

The Digital and Tech sector in Ireland

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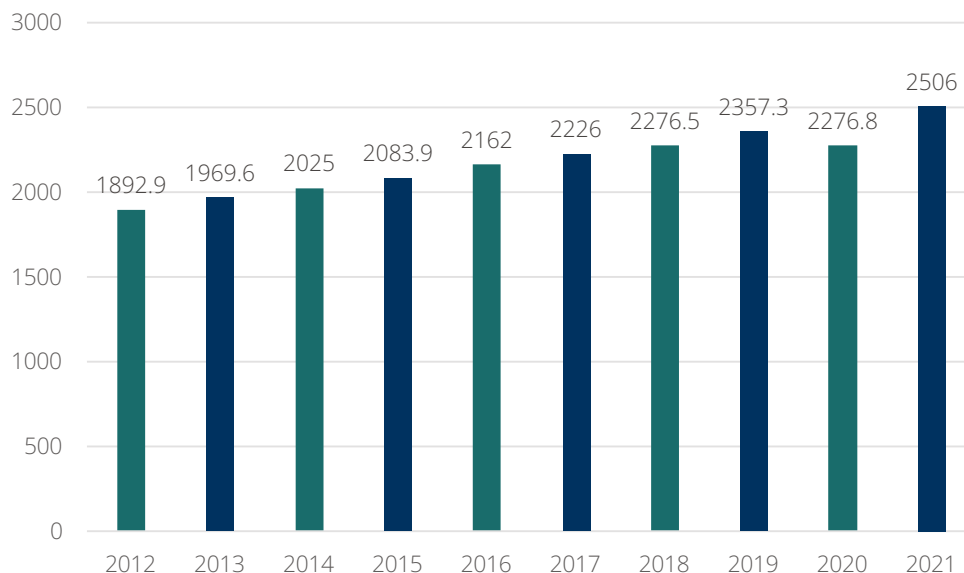


This report outlines employment levels in the Digital Sector in the Republic of Ireland. Many industries within the Digital Sector have experienced significant employment growth over the last number of years and the sector has consequently become a very significant component of the Irish labour market. In addition to growth at national level, there has also been growth in the Digital Sector within the regions of Ireland. This growth has not been uniform and different parts of the digital sector play a greater role in some regions than others. This report aims to provide a more detailed picture of the national and regional structure of the fastest growing sector of employment in Ireland.

Introduction

The Irish labour market has undergone significant change over the last number of decades. The significant growth of the Celtic Tiger Era followed by the crash of the property market in the midst of the global financial crisis provided significant turbulence. However, the 10 years since the financial crisis have seen steady growth in total employment in the Irish labour market. Figure 1 shows that total employment grew every year from 2012 to 2021 with the exception of 2020 which showed a significant drop due to the Covid-19 pandemic¹. Total employment increased from just under 1.9mn in 2012 to just over 2.5mn in 2022, an increase of 32.4%. Much of the falloff in employment in 2020 was recovered in 2021 leaving the trend growth rate since 2012 at just under 3% annually.

Figure 1 Total Employment in the Republic of Ireland (000s)

