# Future of Jobs in Ireland – Automation Risk

## Skills and Labour Market Research Unit, SOLAS

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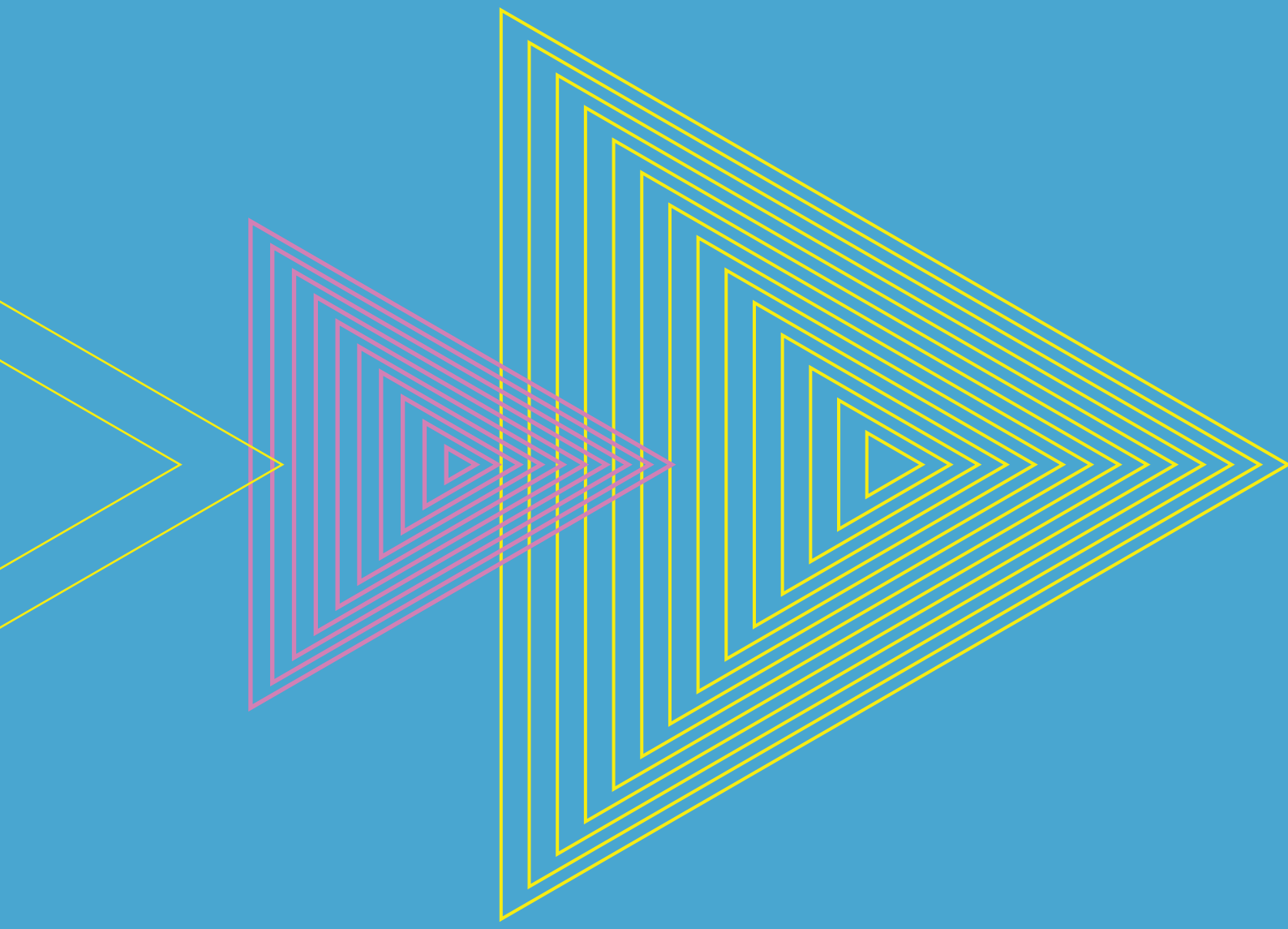

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# The Future World of Work

The COVID-19 pandemic has triggered a seismic change in the way in which the labour market operates globally, with the fundamental relationship between the workplace and the workforce likely to be changed on a long-lasting basis. The future world of work, in particular at occupational level, should see a continued embracing of practices being utilised recently such as automation, newly defined processes, flexible hours, flexible locations and new skillsets.

