with demand increasing due to an aging population as well as international competition to attract the skills and talent to the sector.

Shortages have been identified for the following occupations:

- medical practitioners (especially locum and non-consultant hospital doctors, registrars and medical specialists (e.g. general and emergency medicine, oncology, psychiatry, orthopaedic, anaesthetists, paediatricians))
- nurses - advanced nursing practitioners (e.g. intensive care, operating theatre, theatre nurse managers), registered nurses (e.g. general nurse, cardiovascular care, elder persons' care, paediatric, oncology, intellectual disability care, fertility) and clinical nurse managers
- radiographers (clinical specialists; MRI and CT radiographers)
- niche area specialists (audiologists, cardiac technician, dieticians).

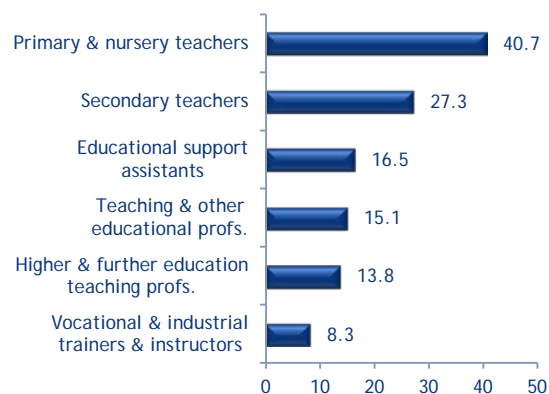


## 9.6 Education Occupations

- In 2016, there were approximately 122,000 persons employed in the selected education occupations, representing 6% of national employment (Figure 9.6.1)
- Almost four fifths of overall employment was at professional level (mostly in primary/nursery and secondary school teaching)
- Between 2011 and 2016, overall employment expanded very modestly (1% on average annually) with changes in employment varying by occupation; the highest growth was observed for educational support assistants (5.6%) while negative growth was recorded for secondary teachers as well as teaching and other educational professionals (0.4% and 0.3% respectively)
- Over the same five-year period, there were a net 6,200 additional jobs created; the largest employment increases were observed for educational support assistants (Figure 9.6.2)
- Between 2015 and 2016, overall employment expanded by 2%, with a net 2,400 additional jobs; the largest increase was observed for educational support assistants (22.4% or 3,000 jobs), however a decline occurred for those employed as secondary teachers (8.3% or 2,500 less jobs)
- At least one quarter of employed higher and further education teaching professionals were aged 55 or older – slightly above the national average (Figure 9.6.3)
- Almost 90% of persons employed in professional occupations were third level graduates; the share was 49% for educational support assistants and 71% for associate professionals (i.e. vocational and industrial trainers/instructors)

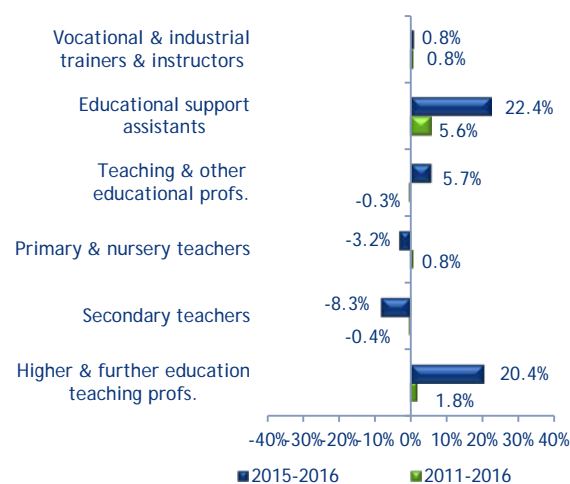
- Females accounted for the highest share in all educational occupations, excluding higher and further education teaching professionals as well as vocational and industrial trainers/instructors (47% and 46% female respectively)
- Approximately one third of educational support assistants and teaching and other educational professionals worked part-time.

Figure 9.6.1 Numbers Employed (000s) in Selected Education Occupations, 2016



Source: SLMRU (SOLAS) analysis of CSO data

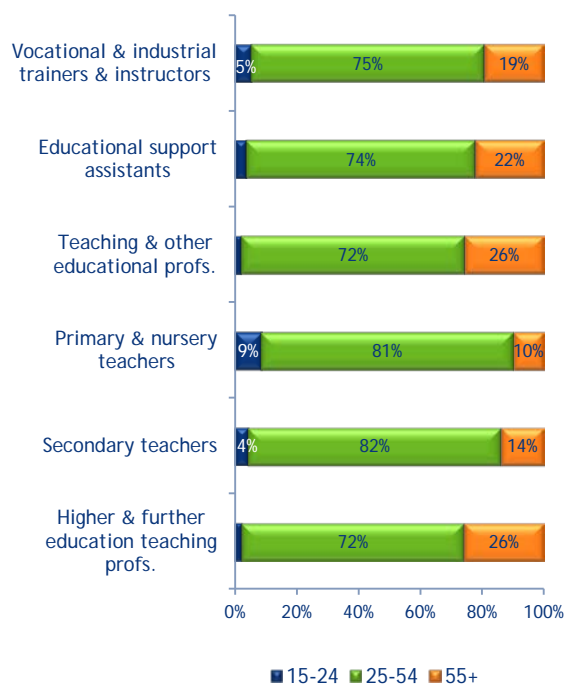
Figure 9.6.2 Average Annual Growth (%) in Selected Education Occupations



Source: SLMRU (SOLAS) analysis of CSO data

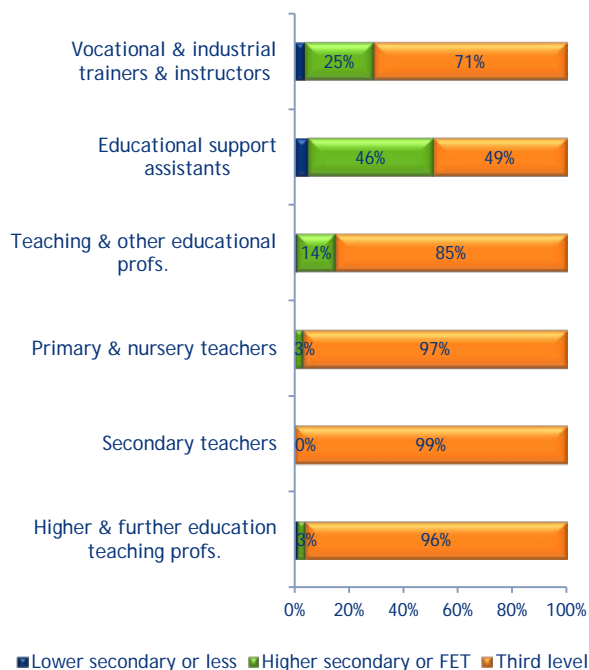
Note: Growth rates associated with occupations where employment is comparatively small are less reliable due to a greater risk of sampling error.

Figure 9.6.3 Age Profile of Selected Education Occupations, Quarter 4 2016



Source: SLMRU (SOLAS) analysis of CSO data

Figure 9.6.4 Education Profile of Selected Education Occupations, Quarter 4 2016



Source: SLMRU (SOLAS) analysis of CSO data

### Shortage Indicators

The recent growth in the number of primary school enrolments are expected to peak in 2018 and to fall thereafter due to declining number of births, while enrolments at second level are expected to continue to increase through to 2025. Growth in the number of teachers employed has been modest, with replacement demand being the main driver of the recruitment of teachers. In 2016, almost 3,500 transitions to economic inactivity (i.e. retirement, home duty etc.) were identified for primary and secondary teachers.

No overall shortages have been identified for teachers, with 480 relevant job ready job seekers with third level qualifications in April 2017. In 2015, graduate output from education courses at NFQ levels 8 and above was 4,700 (including private colleges). However, issues continue to exist in relation to sourcing teachers (in both second and third level) with a high level of expertise in specific fields, such as science and mathematics. The Department of Jobs, Enterprise and Innovation has recently added experienced academics who hold a qualification equivalent to NFQ Level 10 to their employment permits highly skilled list.

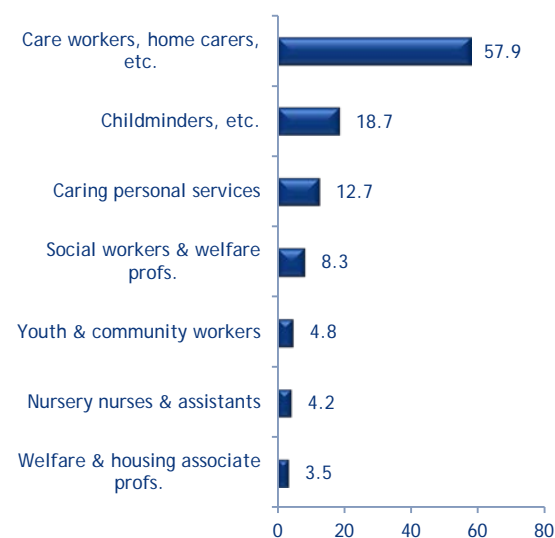
## 9.7 Social and Care Occupations

- In 2016, there were 110,000 persons employed in the selected social and care occupations, representing 5.4% of national employment (Figure 9.7.1)
- Approximately 58,000 persons were employed as care workers/home carers, accounting for just over 57% of total employment in the selected occupations
- Over four fifths of total employment was concentrated in human health and social work and residential care activities
- Between 2011 and 2016, overall employment levels increased by 1.3%; the strongest employment growth rates were observed for social workers and welfare professionals (5.5% on average annually); in contrast, the strongest contraction was observed for youth and community workers as well as welfare and housing associate professionals with annual average rate declines of 6.4% and 6.2% respectively (Figure 9.7.2)
- Over the same period, an additional 6,700 net jobs were created; the largest employment increase (in absolute terms) was observed for care workers/home workers; the largest decrease was observed for youth and community workers
- Between 2015 and 2016, overall employment reduced by 1.6% (approximately 1,700 jobs); although the relative change varied strongly (ranging from declines of 25.9% and increases of 26.7%), the absolute numbers involved were relatively small
- Approximately one fifth of the overall workforce for this group was 55 years or older while, on average, 8% were below 25 years old (Figure 9.7.3)
- Almost all employed social workers and welfare professionals had attained third

level qualifications; approximately one third of childminders, caring personal services workers, and nursery nurses were third level graduates; 16% of care workers/home carers and 12% of personal caretakers had attained lower secondary or less qualifications (Figure 9.7.4)

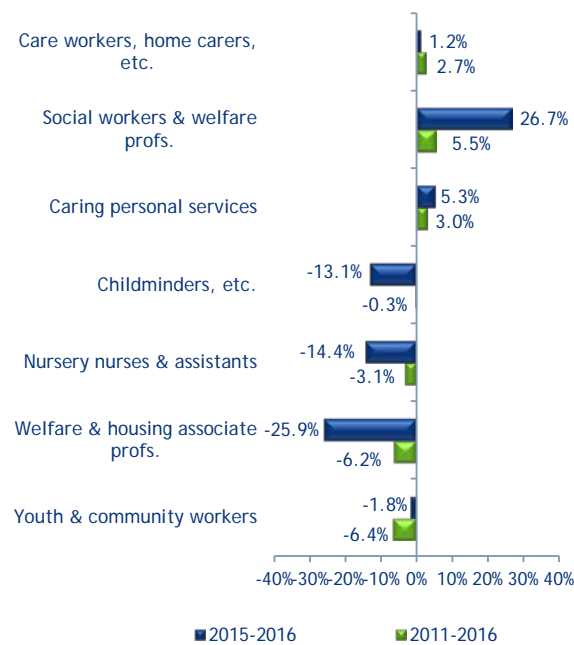
- The share of females employed in each occupation was well above the national average excluding social workers and welfare professionals (52% female); almost all employed childminders and nursery nurses and assistants were female
- The share of persons in part-time employment in social care occupations was higher than the national average (38% compared to 22%) with this group having the highest share nationally among all 17 groups of occupations; furthermore, over half of employed nursery nurses and assistants, as well as childminders, worked part-time
- Almost 30% of employed welfare and housing associate professionals were non-Irish nationals, above the national average of 15.4%.