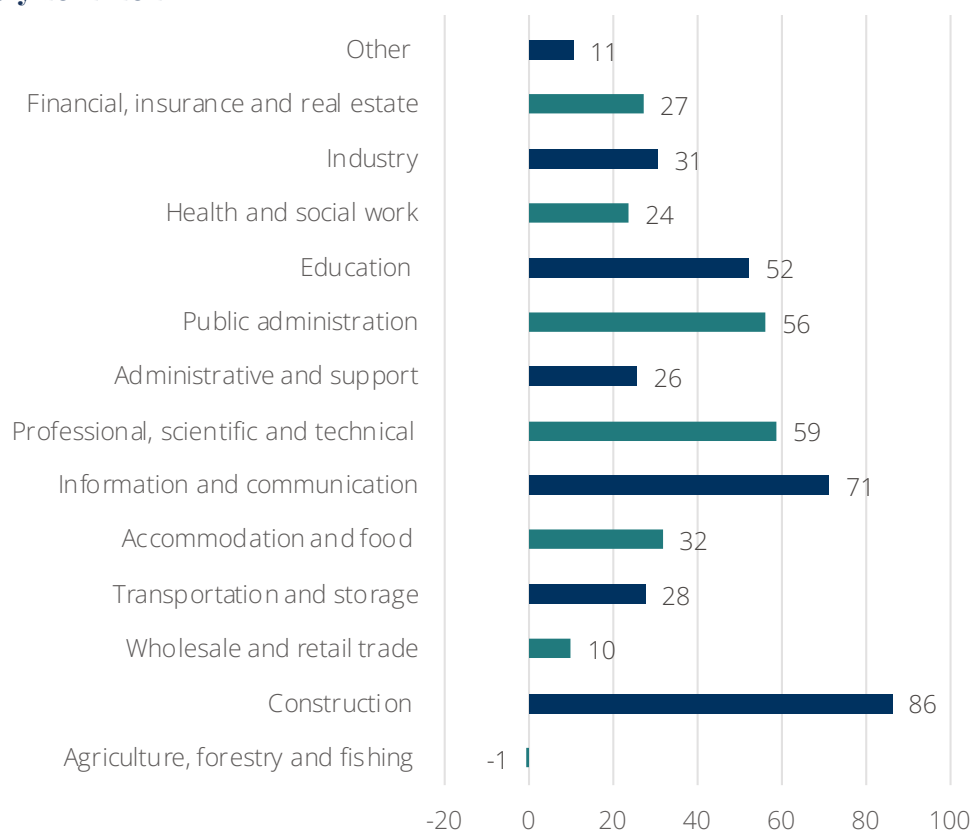


Source LFS

¹ Irish employment levels dropped much more considerably than their European counterparts in part because many of the support schemes employed by other countries supported people to remain in employment if not 'at work'. In contrast the majority of pandemic support to the Irish labour market was delivered through out of work benefits which induced a comparatively sharper fall in total employment levels.

While growth in total employment has been broadly positive and consistent, it has not been even between different industries. Indeed, the last 9 years have seen a significant divergence in growth rates ranging from a fall of 1% to growth of 86% between industries. *Agriculture, forestry and fishing* saw growth of -1%, the only such sector to record negative growth. Wholesale and Retail saw a very modest increase of 10%. As Figure 2 shows *Accommodation and Food* along with *Industry* (which includes manufacturing) saw growth of the same magnitude as total employment while Transportation and Storages, Health, Administration and Support and Financial, insurance and real estate were just below the overall average. Education and Public Administration saw growth of 52% and 56% respectively, while Professional, Technical and Scientific grew by almost 60%. The top performing sector was Construction which saw growth of 86%, however this figure must be taken in the context of the recent experience of that sector and its central role in the financial crisis. Between 2008 and 2012, the construction sector lost 55% of its employment, and the growth over the last 9 years has only brought it back to 83% of the total employment that it had in 2008.

Figure 2 Percentage Change in Total Employment in the Republic of Ireland by Industry 2012–2021