As a small, open, dynamic economy, Ireland has the potential to be at the forefront of the opportunities and challenges of the future world of work and policy makers can enhance this evolution through incentives and initiatives for those within and outside the labour force.

## Introduction

The focus of this report is an examination of occupations in Ireland in terms of their level of automation risk.

The impact of automation is expected to result in an overall increase in the number of persons employed over time[1], but the type of jobs on offer are likely to change significantly. In the short to medium term, to assist employers and employees facing automation risk, widespread government support will be required to promote innovation, flexibility and opportunities in the workplace. This report focuses on those in employment in occupations that are considered at high risk of automation in order to assist policy makers in where to direct upskilling and/or reskilling opportunities.

There has been extensive commentary about the displacement threat to workers posed by automation and the ensuing socio-economic implications. Internationally, fundamental work in this area was published by Frey & Osborne[2] in 2013. Expert work by the OECD[3] in 2018 further enhances the discussion around automation risk at an international level.

Within an Irish context, the Irish Government Economic and Evaluation Service (IGEES)[4] have carried out a comprehensive assessment on the impact of automation in Ireland in 2018. The Skills and Labour Market Research Unit (SLMRU) in SOLAS have applied the analysis produced by IGEES on the OECD model to the CSO Labour Force Survey Quarter 4 2019 data, to identify occupations in Ireland in terms of their level of automation risk (for more detailed information on the methodology used see the Technical Note at the end of the report). The analysis in this report is based on the 16 occupational groups in the occupational

1 See Future of Jobs Report (2018) by the World Economic Forum which estimates the creation of 133 million jobs globally and the destruction of 75 million jobs over the period 2018-2022.
2 The Future of Employment: How Susceptible Are Jobs to Computerisation? Carl Benedikt Frey and Michael A. Osborne, September 2013.
3 Automation, skills use and training, Nedelkoska and Quintini; OECD Social, Employment and Migration Working Paper No. 202, March 2018.
4 Automation and Occupations: A Comparative Analysis on the Impact of Automation on Occupations in Ireland; Irish Government Economic and Evaluation Service, April 2018.

employment profiles section of the National Skills Bulletin[5].

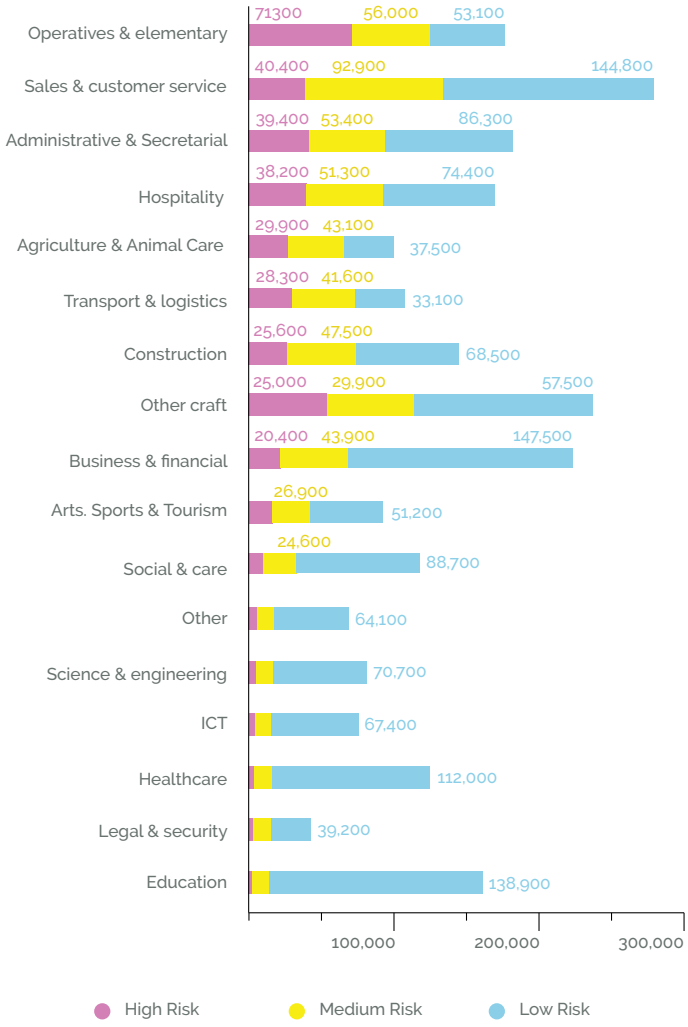
The report also provides details on the profile of the cohorts most likely to be affected by automation in terms of age, gender, nationality and the region of employment.