Figure 9.7.1 Numbers Employed (000s) in Selected Social and Care Occupations, 2016



Source: SLMRU (SOLAS) analysis of CSO data

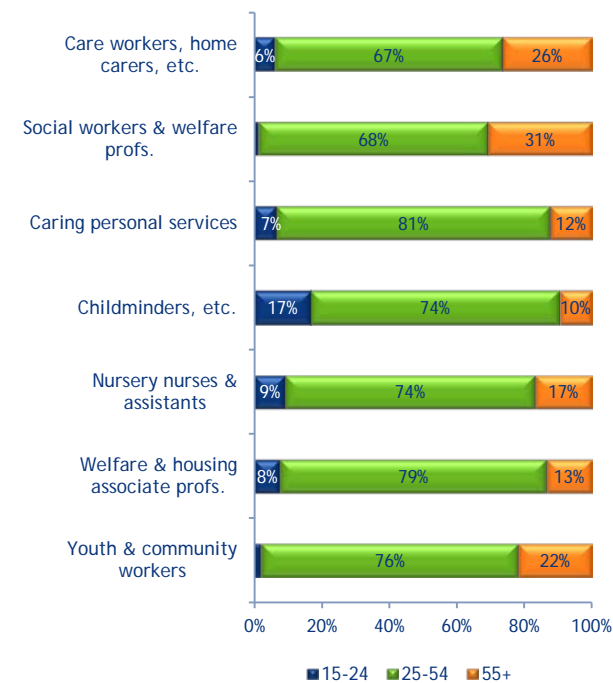
Figure 9.7.2 Average Annual Growth (%) in Selected Social and Care Occupations



Source: SLMRU (SOLAS) analysis of CSO data

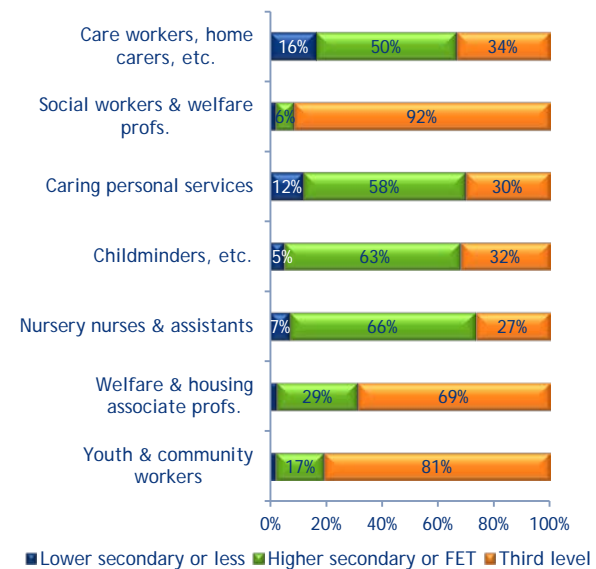
Note: Growth rates associated with occupations where employment is comparatively small are less reliable due to a greater risk of sampling error.

Figure 9.7.3 Age Profile of Selected Social and Care Occupations, Quarter 4 2016



Source: SLMRU (SOLAS) analysis of CSO data

Figure 9.7.4 Education Profile of Selected Social and Care Occupations, Quarter 4 2016




Source: SLMRU (SOLAS) analysis of CSO data

### Shortage Indicators

Ireland's ageing population will be a key driver of the future demand for care workers. The extent to which this requirement translates into employment growth will partly depend on Government policy, given that a significant share of the care services is publicly funded. Some employment expansion was already evident in recent job announcements including those by TTM Healthcare, Nua Healthcare and Ardmore Care.

Employment in child-minding declined in the most recent time period, with the fall in the number of children in the relevant age cohort (aged 3-5 years) likely to have an impact in the short term. However, government initiatives, such as the expansion of the ECCE scheme, have led to the introduction of minimum qualification levels for childcare workers (with leaders required to have a minimum of NQF Level 6 and a forthcoming EU requirement for a level 7 qualification); this may cause difficulties in recruiting



appropriately qualified staff due to issues such as wages.

In 2016, care workers and childminders combined accounted for 70% of employment in the selected social and care occupations. Employment was mostly part-time with females accounting for the majority of persons employed. These two occupations are characterised by high turnover rates, with 3,700 and 3,200 transitions respectively due to a change of employer in 2016. In addition, these were among occupations with the highest number of transitions between employment and economic inactivity.

In 2016, there were 6,700 awards in caring/nursing studies at level 5 and 4,675 in childcare (levels 5 and 6). There were also over 900 awards at third level awards (NFQ 6-8) in areas such as early childhood care,

health and education. In addition, there were approximately 3,300 job ready carers and 300 child-minders seeking employment in April 2017.

Given the high level of turnover, as well as the high volume of job vacancies advertised, it is recognised that some employers may be experiencing difficulty in attracting and retaining qualified care and childcare workers.

Although there are issues in relation to geographical mobility and a lack of attractiveness of the job (e.g. temporary contract), there is currently no shortage of care workers and childminders. However, changing demographics, along with Government policy, will impact on the demand for these skills in the short to medium term.

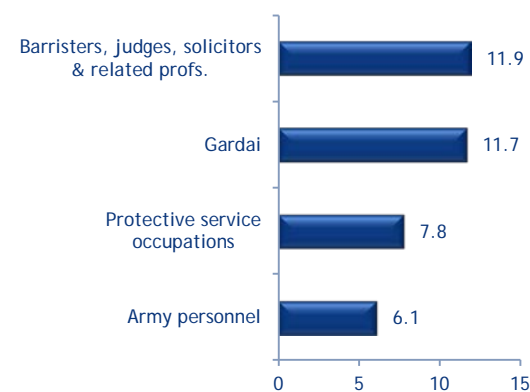
## 9.8 Legal and Security Occupations

- In 2016, there were approximately 37,500 persons employed in legal and security occupations, representing 1.9% of Ireland's workforce (Figure 9.8.1)
- Two thirds of overall employment was concentrated in public administration and defence, while a further one quarter was in professional, scientific and technical activities
- Over the period 2011 to 2016, overall employment levels in legal and security occupations contracted (by 2.2% on average annually, or 4,500 persons); this was the strongest rate of decline of the 17 occupational groups examined
- Over the five-year period, employment contracted in all occupations, excluding barristers, judges, solicitors and related professionals; the strongest declines (in absolute and relative terms) were observed for army personnel (5.3% on average annually) and Gardaí (4.7% on average annually) (Figure 9.8.2)
- Between 2015 and 2016, employment increased by 5.8% (compared to a 2.9% increase nationally); employment levels for most occupations changed marginally with 2,000 new jobs created over the period
- Over four fifths of persons employed in legal and security occupations was aged 25-54; one quarter of employed barristers, judges, solicitors and related professionals was 55 or older (Figure 9.8.3)
- Almost all persons employed as legal professionals (i.e. barristers, judges, solicitors and related legal professionals) had attained third level qualifications; the corresponding share was 42% for employed army personnel and 53% for protective service workers; 18% of

employed army personnel and 12% of protective services workers had attained lower secondary or less qualification (Figure 9.8.4)

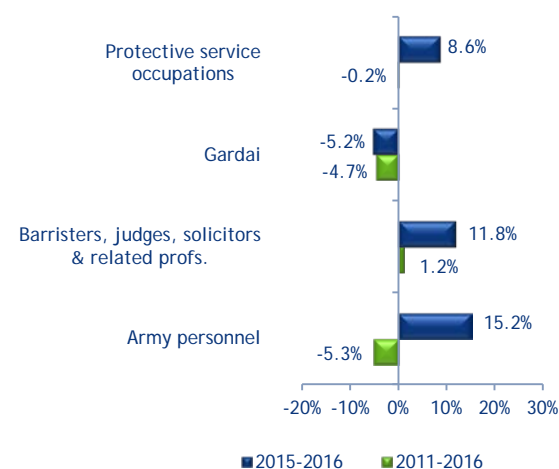
- While employment in most occupations was predominantly male, this was not the case for barristers, judges, solicitors and related professionals (57% female)
- Most persons employed in the selected occupations worked full-time and were Irish-nationals.

Figure 9.8.1 Numbers Employed (000s) in Selected Legal and Security Occupations, 2016



Source: SLMRU (SOLAS) analysis of CSO data

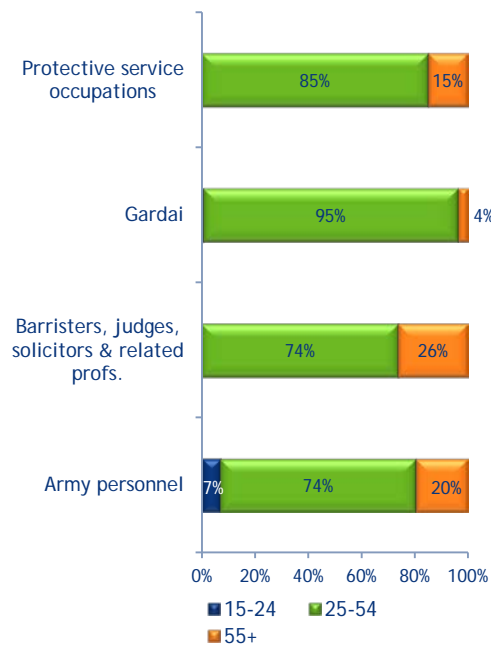
Figure 9.8.2 Average Annual Growth (%) in Selected Legal and Security Occupations



Source: SLMRU (SOLAS) analysis of CSO data

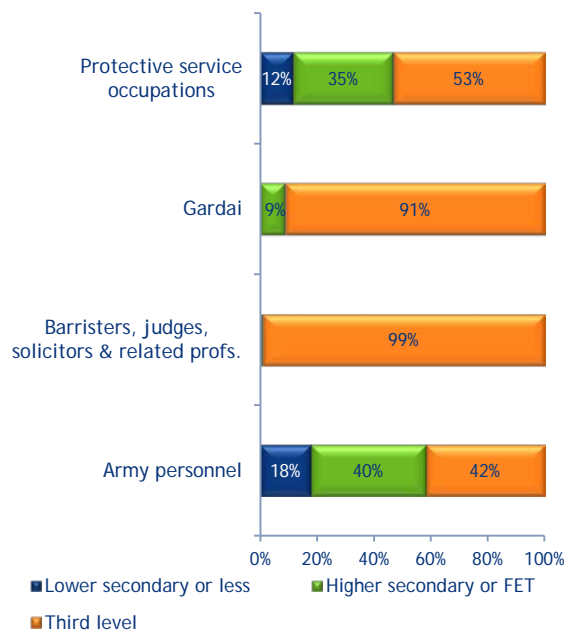
Note: Growth rates associated with occupations where employment is comparatively small are less reliable due to a greater risk of sampling error.

Figure 9.8.3 Age Profile of Selected Legal and Security Occupations, Quarter 4 2016



Source: SLMRU (SOLAS) analysis of CSO data

Figure 9.8.4 Education Profile of Selected Legal and Security Occupations, Quarter 4 2016



Source: SLMRU (SOLAS) analysis of CSO data

### Shortage Indicators

There were 11,900 legal professionals (including judges, barristers and solicitors) employed in Ireland in 2016. The demand for law graduates is not confined to the legal profession alone and there is a need for legal expertise across various business and industry sectors, particularly in relation to compliance in sectors such as aviation, finance (anti-fraud), security and data analytics/protection issues. With over 1,700 law graduates from NFQ level 8 and above courses in 2015, the supply from the education and training system appears to be sufficient.

Nonetheless, the Recruitment Agency Survey has identified an increased demand for corporate, taxation, compliance and merger lawyers.