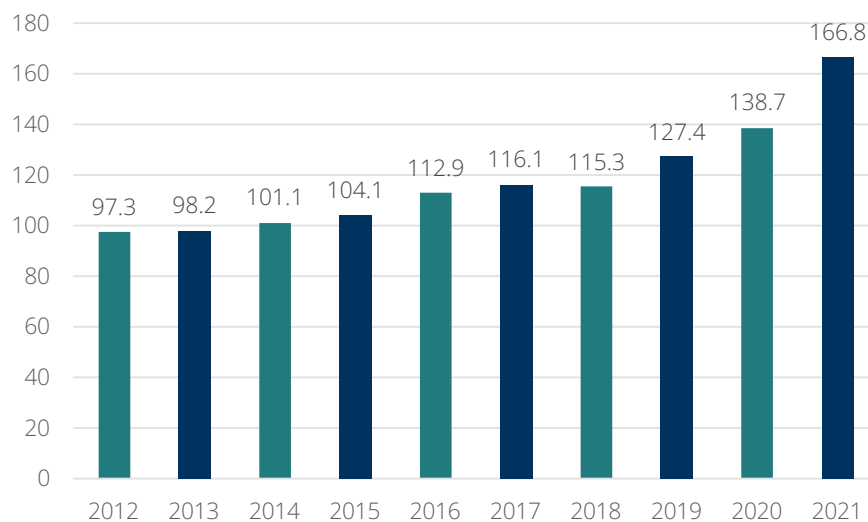


Source LFS

The Information and Communications Industry

While the results from Construction can be attributed to the property crash and recovery therein, growth in the Information and Communication sector stands out more clearly. This sector has grown by more than 70% over the last 9 years. More interestingly, as Figure 3 shows, growth in the Information and Communication (I&C) sector withstood the disruption of the covid-19 pandemic in 2020 by growing, and in 2021 recorded the largest increase in employment over the last 9 years. Total employment in the sector now stands at 166,800 compared to only 97,300 in 2012.

Figure 3 Total Employment in Information and Communication in the Republic of Ireland (000s)



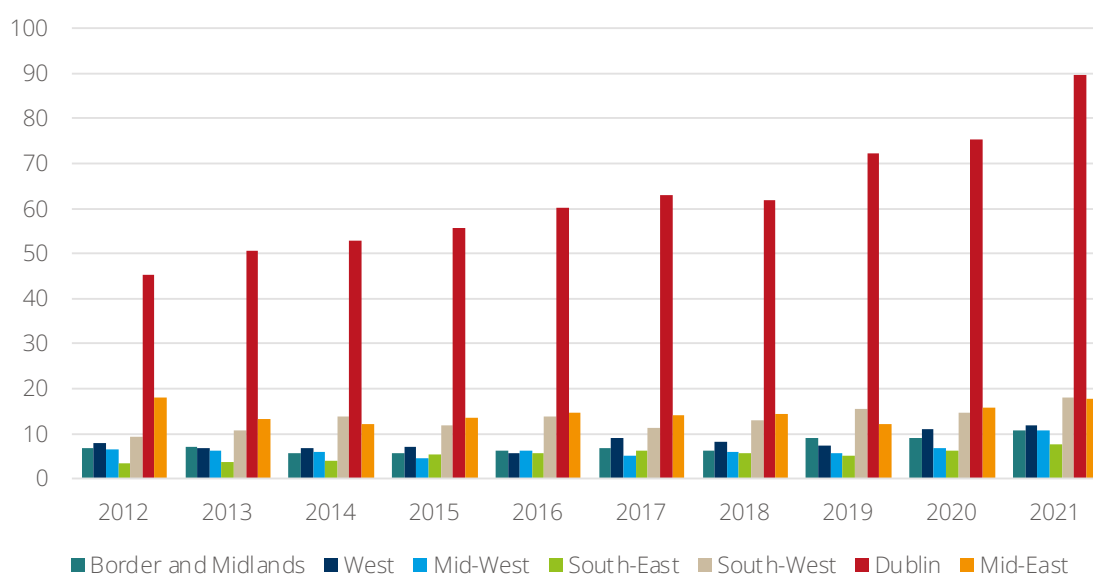
Source LFS

While the I&C sector has seen significant growth over the last number of years, that growth has not been uniform across the country. Furthermore, the I&C sector has historically had a stronger grounding in some regions more than others and the recent phase of growth has altered that situation somewhat. In order to get a picture of this regional distribution, we can utilise the Nomenclature of territorial units for statistics. This divides Ireland into 8 units as set out in table 1 below. However, when it comes to analysing employment in the I&C sector there are concerns that releasing figures for regions with lower levels of employment in the I&C sector could be disclosive. For this reason, the regions of Border and Midlands are not reported separately each year, therefore it is necessary to combine these regions to provide the most up to date regional picture.