## Overview

**Based on the international models used, over 370,000 people have been identified as being employed in occupations at high risk of automation. A further 600,000 were in jobs considered at medium risk of automation.**

In Q4 2019 there were approximately 373,500 people in Ireland who were employed in occupations which were considered at high risk of automation. Of the 16 occupational groups, the six groups with the largest number of persons employed whose jobs were at high risk of automation were; operatives & elementary, sales & customer service, administrative & secretarial, hospitality, agriculture & animal care and transport & logistics as shown in **Figure 1**. These groups combined account for two thirds (247,500) of the national total.

**Figure 1.** *Occupational groups by level of automation risk, total persons employed*




***Source:*** *SLMRU analysis of CSO LFS, Q4 2019.*

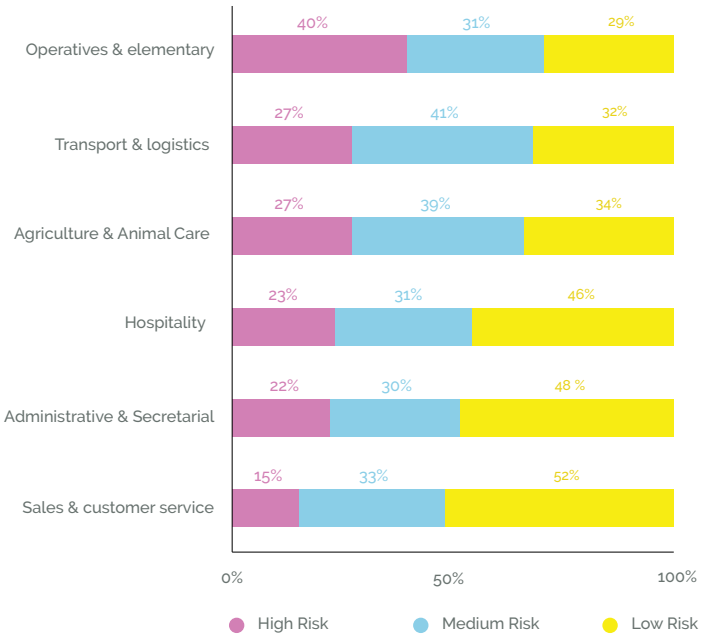
The impact of automation is likely to be much lower for those in occupational groups such as ICT, science & engineering, healthcare and education.

The individual occupations with the highest volumes of employment at high risk of automation were assemblers & routine operatives, process operatives, cleaners, warehouse operatives, drivers, farmers, kitchen & catering assistants, waiters, financial, government & other administrators, construction operatives and sales assistants.

## Occupational groups - Top 6 by share of risk level

Of the top six occupational groups with the largest number of persons employed whose jobs were at high risk of automation, operatives & elementary occupations had the highest share (40%) with sales & customer service occupations having the lowest share (15%), as shown in **Figure 2**.