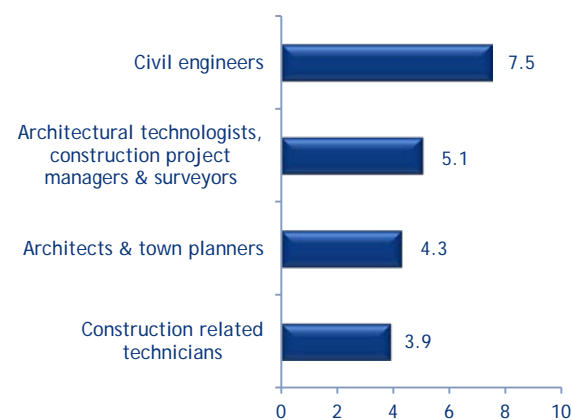


## 9.9 Construction Professional and Associate Professional Occupations

- In 2016, there were approximately 21,000 persons employed in the selected construction professional and associate professional occupations, representing 1% of total national employment (Figure 9.9.1)
- Approximately 60% of overall employment was concentrated in professional, scientific and technical activities (mostly architectural and engineering), while a further 14% was in construction
- Between 2011 and 2016, overall employment in the selected occupations expanded (almost 2,000, or 1.9% on average annually), similar to the national average rate; the strongest growth was observed for architects & town planners (4.4% on average annually) and construction related technicians (4.1% on average annually); in contrast, employment of civil engineers remained unchanged
- Between 2015 and 2016, while overall employment expanded by 6.1%, this amounted to an additional 1,200 persons; the strongest increase (in both absolute and relative terms) was observed for the combined group architectural technologists, construction project managers & surveyors
- Almost 90% of all employed construction professionals were aged 25-54; the share was almost 75% for construction associate professionals
- Approximately 95% of construction professionals in employment were third level graduates; the corresponding share was 65% for construction associate professionals

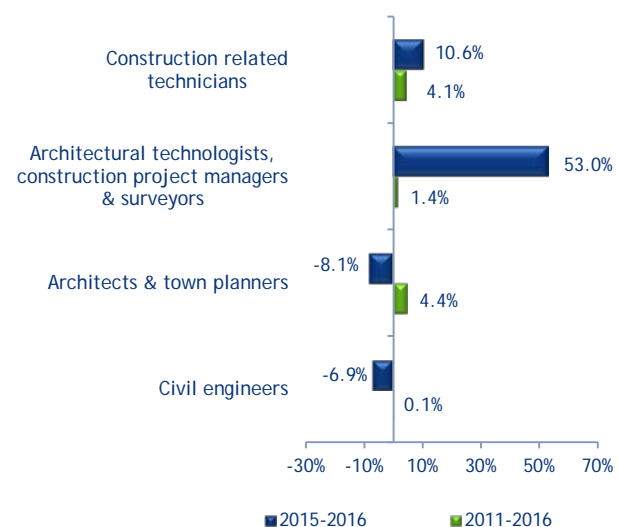
- Employment in most occupations was predominantly male; one third of employed architects & town planners were female, the highest representation of females
- The majority of persons employed in each occupation worked full-time and were Irish nationals.

Figure 9.9.1 Numbers Employed (000s) in Selected Construction Professional and Associate Professional Occupations, 2016



Source: SLMRU (SOLAS) Analysis of CSO data

Figure 9.9.2 Average Annual Growth (%) in Selected Construction Professional and Associate Professional Occupations

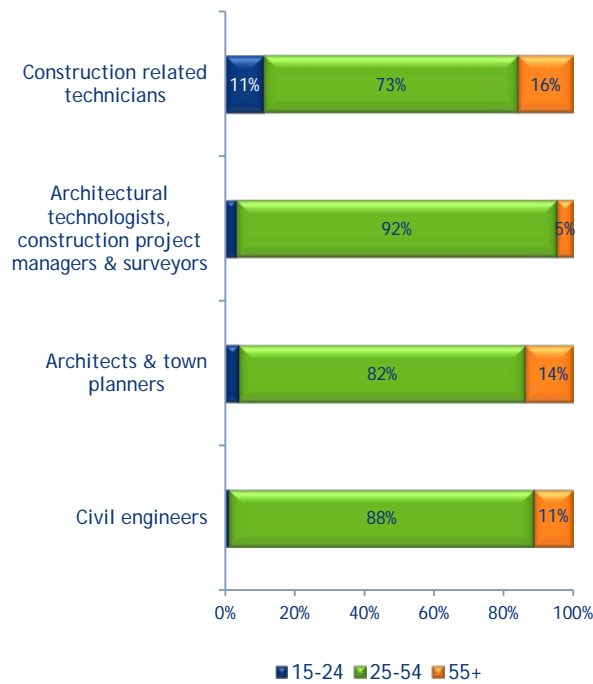


Source: SLMRU (SOLAS) Analysis of CSO data

Note: Growth rates associated with occupations where employment is comparatively small are less reliable due to a greater risk of sampling error.

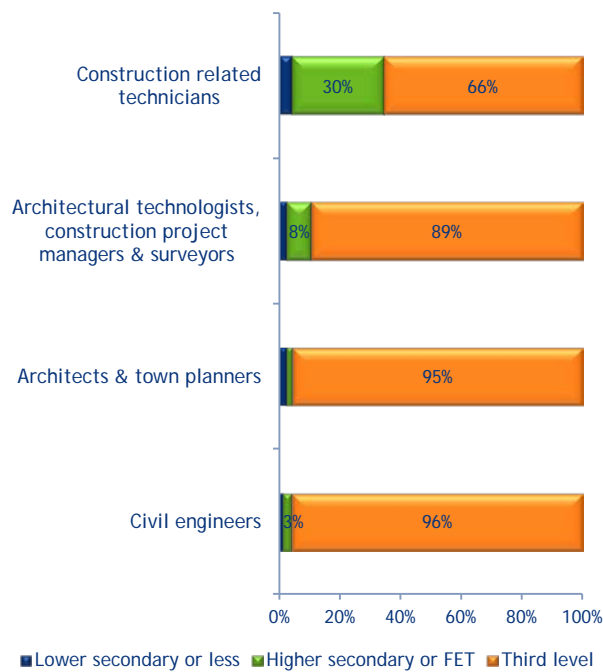


Figure 9.9.3 Age Profile of Selected Construction Professional and Associate Professional Occupations, Quarter 4 2016



Source: SLMRU (SOLAS) analysis of CSO data

Figure 9.9.4 Education Profile of Selected Construction Professional and Associate Professional Occupations, Quarter 4 2016



Source: SLMRU (SOLAS) analysis of CSO data

### Shortage Indicators


The outlook and prospects for the construction industry is the most positive in a decade. A recent DKM/CIF report<sup>44</sup> forecasts that the construction industry will experience strong growth in activity over the medium term, with the overall volume of construction output predicted to grow at an average annual rate of 9% over the period 2016 to 2020, and employing an estimated 213,000 workers, almost an additional 80,000 persons on 2016 levels.

The significant number of additional workers (including construction professionals and associate professionals) will be required to deliver the ambitious targets set out in the Government's €42 billion Capital Programme (investment in social infrastructure (schools, hospitals) and productive infrastructure (the national and non-national road network, water treatment services)); the Rebuilding Ireland Strategy, and the increasing demand from foreign direct investment companies for buildings (particularly office space).

Recent job announcements in the media supporting or expected to increase the volume of construction related investment, and hence the demand for skilled construction workers (although temporary jobs), include Apple, Cook Medical and Microsoft (data centres), Shire and Alexion Pharmaceuticals (biologics manufacturing plant), West Pharmaceuticals (manufacturing medical devices plant), Intel (manufacturing semiconductor technology facility).

Although strong employment growth is forecast for this sector, this relates primarily to skilled tradespersons, operatives and

<sup>44</sup> DKM/CIF, (2017), Demand for Skills in Construction to 2020



labourers. The five-year growth to 2020 for managers, professionals and associate professionals is expected to be in the region of 1,600 persons. Despite significant increases in employment for this sector since 2011, these selected occupations grew by 1,900 during this period.

The reduced intake in higher level education due to the recession has led to a continued fall in the output from construction-related courses, particularly impacting NFQ level 7 and 8 courses, with overall output declining by 50% to 1,700 in 2015. The number of graduates from level 8 civil engineering courses in 2015 amounted to 160, compared to 350 in 2011. In 2015, there were over 190 awards in surveying; 150 were in quantity surveying/construction economics and a further 20 in building surveying. The supply

of skills from the live register is also tightening; in April 2017, there were 75 job ready civil engineers, 85 architects and 40 architectural technologists with NFQ level 8 or above qualifications seeking employment.

The reduced supply of skills for these occupations is expected to impact the labour market as demand for these skills increases. Shortages of the following skills have been identified:

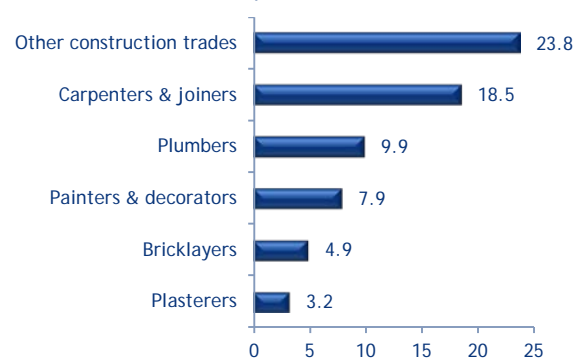
- construction project managers (with relevant experience and specialist knowledge)
- quantity surveyors, building services/structural/site engineers.

## 9.10 Construction Craft Occupations

- In 2016, there were approximately 68,000 persons employed in the selected construction craft occupations (Figure 9.10.1), representing 3.4% of the national workforce
- Over 80% of overall employment was concentrated in construction
- Between 2011 and 2016, overall employment increased by 11,000, or 3.6% on average annually (compared to 1.8% nationally); employment growth was observed for most occupations, with the strongest rates for bricklayers (8.7% on average annually), painters & decorators (6.8% on average annually), carpenters & joiners (3.9% on average annually); the largest absolute increase was observed for other construction trades, carpenters & joiners (Figure 9.10.2)
- Between 2015 and 2016, while overall employment expanded by 3.9% (2,600), the numbers employed in most occupations remained relatively static; the most pronounced increase was observed for bricklayers (in both relative and absolute terms)
- Most persons employed in each occupation were aged 25-54; one-fifth of employed painters & decorators and other construction trades was aged 55 or older, the most mature workforces (Figure 9.10.3)
- The share of persons employed in the selected construction craft occupations who had attained higher secondary/FET qualifications (62%) and lower secondary or less qualifications (27%) was well above the respective national average share of 38% and 15%; the share who had attained third level qualifications (11%) was considerably below the national average share (47%) (Figure 9.10.4)

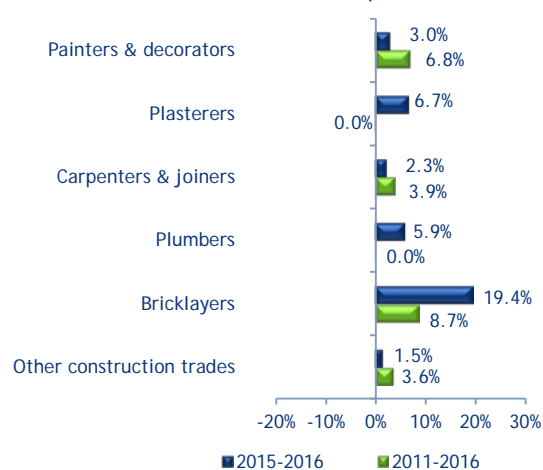
- Employment in most occupations was almost exclusively male
- Most construction craft workers in each occupation were in full-time employment
- Construction craft workers were predominantly Irish-nationals; at just over one-quarter, the share of non-Irish workers was above average for plasterers and painters & decorators
- In quarter 4 2016, the overall unemployment rate for construction craft workers (aged 15-74) was 7.6% (compared to 6.7% nationally).