Table 1 NUTS Regions in the Republic of Ireland

Border	Cavan, Donegal, Leitrim, Monaghan, Sligo
Dublin	Dublin
Mid-East	Kildare, Meath, Wicklow, Louth
Midland	Laois, Longford, Offaly, Westmeath
Mid-West	Clare, Tipperary, Limerick City and County
South-East	Carlow, Kilkenny, Wexford, Waterford City and County
South-West	Kerry, Cork and Cork City
West	Mayo, Roscommon, Galway and Galway City

As Figure 4 below shows, Dublin plays a significant role in the growth of I&C sector employment in Ireland. As of 2021 Dublin accounts for over half (53%) of all I&C employment, an increase of 7 pp since 2012. Apart from 2018, the sector has shown sustained growth in employment over the period. The scale of employment in Dublin however can distort some of the movement that has taken place among other regions.

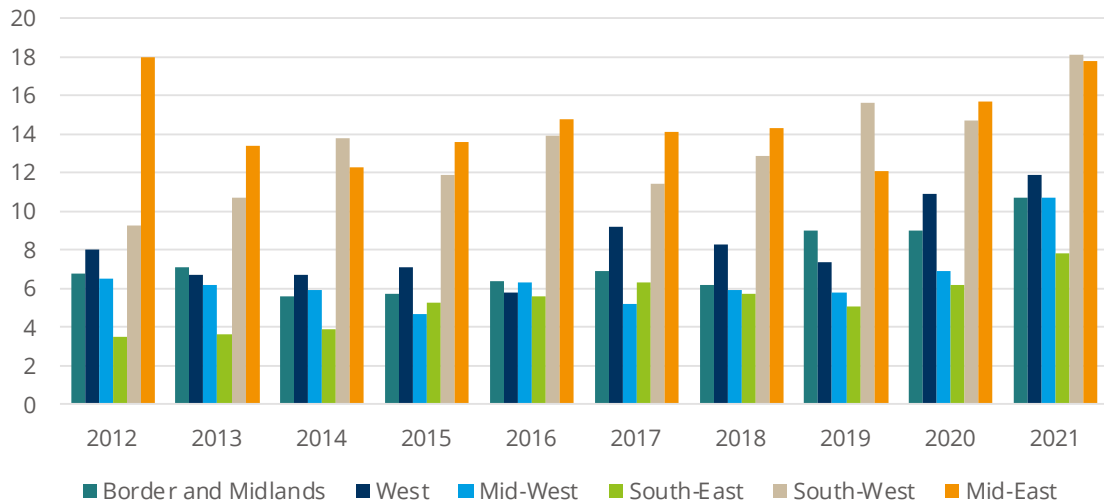
Figure 4 Total Employment in Information and Communication in the Republic of Ireland by NUTS regions (000s)

Source LFS

Figure 5 shows the same information contained in Figure 4, but with the Dublin region removed to give a clearer picture of the shifts in employment between the other regions. What can be seen is that, in 2012, after Dublin, the Mid-East region accounted for the next largest share of total I&C jobs (18%). However, while there has been impressive growth elsewhere since then, the Mid-East region experienced a decline followed by a slow recovery in I&C employment over the same period. The South-West has been the chief beneficiary of I&C sector employment growth with the total level of employment almost doubling over the period. While the total number of jobs in Mid-East is almost exactly the same as it was in 2012, the share of total I&C employment has almost

halved. The South-West (10.8%) now accounts for a larger share of I&C employment than the Mid-East (10.6%). Growth in the West region has also been impressive, with the exception of a dip in employment level in 2018 and 2019. The Mid-West and South-East regions also showed positive employment growth, peaking more toward the latter end of the time period.