**Figure 2.** *Top 6 occupational groups by share of risk level*




***Source:*** *SLMRU analysis of CSO LFS, Q4 2019.*

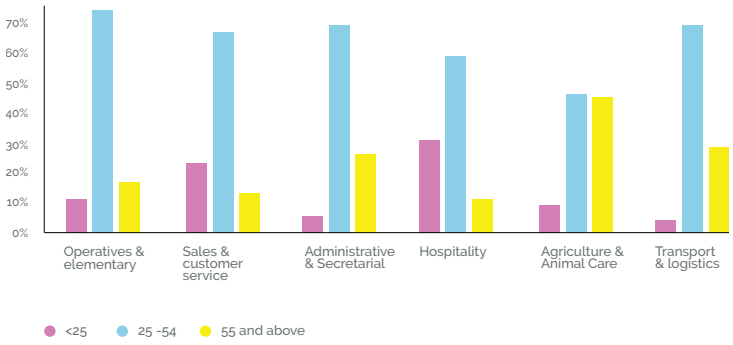
5 The National Skills Bulletin is an annual publication produced by the Skills and Labour Market Research Unit in SOLAS on behalf of the National Skills Council.

The following analysis shows these six occupational groups by age, educational attainment, gender and nationality.

## Age profile

In terms of the age profile, each of the occupational groups showed very low shares of persons employed aged less than 25 years, with the exception of hospitality (31%) and sales & customer service occupations (23%), both of which were above the State average of 11%. There was a significant portion of persons employed aged 55 years and above in agriculture & animal care (46%) (predominantly made up of farmers), transport & logistics (28%) and administrative & secretarial (25%) occupations, as shown in **Figure 3**. The national average for persons employed aged 55 years and above stood at 19%.