Figure 9.10.1 Numbers Employed (000s) in Selected Construction Craft Occupations, 2016



Source: SLMRU (SOLAS) analysis of CSO data

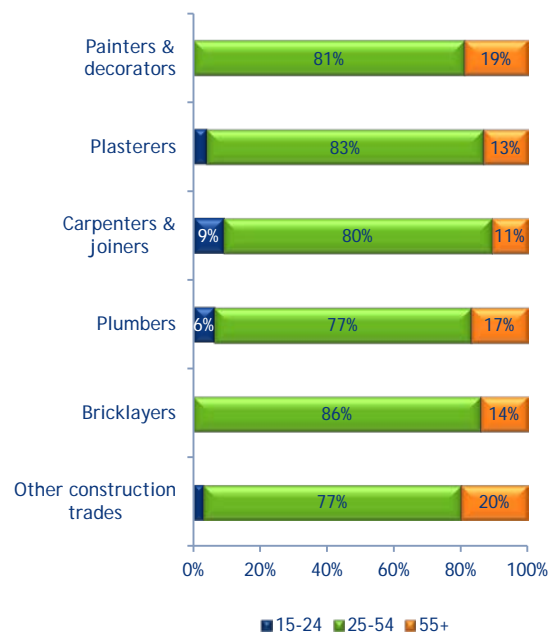
Figure 9.10.2 Average Annual Growth (%) in Selected Construction Craft Occupations



Source: SLMRU (SOLAS) analysis of CSO data

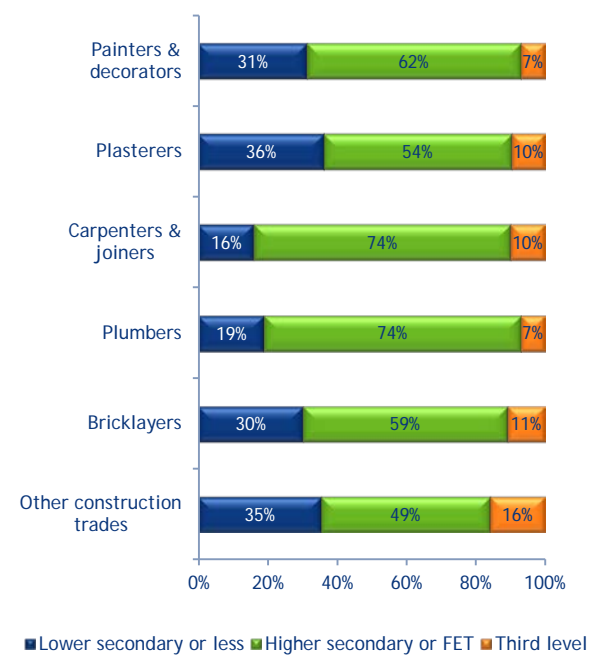
Note: Growth rates associated with occupations where employment is comparatively small are less reliable due to a greater risk of sampling error.

Figure 9.10.3 Age Profile of Selected Construction Craft Occupations, Quarter 4 2016



Source: SLMRU (SOLAS) analysis of CSO data

Figure 9.10.4 Education Profile of Selected Construction Craft Occupations, Quarter 4 2016



Source: SLMRU (SOLAS) analysis of CSO data


## Shortage Indicators

Job opportunities for construction craftspersons are primarily concentrated in the construction of commercial buildings at present (arising from the continued strong demand for office and industrial space to facilitate the expansion of activities of the FDI companies in sectors such as ICT, Pharma), but are also extending to the residential sector in Dublin and Cork.

DKM and SOLAS predict an additional 40,000 skilled craftspersons will be required for the construction industry by 2020, with demand particularly strong, in absolute terms, for carpenters and joiners and plasterers. Employment of most skilled construction craftspersons is expected to double, or almost double, recovering above 2015 levels, although remaining below pre-recession levels.

Employment growth for the selected construction craftspersons in recent years has been slow but steady. The volume of vacancy notifications has been increasing, particularly for apprentices. The transitions data point to a high volume of movement between employment and unemployment (with net gains for those moving into employment) and also significant movement between employers (at over 9,000). As expansion for these occupations was relatively small since 2015 (at 2,600), movements between employers is thought to be the main contributing factor relating to the almost 14,000 new job hires in 2016. Of these, almost two thirds held higher secondary or FET qualifications; carpenters accounted for the largest share of new hires.

In terms of supply, the current level of apprentice intake, particularly in wet trades (bricklayers, plasterers, painters and



decorators, floor and wall tilers), is very low (double digits). As it takes four years for an apprentice to fully qualify, the training output is likely to lag behind the demand arising from the anticipated strong growth in residential development. This may lead to shortages in the medium term.

A considerable overhang of construction skills remains in the Irish labour market: although the number of construction craftspersons seeking employment through the Public Employment Service (PES) has declined in recent years, in April 2017 there were 8,500 job ready job seekers from these occupations collectively. It should be noted, however, that for the most part, these individuals had at most a Leaving Certificate. As a result, the availability of qualified tradespersons (i.e.

NFQ 6 advanced certificate) may become an issue as the recovery accelerates.

Although there are no overall shortages in these occupations, there are niche areas where issues with recruiting are occurring. Future shortages are anticipated if the sector recovers as expected, particularly in the more labour intensive residential sector, and if the output from apprenticeships is not sufficient to meet demand. A shortage of skills has been identified for the following occupations:

- curtain wallers
- glaziers
- steelfixers, steel erectors
- pipelayers
- shuttering carpentry
- shift managers and supervisors.

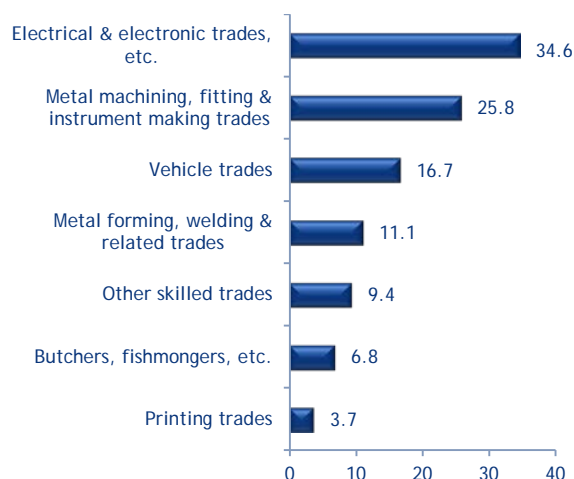
### 9.11 Other Craft Occupations

- In 2016, approximately 110,000 persons were employed in other craft occupations, representing 5.4% of the national workforce (Figure 9.11.1)
- Approximately 75% of overall employment was concentrated in three sectors: manufacturing (36%), wholesale and retail (20%) and construction (18%)
- Just over 70% of overall employment was concentrated in three trades: electrical & electronic (32%), metal machining, fitting and instrument making (24%) and vehicle (15%)
- In 2016, overall employment levels were similar to those observed in 2011 (average annual growth was only 0.2%), and 3.9% (or 4,500) lower than the 2015 level
- Between 2011 and 2016, however, the change in employment varied by occupation, with the strongest growth observed for metal forming, welding & related trades (8.8% on average annually), metal machining, fitting & instrument making trades (3.9% on average annually); the latter group of trades recorded the largest increase in the numbers employed (4,500); in contrast, the strongest rate of decline was observed for butchers, fishmongers & related trades (5% on average annually); employment levels of other skilled and printing trades was virtually static (Figure 9.11.2)
- Between 2015 and 2016, employment levels for most occupations did not change significantly, with the most pronounced change observed for metal machining, fitting & instrument making trades (decline of 2,600), and vehicle trades (decline of 2,000)
- Approximately 75% of all persons employed in the selected occupations was aged 25-54; approximately one fifth of

employed butchers, fishmongers & related trades and other skilled trades workers was aged 55 or older (Figure 9.11.3)

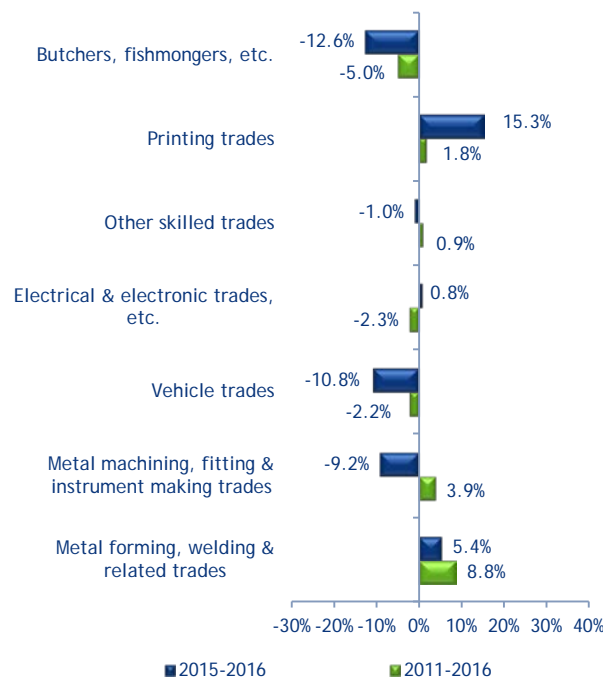
- Almost 60% of all persons employed in the selected occupations had attained higher secondary/FET qualifications, considerably above the national average of 38%; in contrast, the share with third level qualifications (25%) was well below the national average of 47%; however, the share with third level qualifications varied by occupation: just over one third of metal machining, fitting & instrument making trades workers had attained this level of education; in contrast, the corresponding share was only 9% for butchers, fishmongers & related trades
- Approximately 40% of all employed butchers, fishmongers & related trades were non-Irish nationals, three times above the national average, and one of the highest shares among occupations in the national workforce
- Employment in most occupations was predominantly male; the workforce of other skilled trades had the highest female representation (at 39%).

Figure 9.11.1 Numbers Employed (000s) in Selected Other Craft Occupations, 2016



Source: SLMRU (SOLAS) analysis of CSO data

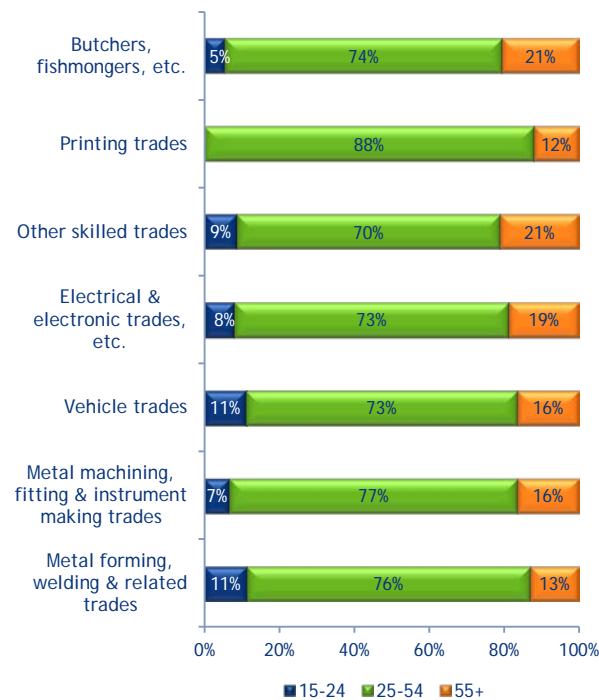
Figure 9.11.2 Average Annual Growth (%) in Selected Other Craft Occupations



Source: SLMRU (SOLAS) analysis of CSO data

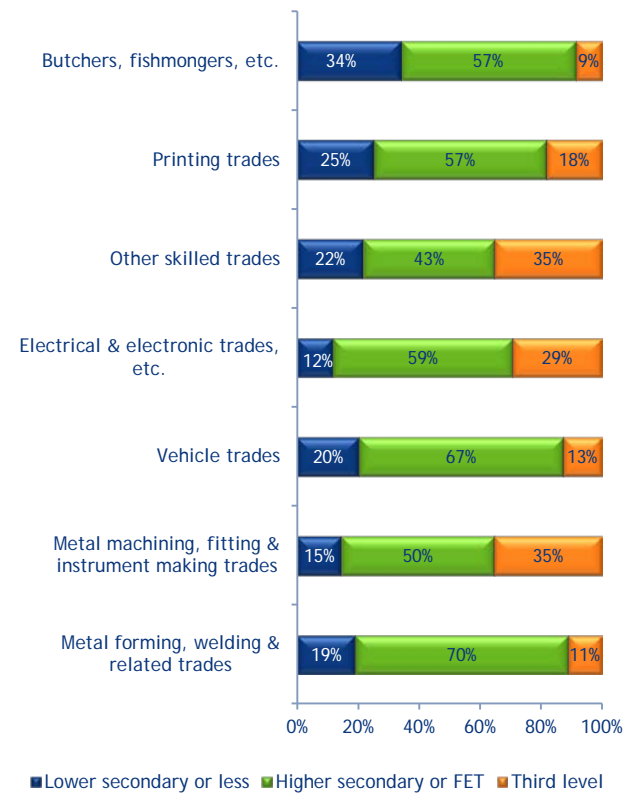
Note: Growth rates associated with occupations where employment is comparatively small are less reliable due to a greater risk of sampling error.