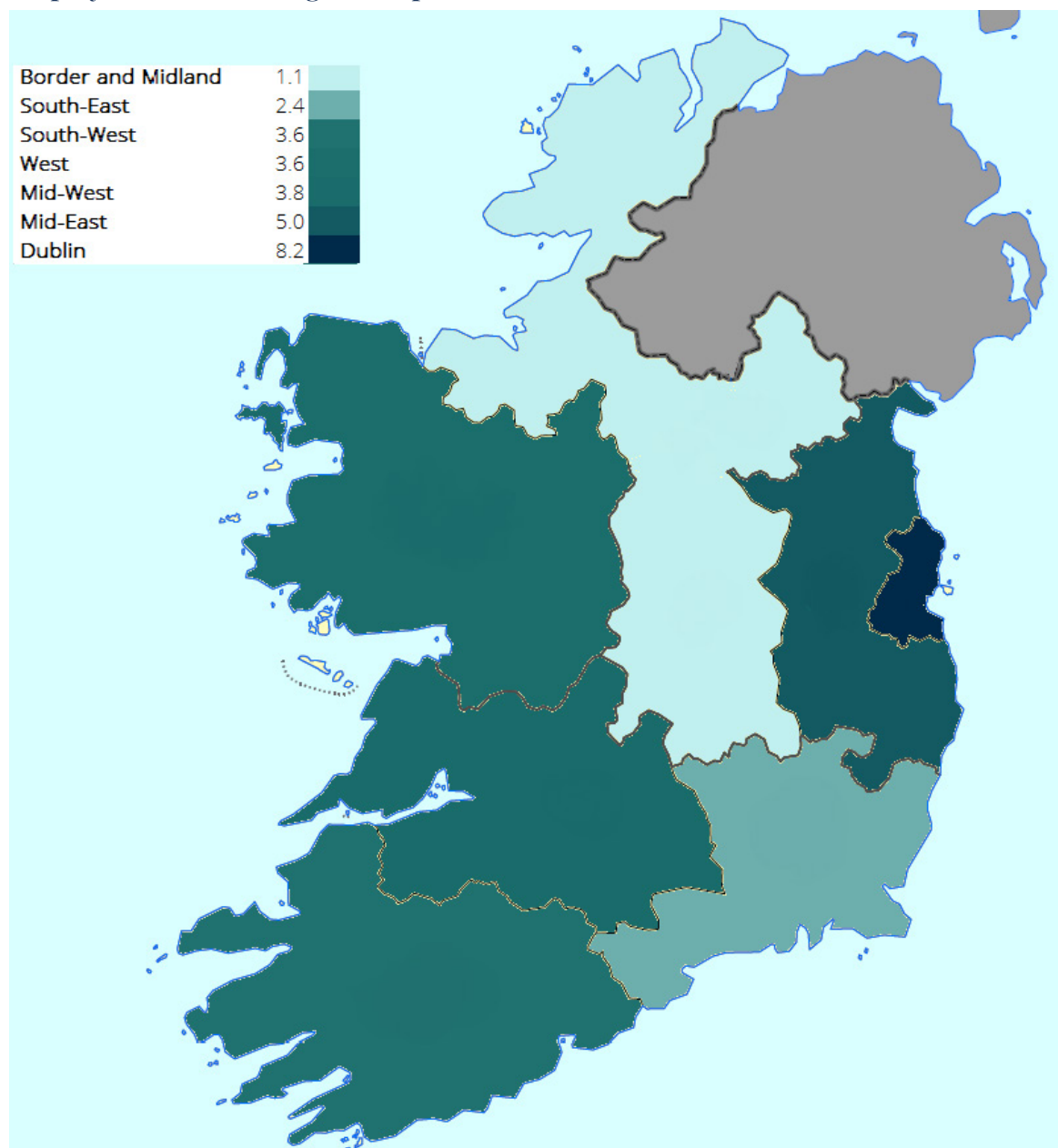
Figure 5 Total Employment in Information and Communication in the Republic of Ireland by NUTS regions ex Dublin (ooos)