**Figure 3**. *Top 6 occupational groups by age*

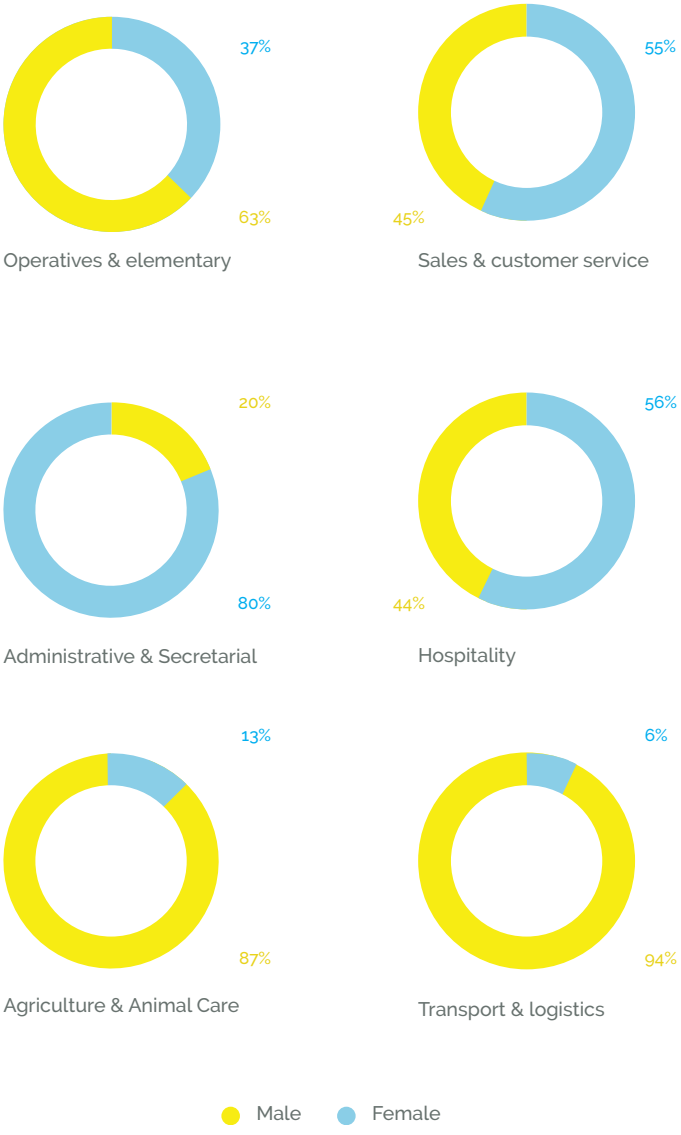



***Source:*** *SLMRU analysis of CSO LFS, Q4 2019.*

## Gender

In terms of gender, persons employed in transport & logistics (94%) and agriculture & animal care (87%) occupations were predominantly male, while 80% of those employed in administrative & secretarial occupations were female, as shown in **Figure 4**. The other three occupational groups had a gender distribution closer to the national averages of 54% for males and 46% for females. Sales & customer service, administrative & secretarial and hospitality occupations combined, accounted for over 385,000 females employed, highlighting the need for upskilling and/or retraining for this particular cohort in these areas.

**Figure 4**. *Top 6 occupational groups by gender*

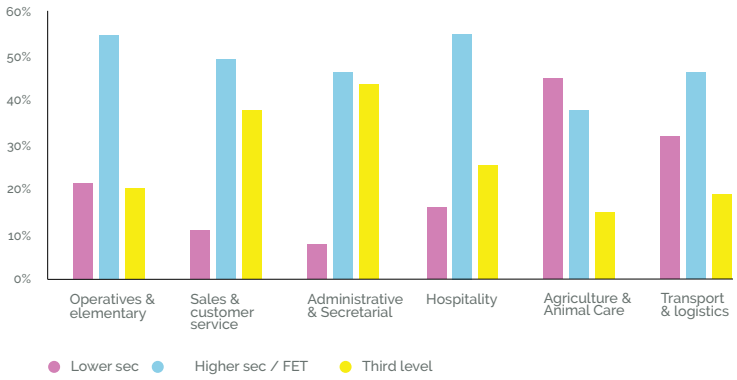



***Source:*** *SLMRU analysis of CSO LFS, Q4 2019.*

## Education

Each of the six occupational groups had lower shares of persons employed with third level qualifications than the national average of 48%. Administrative & secretarial occupations had the highest share of persons employed with a third level qualification at 43%, followed by those employed in sales & customer service occupations (37%). Both transport & logistics and agriculture & animal care occupations had the largest shares of persons whose highest level of education was lower secondary, as shown in **Figure 5**. Operatives & elementary and hospitality occupations also had higher shares than the national average (12%) for lower secondary educational attainment.