Figure 9.11.3 Age Profile of Selected Other Craft Occupations, Quarter 4 2016



Source: SLMRU (SOLAS) analysis of CSO data

Figure 9.11.4 Education Profile of Selected Other Craft Occupations, Quarter 4 2016



Source: SLMRU (SOLAS) analysis of CSO data

### Shortage Indicators

**Electricians:** Employment of those in electrical/electronic trades is concentrated in construction (41%), industry (19%) and the ICT sector (14%). The volume of vacancy notifications has been increasing in recent years, although overall employment levels have remained static. Replacement demand for this occupation is far higher than average, although this may be due to coding issues relating to IT user support technicians/IT engineers. In 2016, 31 employment permits were issued, primarily for field service engineers entering on intra-company transfers.

In terms of supply, the number of electrical apprentices registering annually has been growing steadily since 2011. In addition,



almost 1,500 job ready electricians were available in April 2017 (albeit a significant portion of these job seekers held at most Junior Certificate qualifications). Despite this supply, demand for electricians is expected to increase, with DKM indicating a further 5,500 electricians will be required by 2020; as such, it may become increasingly difficult for employers to source suitably qualified electricians. Indeed, employers are already reporting difficulties in sourcing electricians with specific skills in areas such as computer based industrial control systems, indicating that shortages may begin to emerge for this occupation in the short-medium term.

**Welders** - while this occupation experienced employment growth in recent years, a high volume of movement between employers (over 1,600 identified in 2016) is also a contributing factor to the increased number of vacancy notifications for this occupation; vacancies for welders were primarily for those with TIG/MIG, ARC, butt/electric fusion skills; on the supply side, 160 FET minor awards were made in 2016 in manual arc and oxy-acetylene welding; there were also 1,000 job ready job seekers previously employed as welders in April 2017, although over half held a Junior Certificate qualification or less; nonetheless, a shortage of TIG/MIG welders continues to persist, with demand expected to remain strong particularly due to the growth in the construction and metal fabrication/machining (e.g. high tech manufacturing) industries.

**Tool makers/fitters** - the strong performance of the high tech manufacturing sector is driving the demand for tool making skills; in response to the growing demand, a number of new courses and modules have been introduced in recent years, including two new manufacturing apprenticeships (at NFQ levels

6 and 7) have commenced, led by the Irish Medical Devices Association (IMDA), with an anticipated 100 annual enrolments; this is in addition to the 38 awards made through FET courses in 2016 (an increase from 10 in 2013) and an increase in apprentice intake on the tool making apprenticeship; nonetheless, shortages of tradespersons with expertise in making highly complex precision tools are expected to persist in the short run.

**Butchers/de-boners** - despite a fall in the overall number of butchers/de-boners employed, a high demand exists driven by the strong performance of the meat processing industry; over two fifths of those employed as butchers/deboners were non-Irish nationals in 2016, with 160 new employment permits issued; an NFQ level 5 apprenticeship in butchery is under development in order to meet demand for this occupation; however, the problem with attracting and retaining skilled butchers/de-boners following completion of their training is expected to remain a challenge for the meat industry in Ireland, with the issue likely to be exacerbated by the greater availability of job opportunities across other growing sectors of the economy.



## 9.12 Arts, Sports and Tourism Occupations

- In 2016, approximately 183,000 persons were employed in the selected arts, sports and tourism occupations (Figure 9.12.1), representing 9% of Ireland's workforce
- There were 134,000 persons employed in hotel, restaurant & publican related occupations, 29,000 persons in artistic, literary & media occupations and 20,000 persons in leisure, sports & travel service occupations
- Between 2011 and 2016, overall employment expanded by 4% on average annually, above the national average of 1.8%; since 2012, employment has increased steadily, with the level in 2016 33,000 above the 2011 level of 150,000
- Over the five-year period, the most pronounced employment growth (in both rates and absolute terms) was observed for waiting staff (10.3% on average annually, or 11,500), chefs & cooks (8.2% on average annually, or 10,500); in contrast, the strongest rates of decline were observed for leisure & sports managers (5.9% on average annually), publicans, and leisure & travel service occupations (jointly at 2% on average annually), although the absolute decreases were small in magnitude (Figure 9.12.2)
- Between 2015 and 2016, overall employment levels expanded by 9% (or 15,000 persons); the largest absolute increases were observed for waiting staff (5,500) and chefs & cooks (almost 4,000)
- The workforce of both waiting and bar staff was the youngest among the selected occupations, with 42% and 33% aged 15-24 respectively (Figure 9.12.3)
- At just over 90%, the overall workforce of media professionals had the highest share

of third level graduates; in contrast, the share was 20% for publicans (Figure 9.12.4)

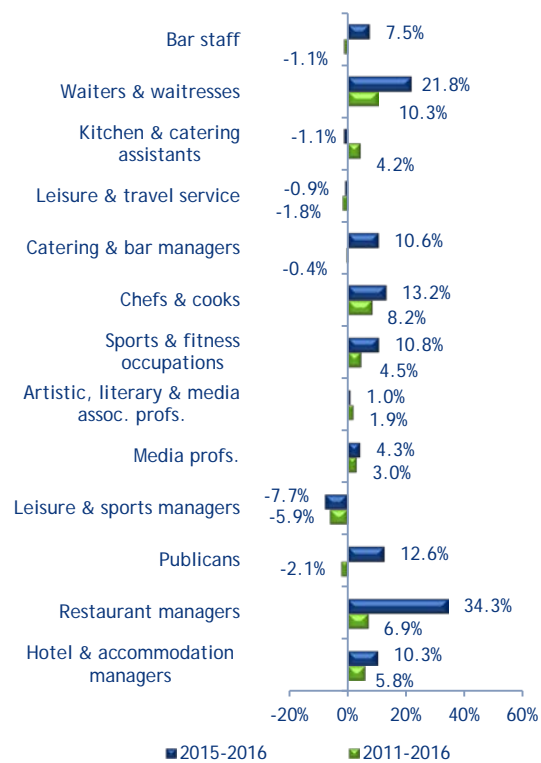
- While the overall workforce of the selected occupations was almost gender balanced, there was a higher representation of females employed as waiting staff (almost 75%), kitchen & catering assistants, and catering & bar managers (each at approximately 70%); the workforce of both bar staff and publicans was mostly male (each at approximately 70%)
- The prevalence of part-time work was the highest for waiting staff (close to 66%), among the highest shares across all occupations in the national workforce; the share was 50% for kitchen & catering assistants
- Approximately 45% of employed restaurant managers were non-Irish nationals, considerably above the national average share of 15%; the corresponding share was 40% for both chefs & cooks, and kitchen & catering assistants.

Figure 9.12.1 Numbers Employed (000s) in Selected Arts, Sports and Tourism Occupations, 2016



Source: SLMRU (SOLAS) analysis of CSO data

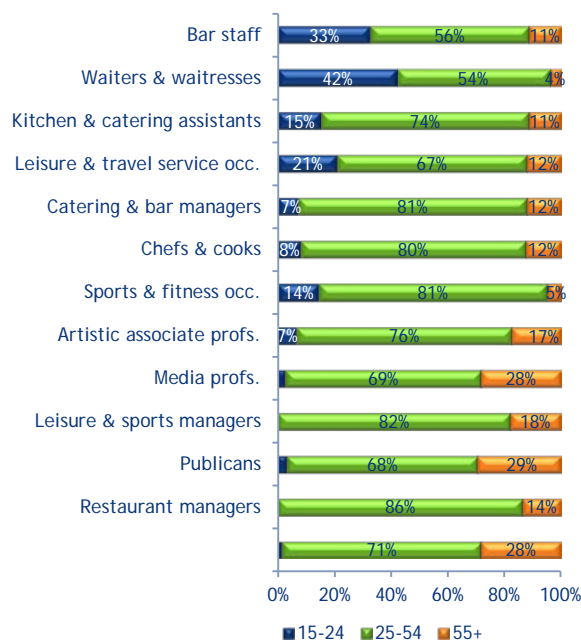
Figure 9.12.2 Average Annual Growth (%) in Selected Arts, Sports and Tourism Occupations



Source: SLMRU (SOLAS) analysis of CSO data

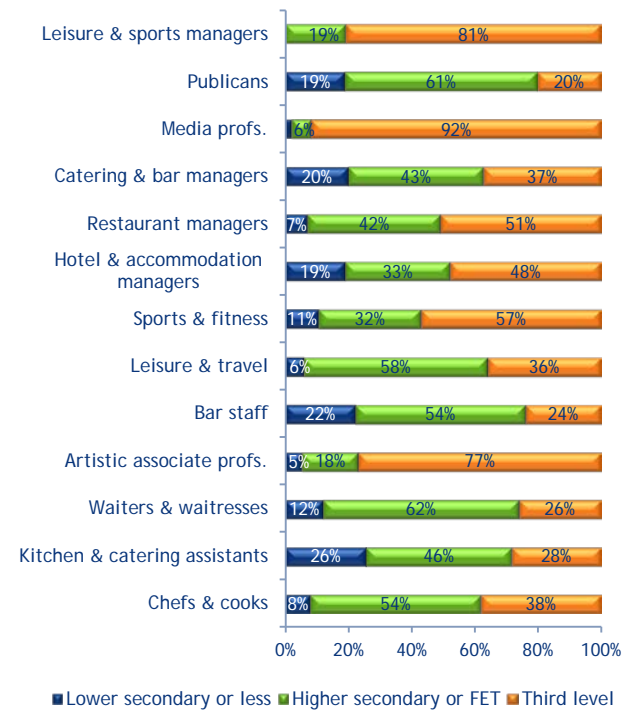
Note: Growth rates associated with occupations where employment is comparatively small are less reliable due to a greater risk of sampling error.

Figure 9.12.3 Age Profile of Selected Arts, Sports and Tourism Occupations, Quarter 4 2016



Source: SLMRU (SOLAS) analysis of CSO data

Figure 9.12.4 Education Profile of Selected Arts, Sports and Tourism Occupations, Quarter 4 2016




Source: SLMRU (SOLAS) analysis of CSO data

### Shortage Indicators

The number of persons employed in hospitality related services grew strongly between 2015 and 2016, particularly for chefs, waiters and restaurant managers. These occupations are characterised by a higher than average volume of transitions between employment, unemployment and inactivity. A half of those exiting employment to inactivity did so in order to study; a high level of movement between employers was particularly evident for chefs and waiters. Hospitality occupations also had a high share of non-Irish nationals employed; at least a third of chefs, waiters and kitchen assistants were non-Irish; the number of new employment permits issued for chefs grew to 205 in 2016.

The increasing number of job vacancies for hospitality related occupations are a



reflection of both the growth in the sector as well as the high volume of movement within these roles. This high level of transitions indicates that employment in these occupations is often transitory in nature. Although a shortage of hotel and restaurant managers has not been identified, employers are experiencing difficulties due to issues in relation to retention, the location of employment (rural vs. urban), and level of experience.

In terms of supply, there were over 1,000 job ready job seekers chefs on the Live Register in April 2017, although almost three-quarters of those held leaving cert qualifications or below. The supply from the education and training system has continued to increase, with the number of chefs qualifying from courses at NFQ levels 5-8 at almost 900 in

2015/16, up from 600 in 2013/2014. A two-year commis chef apprenticeship (NFQ level 6) is due to commence in 2017, with an expected annual intake of over 100 apprentices; further development of apprenticeships for chefs de partie, sous chefs and executive chef is on-going.

Despite the increased supply from the education and training system, there remains a shortage of chefs. While the supply is sufficient to meet the demand for lower skilled hospitality roles (waiters/bar staff and catering assistants), the availability of persons willing to take up those roles is expected to be negatively affected by the greater availability of job opportunities across other growing sectors.