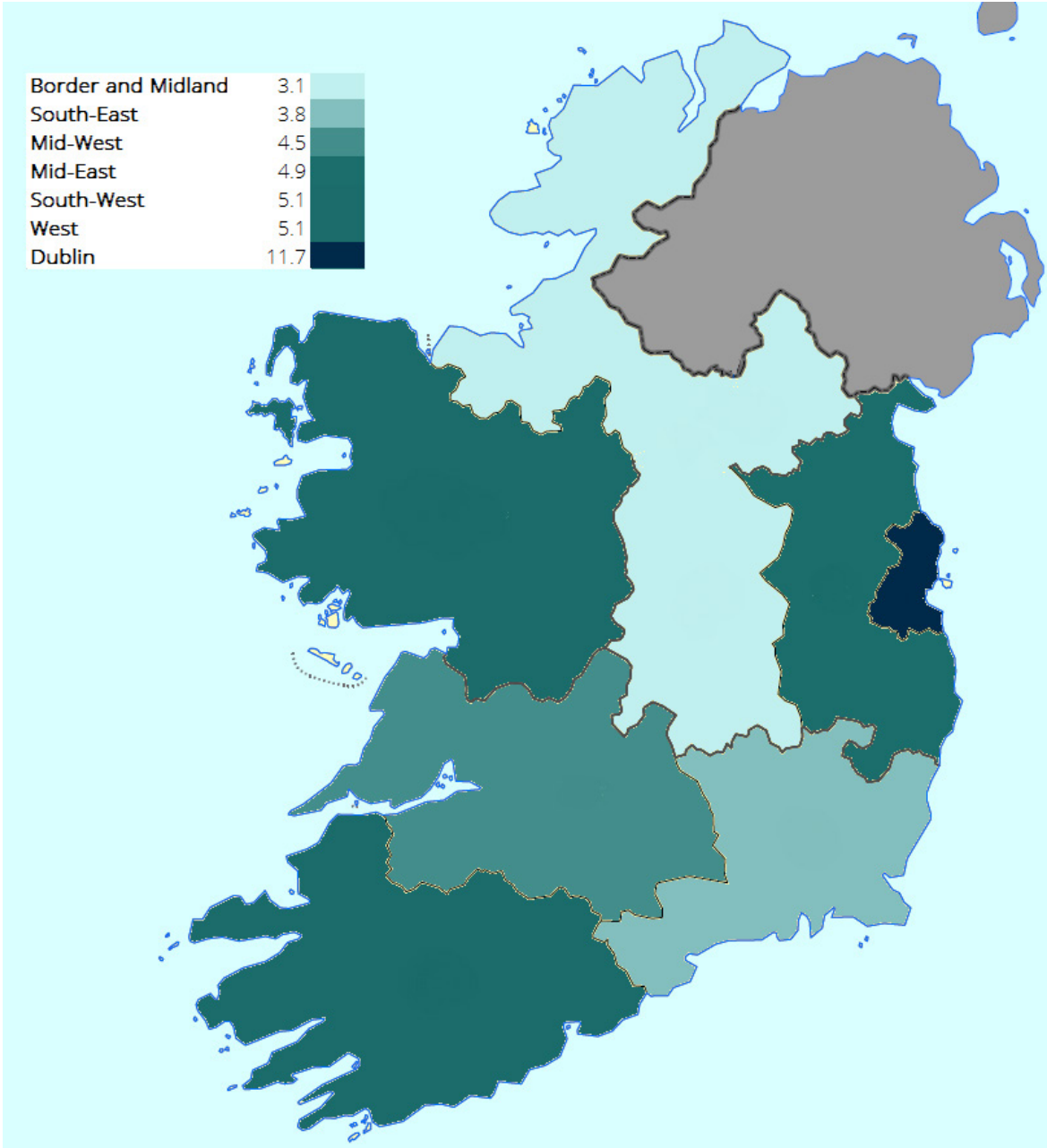


Source LFS

While Figures 4 and 5 show what share of I&C employment each region accounts for, Figure 6 shows how important the I&C sector is the total employment in that region. In Figure 6 we can show I&C employment as a percentage of total employment in each region at the start and end of this period. While Dublin still stands out among the other regions, the order of difference is not of the same scale as in Figures 4 and 5. Over the time period it can be seen that I&C has become a larger sector of employment in both the West and the South-West. While the South-West accounts for a much larger share of overall employment in I&C, the West now has the second largest share of I&C in total employment after Dublin. The South-East still has the second smallest share of I&C employment, but that this has increased substantially over the period. While the proportion of I&C employment in the Mid-East has declined only by 0.1 pp, it has fallen from second place to fourth place among the regions. The Border and Midland region had the lowest proportion of I&C employment in 2012, and that remains the case in 2021, but the proportion now stands at 3.1% which is much more in line with other regions. The Mid West has seen growth in its proportion of I&C employment, but this has not been as pronounced as in other regions.

Figure 6 Employment in Information and Communication as a Percentage of Total Employment in NUTS regions Republic of Ireland 2012 and 2021





Source LFS

The Digital Sector

In many instances the Information and Communication sector is often conflated with the 'ICT' or Information and Communication Technology sector. While much of the activity classified under the I&C sector is covered by the ICT sector, the latter definition is much wider and seeks to include elements of manufacturing and other services which contribute to the output of the sector as a whole. The first definition of the ICT sector came in 1998 when the Working Party on Indicators for the Information Society (WPIIS) defined the sector as "manufacturing and services industries whose products capture, transmit or display data and information electronically".