**Figure 5**. *Top 6 occupational groups by education level**

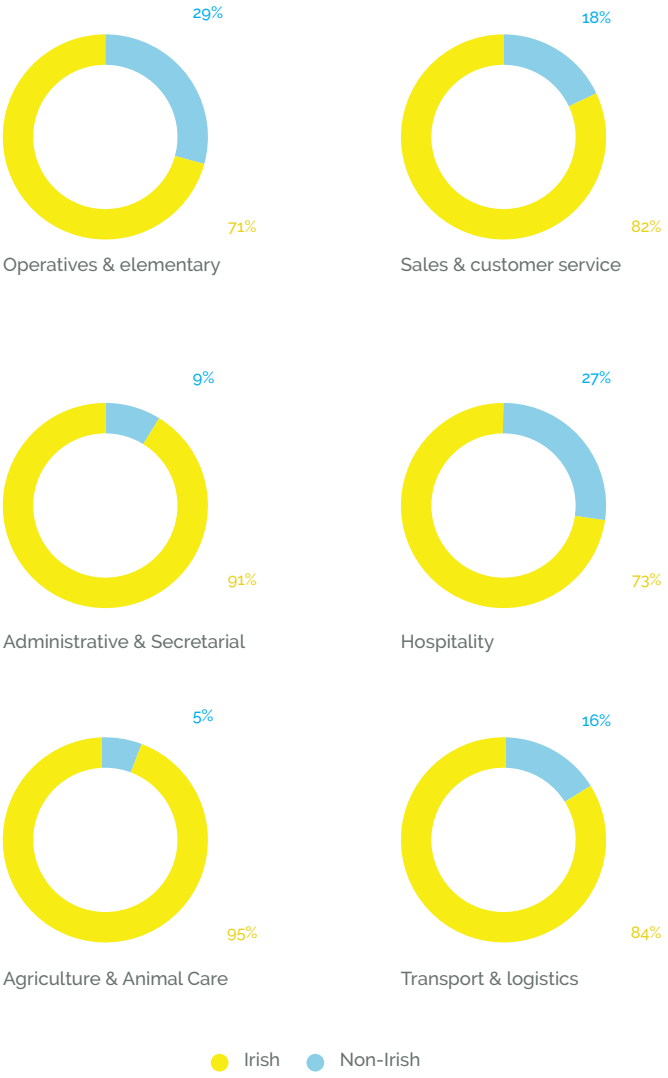



***Source:*** *SLMRU analysis of CSO LFS, Q4 2019.*
** not stated/unknown not included*

## Nationality

In terms of nationality, Irish nationals accounted for over 70% of those employed in each of the six occupational groups, with agriculture & animal care occupations accounting for 95%, as shown in **Figure 6**. There was a higher share of non-Irish nationals employed in operatives & elementary, hospitality and sales & customer service occupations when compared to the national average of 17%.

**Figure 6**. *Top 6 occupational groups by nationality*

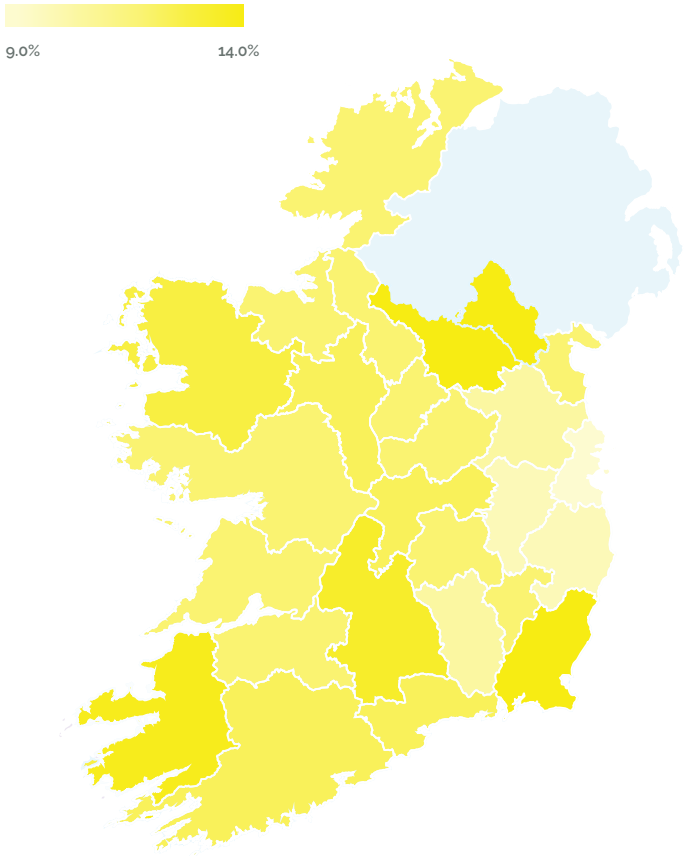



***Source:*** *SLMRU analysis of CSO LFS, Q4 2019.*

The following section shows the six groups by occupational employment on a regional basis. As CSO Labour Force Survey data on employment is not available at county level, the Census 2016 data was used for this analysis. **Figure 7** refers to the combined total within each county of those employed in the six occupational groups identified as being most at risk of automation, expressed as a share of total employment in each county.