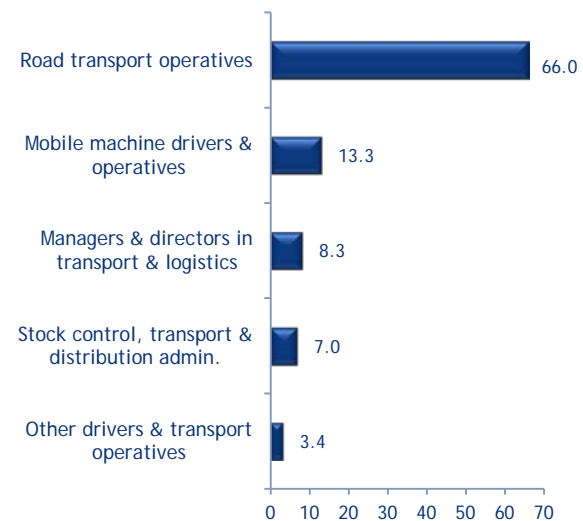
### 9.13 Transport and Logistics Occupations

- In 2016, there were approximately 98,000 persons employed in transport and logistics occupations, representing 4.8% of the national workforce
- Approximately two thirds of those employed (66,000 persons) were road transport operatives (predominantly large goods vehicle and taxi drivers) (Figure 9.13.1)
- In 2016, overall employment levels were 7.7% (7,000) higher than 2011 levels, and 9.4% (8,500) higher than those observed in 2015
- Between 2015 and 2016, employment expanded for most occupations, with the strongest growth rates observed for stock control, transport & distribution administrative occupations (29.7%), managers & directors in transport & logistics (21.2%) and mobile machine drivers & operatives (13.5%); in contrast, employment declined for other drivers & transport operatives (18.9%); the largest absolute increase was observed for road transport operatives (4,600) (Figure 9.13.2)
- Over a quarter of all employed road transport operatives was aged 55 or older (two fifths of all employed bus & coach drivers was in this age group), the most mature workforce of the selected occupations (Figure 9.13.3)
- The education profile of persons employed in the selected occupations was skewed towards lower levels of educational attainment: almost 40% had lower secondary or less qualifications (well above the national average of 15%)
- The majority of those employed in transport occupations were male; two fifths of stock control, transport &

distribution administrative workers were female

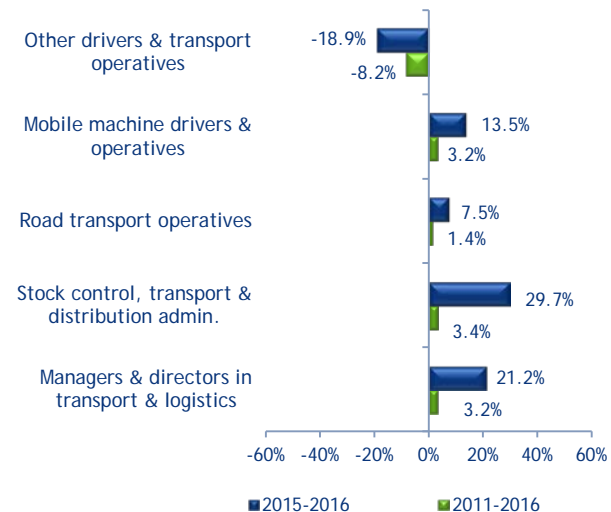
- Most persons worked full-time in the selected occupations.

Figure 9.13.1 Numbers Employed (000s) in Selected Transport and Logistics Occupations, 2016



Source: SLMRU (SOLAS) analysis of CSO data

Figure 9.13.2 Average Annual Growth (%) in Selected Transport and Logistics Occupations

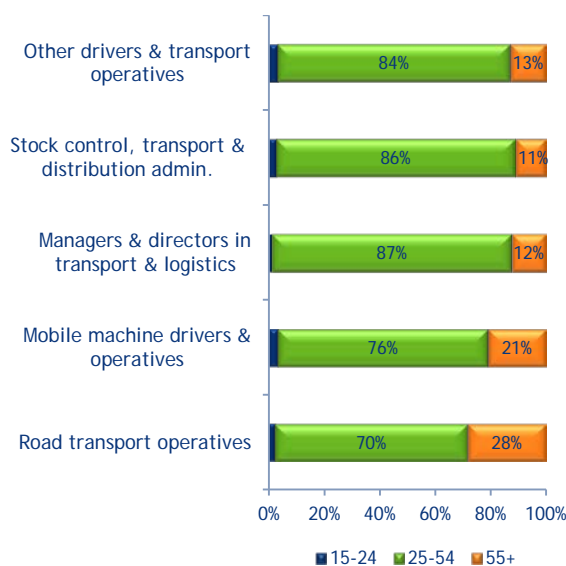


Source: SLMRU (SOLAS) analysis of CSO data

Note: Growth rates associated with occupations where employment is comparatively small are less reliable due to a greater risk of sampling error.

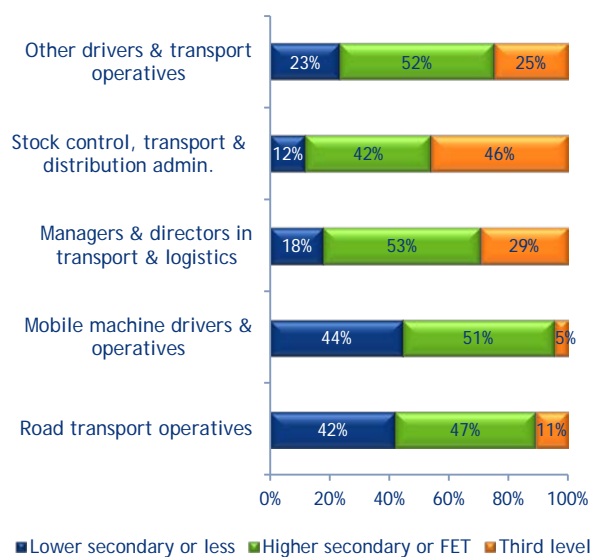
Note: Aircraft pilots, ship officers and air traffic controllers are excluded as the numbers employed in those occupations are too small for reliable statistical analysis.

Figure 9.13.3 Age Profile of Selected Transport and Logistics Occupations, Quarter 4 2016



Source: SLMRU (SOLAS) analysis of CSO data

Figure 9.13.4 Education Profile of Selected Transport and Logistics Occupations, Quarter 4 2016



Source: SLMRU (SOLAS) analysis of CSO data

### Shortage Indicators

Although the numbers employed in managerial and administrative transport positions are relatively small, growth has been observed since 2015. Replacement demand for these occupations was low in 2016


although turnover was above average for management roles, while the volume of vacancy notifications was low. The extent to which Brexit will impact on the international haulage sector is as yet unclear although a recent Department of Finance report suggests that of all services sectors, transport is by far the sector most exposed to changes in access to the UK market. As such, the future demand for skills is difficult to determine in the short-medium term.

In 2016, there were almost 100 major awards made in logistics/distribution & supply chain logistics, mostly at NFQ level 5. At third level, the latest data shows that there were 265 awards in supply chain management (mainly at level 8 & 9) and a further 130 awards in transport management/operation (mostly at levels 7 & 8). In April 2017, job ready job seekers included a number of persons previously employed in managerial and administrative transport positions.

Although most of the indicators examined in relation to managerial and administrative transport occupations, such as volume of vacancies, turnover and number of available jobseekers, do not signal a short supply, the Recruitment Agency Survey identified a number of areas where employers are having difficulty in sourcing a small number of suitably qualified candidates including:

- purchasing managers and senior buyers
- senior planner (supply chain management including demand forecasting)
- distribution specialists with technical expertise (biopharma)
- administrative roles in procurement, supply chain and logistics with languages.

In terms of drivers, although some employment growth occurred since 2015, this



was exceeded by the number of persons starting with a new employer in these occupations in 2016. This indicates that a high level of turnover was responsible for a significant share of the vacancy notifications. Despite demand for these drivers, approximately 7,000 job ready job seekers were recorded in April 2017, although many had attained less than Leaving Certificate level education. In addition, the Road Safety Authority awarded over 500 Driver CPC certificates and the Chartered Institute of Logistics and Transport awarded 170 ADR driving certificates to learners on SOLAS funded courses in 2016.

Nonetheless, employers are still experiencing difficulty in sourcing candidates for these roles and given that almost one in three truck drivers was over 55, replacement demand will remain strong in the short-medium term. In

order to alleviate some of the issues in this area, a number of employment permits have been allocated for HGV drivers who have a CE or C1E driving licence. A three year NFQ level 5 HGV driver apprenticeship is also currently in development. With the increase in construction activity, particularly in Dublin, demand for mobile machine drivers has increased significantly in recent years.

Sourcing and retaining suitably qualified drivers has been identified for

- heavy goods vehicle (HGV) drivers/articulated truck drivers/rigid truck with Certificate of Professional Competence (CPC)
- fork lift drivers (e.g. with VNA and/or turret license, reach truck)
- 360 machine drivers (14 ton).



## 9.14 Administrative and Secretarial Occupations

- In 2016, there were approximately 151,000 persons employed in administrative and secretarial occupations, representing 7.5% of Ireland's workforce (Figure 9.14.1)
- Between 2011 and 2016, while overall employment remained virtually static; the change in employment varied by occupation; the strongest growth rates were observed for office managers & supervisors (6.4% on average annually), records & library clerks (4.4% on average annually), and receptionists (4.2% on average annually); the largest absolute increase was observed for other administrators; in contrast, the strongest decline (expressed in both rates and levels) was observed for government administrative occupations (3.2% on average annually) (Figure 9.14.2)
- Between 2015 and 2016, employment expanded by 1.8% (2,600); the strongest increases were observed for receptionists and government administrative occupations
- At least 68% of those employed in each occupation was aged 25-54; the age profile of employed receptionists was the youngest, with 10% aged 15-24; in contrast, PAs & other secretaries were the most mature, with 30% aged 55 or older (above the national average) (Figure 9.14.3)
- The share of persons employed in administrative and secretarial occupations who had attained higher secondary/FET qualifications was well above the national average (55% compared with 38%); in contrast, the overall share with third level qualifications was below the national average (39% compared with 47%); however, the share was above the

national average for records & library clerks (51%) and office managers & supervisors (57%) (Figure 9.14.4)

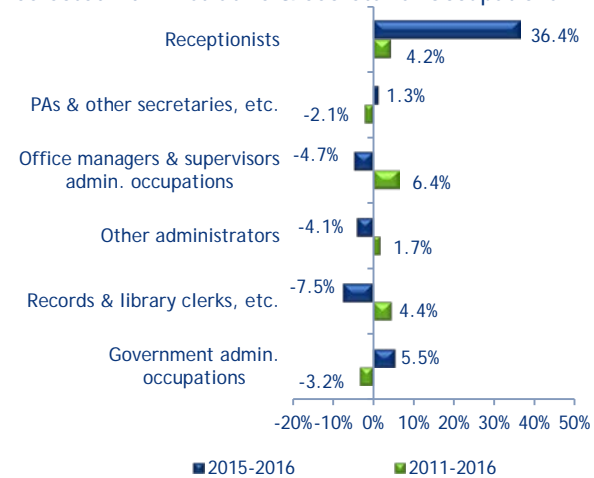
- The majority of persons employed in each occupation was female
- The share of persons in part-time employment was above the national average for PAs & other secretaries (40%), receptionists (48%), and other administrators (31%).

Figure 9.14.1 Numbers Employed (000s) in Selected Administrative and Secretarial Occupations, 2016



Source: SLMRU (SOLAS) analysis of CSO data

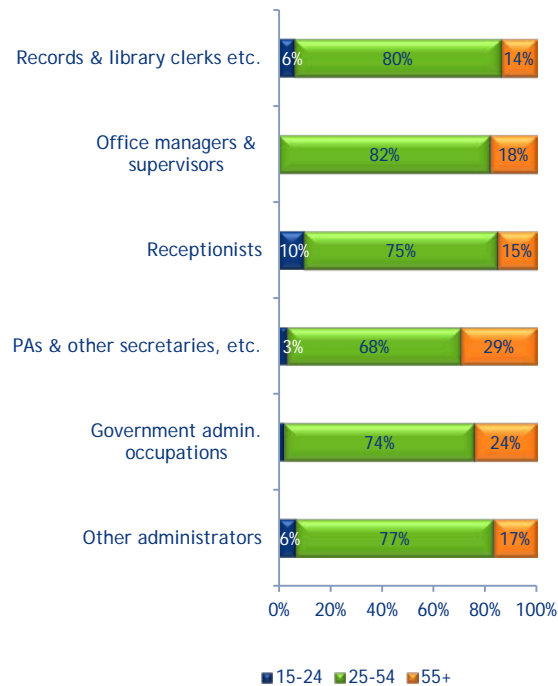
Figure 9.14.2 Average Annual Growth (%) in Selected Administrative & Secretarial Occupations



Source: SLMRU (SOLAS) analysis of CSO data

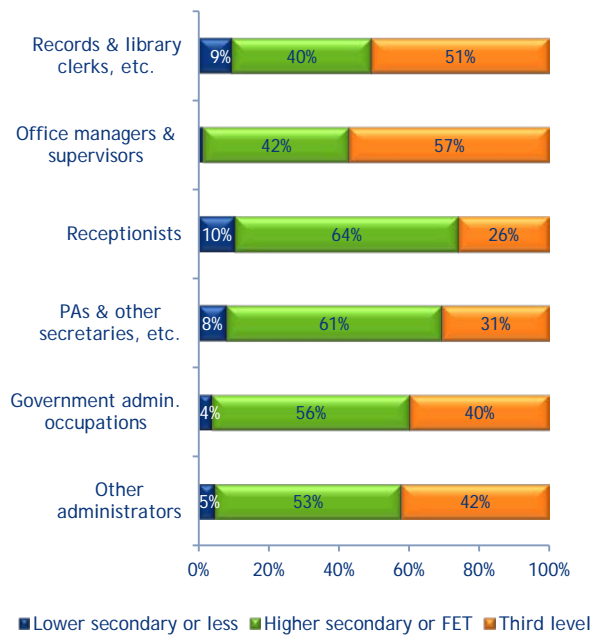
Note: Growth rates associated with occupations where employment is comparatively small are less reliable due to a greater risk of sampling error.