In more recent years, as technology has evolved and the scope of information and communication activity has expanded and diversified, the focus of policymakers has moved to defining what we now call the 'digital economy'. The OECD has since drawn together, under the G20 group, a panel to produce 'A Roadmap toward a Common Framework for Measuring the Digital Economy'. The definition that they have arrived at was that;

"The Digital Economy incorporates all economic activity reliant on, or significantly enhanced by the use of digital inputs, including digital technologies, digital infrastructure, digital services and data. It refers to all producers and consumers, including government, that are utilising these digital inputs in their economic activities."

The report focused on defining the Digital economy in terms of Infrastructure; Empowering Society; Innovation and Technology; Adoption; and Jobs and Growth. It set out how the existing framework of national statistics could be used to standardise measurements in all these areas under the agreed definition of the digital economy. Using the Standard Industrial Classification of economic activities (SIC), the digital sector is defined as encompassing the sub-sectors outlined in Table 2.

Table 2 OECD Digital Economy SIC components

SIC code	Description
26.1	Manufacture of electronic components and boards
26.2	Manufacture of computers and peripheral equipment
26.3	Manufacture of communication equipment
26.4	Manufacture of consumer electronics
26.8	Manufacture of magnetic and optical media
46.5	Wholesale of information and communication equipment
58.2	Software publishing
61.1 – 61.9	Telecommunications
62	Computer programming, consultancy and related activities
63.1 – 63.9	Information service activities
95.1	Repair of computers and communication equipment

In the United Kingdom, the Office for National Statistics produces statistics related to what it calls the 'Digital sector' as distinct from the 'Digital economy'. The digital sector expands on the OECD definition by adding sub-sectors related to media. These sub-sectors are set out in Table 3.