As shown in Figure 7, Dublin had the lowest share of persons employed in these six occupational groups, while in contrast, Monaghan had the highest share employed followed by Cavan, Longford, Tipperary and Wexford.

**Figure 7**. *Share of employment in the top 6 occupational groups combined, by county*




***Source:*** *SLMRU analysis of CSO Census 2016.*

## Summary

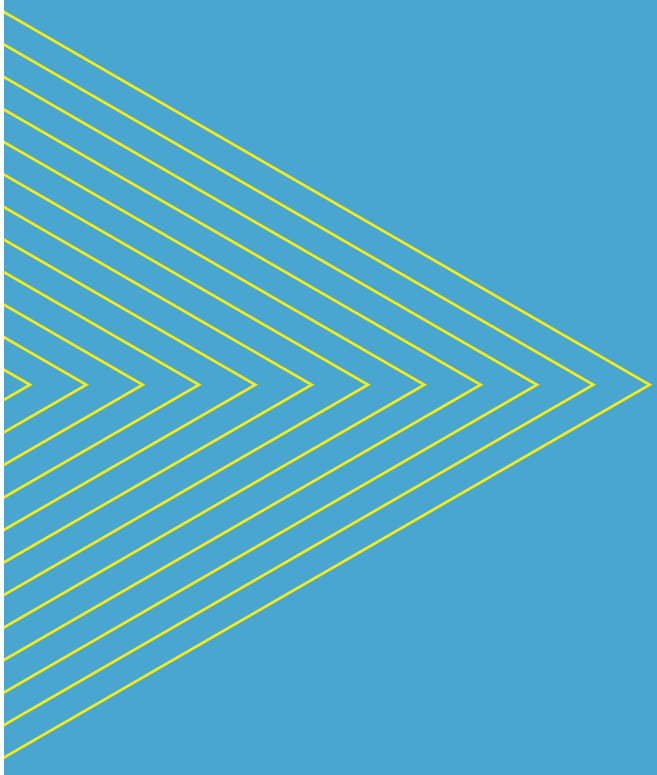
The Irish labour market faces different levels of exposure to automation risk at an occupational level and on a regional basis. The six occupational groups with the largest number of persons employed whose jobs are at high risk of automation show varying results when analysed by age, education level, gender and nationality. However, it is evident that those employed in these six occupational groups were most likely to have higher secondary or further education levels and were predominantly Irish. Those employed in agriculture & animal care and transport & logistics occupations were primarily male and had a significantly higher portion of those aged 55 years and above than the average for the State. Sales & customer service and hospitality occupations, which had larger shares of females employed, had significantly higher proportions of those aged less than 25 years than the State average. Dublin and it's bordering counties had the lowest exposure to automation risk in these groups, while counties facing higher levels of exposure were located throughout each province.

The future world of work will require significant upskilling/ reskilling opportunities across all areas of the labour market to meet the challenges and opportunities posed by automation in the workplace.