Figure 9.14.3 Age Profile of Selected Administrative and Secretarial Occupations, Quarter 4 2016



Source: SLMRU (SOLAS) analysis of CSO data

Figure 9.14.4 Education Profile of Selected Administrative and Secretarial Occupations, Quarter 4 2016



Source: SLMRU (SOLAS) analysis of CSO data

### Shortage Indicators

Vacancies occurred frequently in 2016 for administrative and secretarial roles. However, most administrative occupations experienced declines in employment, with evidence of a significant share of job openings occurring due to replacement (over 10,000 exits from employment to inactivity) and turnover (almost 12,000 transitions between employers). There were over 10,000 persons classified as job ready job seekers in April 2017 who had previously been employed in administrative occupations, across all education levels. In addition, there were over 4,200 QQI awards in business and administration made to FET learners in 2016, mostly at NFQ level 5. Supply is estimated to be sufficient to meet any current demand and no shortages exist at present.



## 9.15 Sales and Customer Service Occupations

- In 2016, there were approximately 226,000 persons employed in sales and customer service occupations, representing 11.2% of Ireland's workforce
- There were 127,000 persons employed as sales assistants – the largest workforce nationally (Figure 9.15.1)
- Between 2011 and 2016, overall employment increased very modestly (by 0.8% on average annually, compared to 1.8% nationally); the strongest growth rates were observed for advertising, marketing & sales directors (7.8% on average annually), sales supervisors (6.3% on average annually), and customer service occupations (5.9% on average annually); in contrast, the strongest rate of decline was observed for sales related occupations (3.9% on average annually)
- Over the five-year period, employment increased by approximately 9,000 persons, with the largest absolute increases observed for customer service occupations (5,800 persons), sales accounts & business development managers, and advertising, marketing & sales directors (each by approximately 2,000 persons); meanwhile, the largest absolute decreases were observed for sales assistants, and sales related occupations (each by approximately 2,000 persons)
- Between 2015 and 2016, overall employment expanded by 1.5% (compared to 2.9% nationally), or 3,500 persons; the largest absolute increase was observed for sales assistants, and customer service occupations (each by 1,600 persons); while the largest decrease was observed for estate & conference managers, and sales related occupations (each by

approximately 1,500 persons) (Figure 9.15.2)

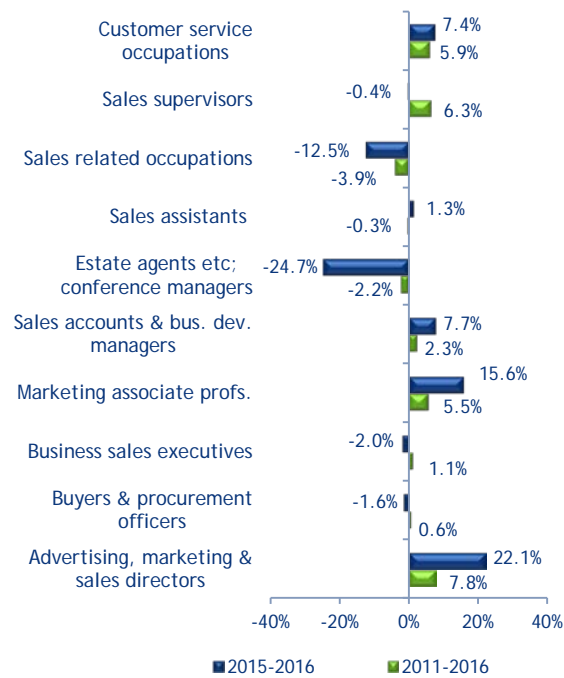
- The age profile of employed sales assistants was the youngest, with 30% aged 15-24 (Figure 9.15.3)
- The share employed in most sales and customer service occupations with third level qualifications was higher than the national average; the only exceptions were for sales assistants, sales related occupations, and sales supervisors (with below average shares), and business sales executives (similar to the national average) (Figure 9.15.4)
- Two thirds of the workforce of both sales assistants, and marketing associate professionals were female, the highest share among the selected occupations
- Over a half (53%) of all employed sales assistants worked part-time – one of the highest shares among all occupations in the national workforce
- Two fifths of employed sales supervisors were non-Irish nationals (over double the national average).

Figure 9.15.1 Numbers Employed (000s) in Selected Sales and Customer Service Occupations, 2016



Source: SLMRU (SOLAS) analysis of CSO data

Figure 9.15.2 Average Annual Growth (%) in Selected Sales and Customer Service Occupations



Source: SLMRU (SOLAS) analysis of CSO data

Note: Growth rates associated with occupations where employment is comparatively small are less reliable due to a greater risk of sampling error.

Figure 9.15.3 Age Profile of Selected Sales and Customer Service Occupations, Quarter 4 2016



Source: SLMRU (SOLAS) analysis of CSO data

Figure 9.15.4 Education Profile of Selected Sales and Customer Service Occupations, Quarter 4 2016




Source: SLMRU (SOLAS) analysis of CSO data

### Shortage Indicators

There were 55,000 recent new hires in 2016 for the selected sales and customer services roles representing 17% of total new hires. With employment growth of 3,300 over the same time period, the high volume of vacancy notifications that occurred related primarily to frequent changes of employer and replacement of those in sales-related occupations who have exited to inactivity.

**Sales assistants:** sales assistants account for the bulk of those employed in sales-related occupations; employment of many sales assistants is casual in nature: over half of employment is part-time, almost a third are aged less than 25, and there is a large volume of transitions in all directions (between employment, unemployment, economic inactivity (mostly study), as well as between employment, unemployment, economic inactivity (mostly study), as well as between and within occupations) and a simultaneous presence of a large number of job seekers (over 7,000) and vacancy notifications. While



the transitory nature of employment for sales assistants may not represent an issue for employers, sourcing for management roles in retail may be a greater challenge; however, the availability of business graduates is likely to help in meeting employer requirements in this regard.

**Associate professional sales and customer service roles:** those employed as sales assistants work primarily in the wholesale and retail sector, whereas business sales executives and those in customer service occupations are employed across a range of sectors including finance, IT and industry, in addition to wholesale and retail. Although there are no shortages of sales assistants,

shortages of the following sales and customer care skills continue to persist:

- technical sales (e.g. software B2B and SaaS products)
- vendor managers/CRM roles with European languages (Nordic, Dutch and German).

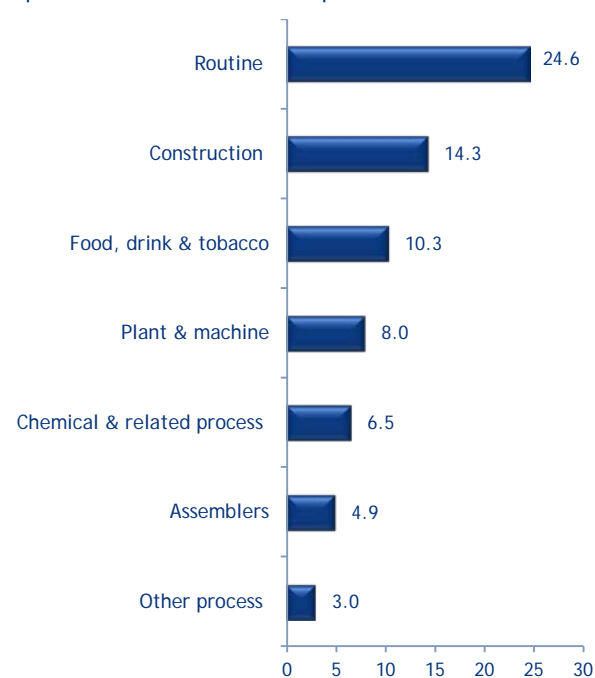
**Marketing experts:** despite the third level graduate output of 1,500 persons from sales and marketing courses at levels 6 and above (HEA and non-HEA sectors), a shortage of marketing experts required to lead product/brand management and business development (with languages) continues to exist.

## 9.16 Operatives

- In 2016, there were approximately 72,000 persons employed in operative occupations, representing 3.5% of Ireland's workforce (Figure 9.16.1)
- Almost two thirds of overall employment (46,000 persons) was concentrated in manufacturing (mostly machinery & equipment; food products; and pharmaceuticals)
- Between 2011 and 2016, overall employment in the selected occupations contracted by 0.8% on average annually (in contrast to a 1.8% increase nationally), or by 3,000 persons
- Over that five-year period, the strongest declines were observed for food, drink & tobacco operatives (8.5% on average annually, or almost 6,000 persons) and assemblers (7.4% on average annually, or almost 2,500 persons); in contrast, the strongest increase was observed for construction operatives (5.2% on average annually, or 3,000 persons) (Figure 9.16.1)
- Between 2015 and 2016, employment expanded by 2.9% (equivalent to that observed nationally), or 2,000 persons; the largest increases were observed for routine (4,500) and construction (2,200) operatives, while the largest decreases were observed for food, drink & tobacco (3,000) and assemblers (2,200)
- With the exception of construction, at least three quarters of those employed in each operative occupation was aged 25-54; almost one third of employed construction operatives was aged 55 or older, the most mature workforce among the selected occupations; in contrast, the youngest workforces were food, drink & tobacco and other process operatives (Figure 9.16.3)

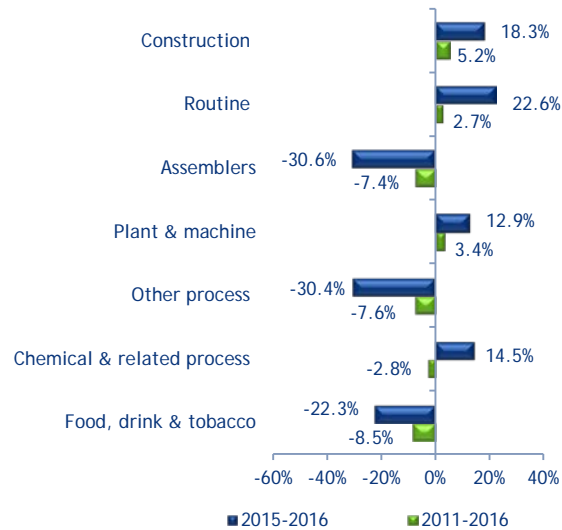
- The education profile of employed operatives was skewed towards lower educational attainment levels; the share employed in most occupations who had attained lower secondary or less qualifications was above the national average, with the highest for construction operatives (at almost a half); the share who had attained higher secondary/FET qualifications was above the national average for all occupations; in contrast, the share with third level qualifications was well below the national average for all occupations (Figure 9.16.4)
- Approximately one quarter of employed food, drink & tobacco and routine operatives were non-Irish nationals (above the national average of 15%)
- Employment in most occupations was predominantly male and full-time.