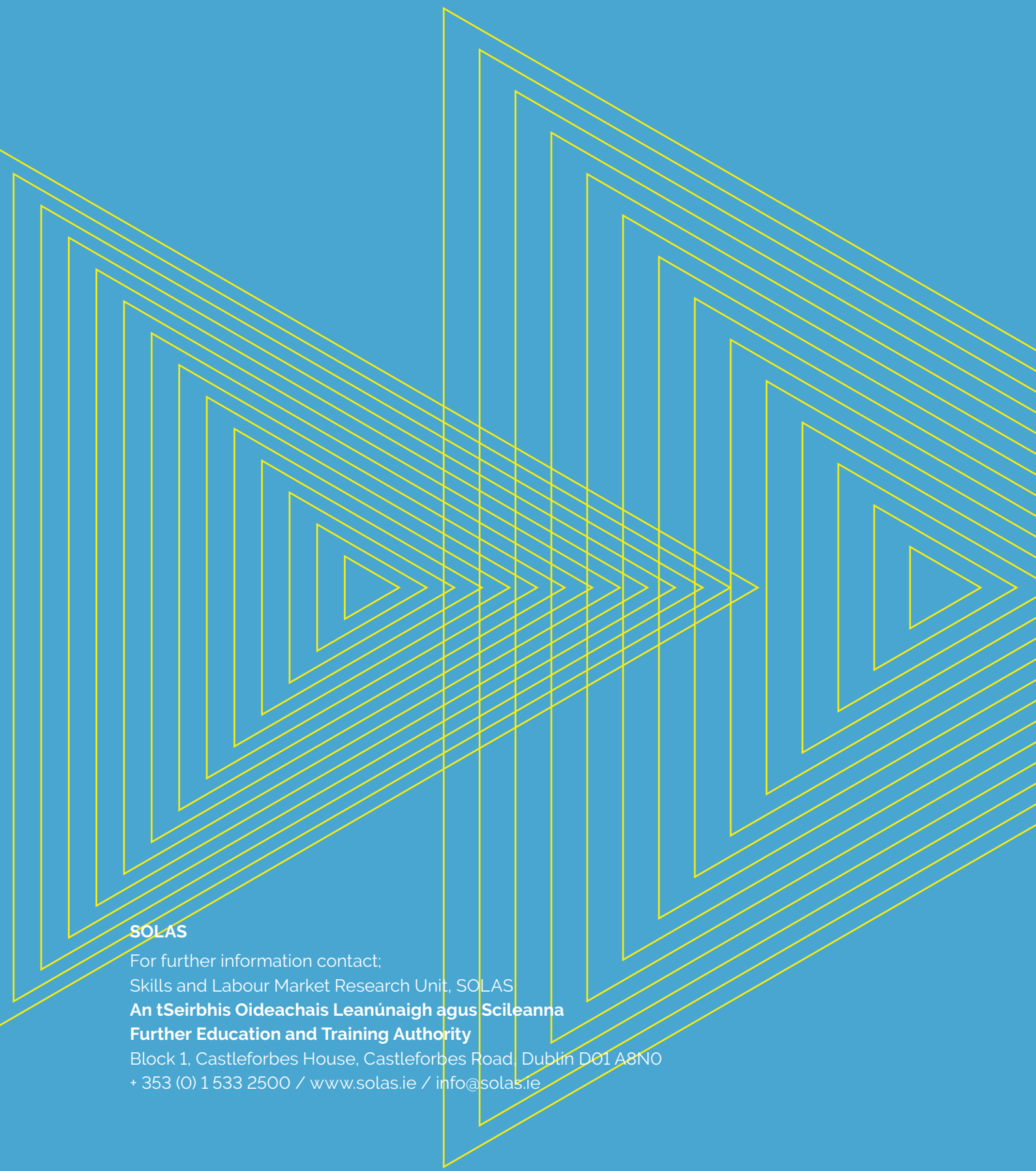
## Technical note

This analysis utilises the risk weights calculated by the Nedelkoska and Quintini method (2018) and adapted by IGEES (2018) for an Irish context.

- Risk weights were divided into three bands; high, medium and low risk. High risk was where there was a greater than 70% probability of automation associated with an occupation, medium risk was between 50% and 70% probability and low risk was less than 50% probability of automation associated with an occupation.
- The risk estimates by ISCO[6] 2-digit were identified and each occupation from the National Skills Bulletin was assigned an ISCO code.
- The employment data for each of these occupations was assigned, in this case relating to CSO LFS Q4 2019.
- The risk estimates by ISCO were then applied to the employment data by National Skills Bulletin occupation to arrive at the estimates of the number of persons at risk of automation by occupational group.



6 The International Standard Classification of Occupations (ISCO) is one of the primary International Labour Organisation (ILO) classification structures, belonging to the international family of economic and social classifications of the United Nations.



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