Figure 9.16.1 Numbers Employed (000s) in Selected Operatives and Related Occupations, 2016



Source: SLMRU (SOLAS) analysis of CSO data

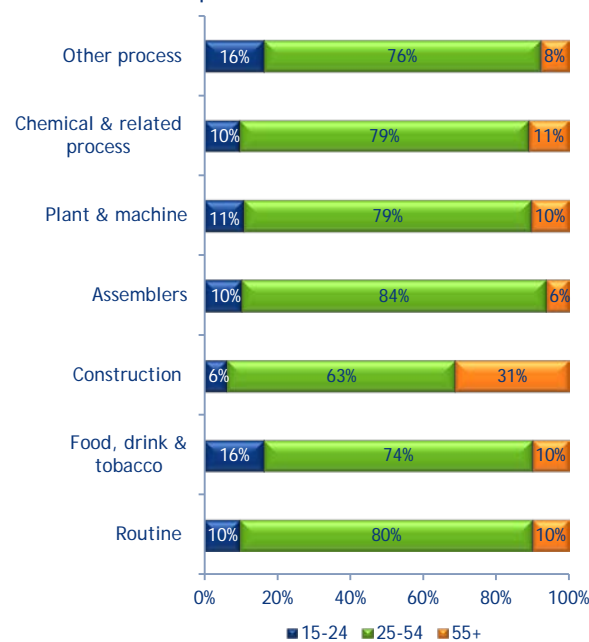
Figure 9.16.2 Average Annual Growth (%) in Selected Operatives and Related Occupations



Source: SLMRU (SOLAS) analysis of CSO data

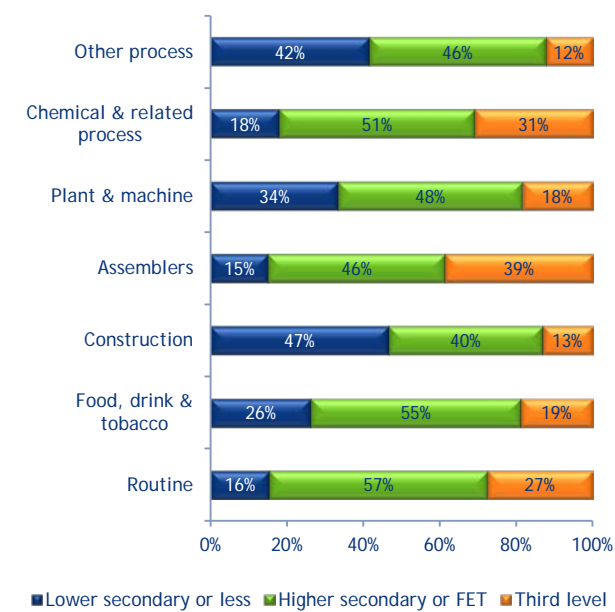
Note: Growth rates associated with occupations where employment is comparatively small are less reliable due to a greater risk of sampling error.

Figure 9.16.3 Age Profile of Selected Operatives and Related Occupations, Quarter 4 2016



Source: SLMRU (SOLAS) analysis of CSO data

Figure 9.16.4 Education Profile of Selected Operatives and Related Occupations, Quarter 4 2016




Source: SLMRU (SOLAS) analysis of CSO data

### Shortage Indicators

In 2016, there was a high volume of vacancies for operative roles, particularly for process and construction operatives. However, the lack of employment growth in many of these occupations, along with a high turnover rate, indicates that vacancies were mostly occurring due to movements between employers.

There were approximately 7,800 job ready job seekers in April 2017 who were previously employed in operative roles, with the majority holding a Leaving Certificate qualification or less. A two-year NFQ level 5 apprenticeship for food and drink process operatives is currently in development.

Nonetheless, the DKM/CIF report on the Demand for Skills in Construction 2020, forecasts a rise of 6,400 in the numbers employed in construction-related operative



roles<sup>45</sup> by 2020. The upturn in the construction industry, and in particular, commercial building, has led to an increasing demand for labour intensive roles including ground workers, scaffolders, tower crane operatives and pipelayers.

Despite the lack of employment growth in these occupations and the high number of job ready job seekers, shortages of the following operative skills have been identified:

- qualified CNC (computer numeric control) operatives: particularly in high technology manufacturing (e.g. medical devices and pharmaceuticals) and engineering; many unemployed operatives have been trained in traditional operative skills and lack the technical and digital competencies required for high technology automated manufacturing
- production operatives: vacancies, particularly in the high-tech manufacturing/med-tech sector, are proving difficult to fill and given the high churn rates, it is possible that retention issues may arise as job opportunities in other sectors improve, resulting in a labour shortage for operative occupations
- construction operatives: ground workers, scaffolders, experienced tower crane operatives and pipelayers in line with the upturn in the construction industry.

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<sup>45</sup> Within the categories of construction operatives and labourers are scaffolders, staggers and riggers; road construction operatives; construction operatives n.e.c.; crane drivers; fork-lift truck drivers; mobile machine drivers and operatives n.e.c.; elementary construction occupations.

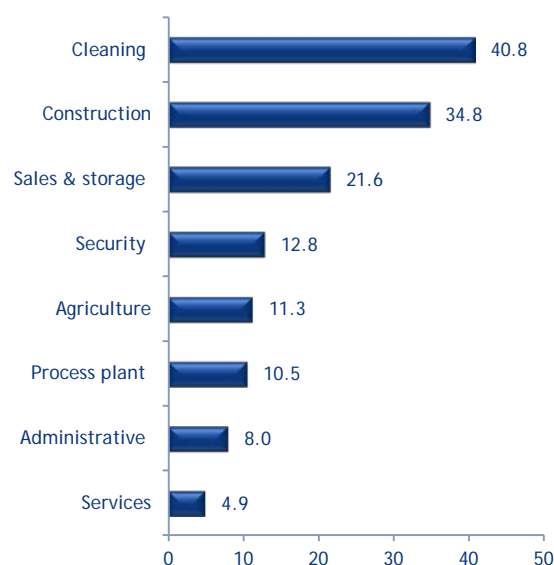
### 9.17 Elementary occupations<sup>46</sup>

- In 2016, approximately 145,000 persons were employed in elementary occupations, representing 7.2% of total employment nationally
- Two thirds (or 97,000 persons) were employed in elementary cleaning, construction and sales & storage occupations (Figure 9.17.1)
- Over the period 2011-2016, overall employment levels remained relatively static; the growth in employment for construction operatives, (8.3% on average annually, or 11,500 persons) was countered by a contraction in employment for all other occupations; in absolute terms, the largest decreases were observed for elementary administrative occupations (almost 5,000 persons), and elementary sales & storage (2,600 persons) (Figure 9.17.2)
- Between 2015 and 2016, employment of elementary construction occupations expanded by 14.6%, well above the national average of 2.9%, with almost 4,500 additional persons employed
- At least two thirds of those employed in most elementary occupations was aged 25-54; the most mature age profile was for elementary administrative (i.e. postal workers, mail sorters) and security workers, with almost 30% and 25% aged 55 or older, above the national average of 18%
- The education profile of persons employed in elementary occupations was skewed towards lower levels of educational attainment; the share employed in each occupation with lower

secondary or less qualifications and higher secondary/FET qualifications was above the respective national average; in contrast, the share with third level qualifications was well below the national average

- Employment in most occupations was predominantly male; however, 64% of employed cleaners and 37% of elementary process plant workers were female
- At 55%, the prevalence of part-time work was the highest for cleaners – one of the highest shares among all occupations in the national workforce
- Approximately 46% of employed cleaners were non-Irish nationals – one of the highest shares among all occupations in the national workforce; the share was also relatively high for elementary process plant workers (37%).

Figure 9.17.1 Numbers Employed (000s) as Labourers, 2016

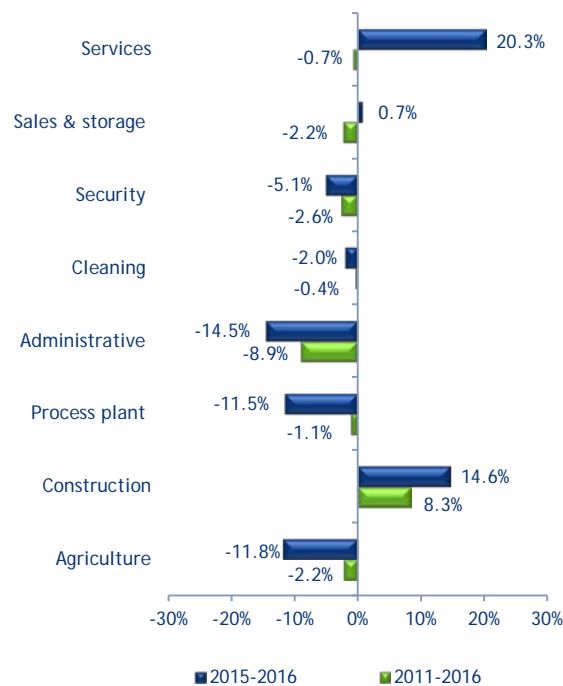


Source: SLMRU (SOLAS) analysis of CSO data

<sup>46</sup>There are a number of occupations discussed in this section which, for simplicity purposes, are referred to as labourers; these include cleaners, porters, sorters, various types of mates and other occupations not elsewhere classified.



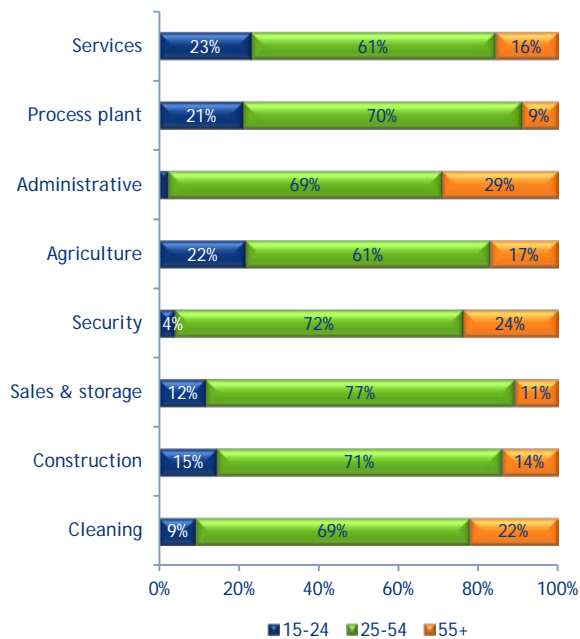
Figure 9.17.2 Average Annual Growth (%) of Labourers



Source: SLMRU (SOLAS) analysis of CSO data

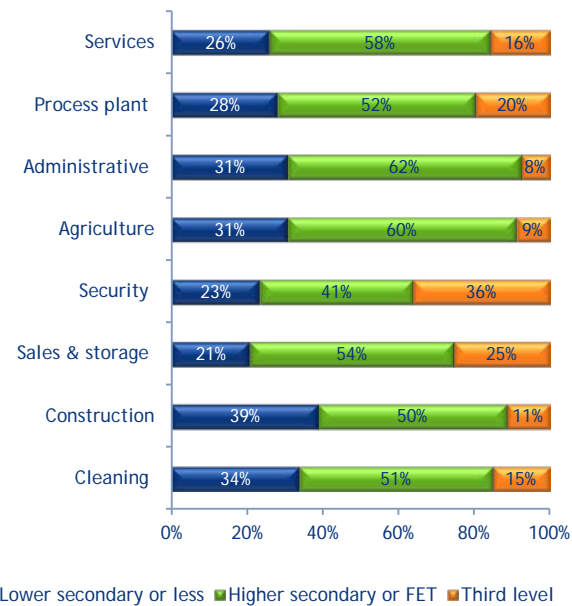
Note: Growth rates associated with occupations where employment is comparatively small are less reliable due to a greater risk of sampling error.

Figure 9.17.3 Age Profile of Labourers, Quarter 4 2016



Source: SLMRU (SOLAS) analysis of CSO data

Figure 9.17.4 Education Profile of Labourers, Quarter 4, 2016



Source: SLMRU (SOLAS) analysis of CSO data

### Shortage Indicators

The transitory nature of employment in elementary occupations (e.g. cleaners, security guards, routine testers, elementary construction workers, agricultural labourers etc.) is apparent through the analysis of the many labour market indicators examined such as transitions, vacancies and job seeker data. There is a higher than average share of non-Irish nationals employed in elementary occupations, particularly in cleaning. There is also a high share of part-time work and the education profile of those employed in these occupations is lower than the overall average. Although there is currently no evidence of shortage of labourers in Ireland, attracting and retaining elementary workers will become increasingly challenging as job opportunities increase across all sectors of the economy. This appears to be the case for those employed in the agricultural sector such as mushroom/fruit pickers. There has also been an increased demand for construction labourers.





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