Table 3 ONS Digital Sector Supplementary SIC components

SIC code	Description
58.1	Publishing activities
59.1 – 59.2	Motion picture, video and television programme production, sound recording and music publishing activities
60.1	Radio broadcasting
60.2	Television programming and broadcasting activities

Looking to measure the size of the digital sector in Ireland, the most up to date source of information on employment under the SIC framework is the Labour Force Survey. However, the level of detail provided by the LFS in Ireland does not allow for as detailed a measurement as in the UK. The LFS can report persons aged 15 - 89 years in employment (ILO) classified by NACE Rev.2 Economic Sector. NACE refers to the EU classification system based on the United Nations' International Standard Industrial Classification of all Economic Activities and is comparable to the UK SIC classification. Unfortunately, due to the underlying sample size in the Irish LFS, employment statistics can only be reported at the 2-digit NACE level which does not give the same level of detail. This presents challenges in estimating the size of the digital sector because not all employment in the 2-digit sector can be classified as being a part of the digital economy. The wholesale sector at 2-digit level is too large to include just for the wholesale of computers and therefore it is omitted from the estimate below. The Repair of computers while recorded at 2-digit level does not produce a sufficiently robust estimate from the LFS sample and so therefore it cannot be reported. With those caveats in mind, Table 4 presents an estimate of the size of the digital sector in Ireland in the final quarter of 2020, the last quarter for which a more complete reporting of 2-digit LFS data could be produced.



Table 4 Adjusted ONS Digital Sector Employment by SIC component Republic of Ireland 2020

NACE code	Sub-sector	Numbers	% Of Digital Employment	% Of Total Employmen
26	Manufacture of computer, electronic and optical products	27600	16.6	1.2
58	Publishing activities	6500	3.9	0.3
59	Motion picture, video and television programme production etc.	7800	4.7	0.3
60	Programming and broadcasting activities	4500	2.7	0.2
61	Telecommunications	21600	13.0	0.9
62	Computer programming, consultancy and related activities	87700	52.7	3.9
63	Information service activities	10700	6.4	0.5
	Total	166400	100	7.3

Source LFS

The census of population offers some indications of the further breakdown of employment data, with the trade-off that the currently available data is now 6 years old. However, it does allow us to show in slightly greater detail what the make-up of employment in the sector was in 2016, particularly on the manufacturing side. Rather than showing numbers which are likely to be quite out of date, Table 5 shows how much of total employment in the digital sector is accounted for by each sub-sector. Overall, the results are broadly similar, showing there has been some decline in the share of digital manufacturing and digital media, and a shift toward computer programming and information services.

Table 5 Adjusted ONS Digital Sector Employment by SIC component Republic of Ireland 2016

NACE	Sub-sector	% of Digital Employment
261	Electronic components and boards	8.5
262	Computers and peripheral equipment	7.5
263-268	Other electronic and optical products	3.2
58	Publishing activities	4.8
59	Picture, video and television programmes, sound recording and music publishing	4.5
60	Programming and broadcasting activities	3.9
61	Telecommunications	13.6
62,63	Computer programming, consultancy and Information service	51.8
95	Repair of computers and personal and household goods	2.1

Source Census of Population



The main benefit of the census data is that it allows us to show a more detailed picture of the regional breakdown of digital employment across Ireland. Regional data in this detail is not possible given the sample size of the LFS, so while the census of population data is quite out of date, it can give us an indication of how regions diverged from the national average in 2016 and which sub-sectors were most important for each region. Given that we have some idea how the national structure may have changed since 2016, that can give us some indication of how these trends may have played out at the regional level.

Table 6 shows each sub-sector of the digital economy and how its employment is spread among the 8 regions outlined in Table 1. When looking at the 3 manufacturing components of the digital sector, it can be seen that for *Electronic components and boards*, while Dublin still has the greatest share at 26.8%, both the Mid-East and the South-West have just under and just over one quarter of all employment between them. The Mid-West also rivals Dublin in *Other electronic and optical components*, accounting for over one fifth of all employment compared to just under one quarter in Dublin. The South-West is clearly the most important region in the manufacture of *Computers and peripheral equipment* accounting for 46% of all employment, significantly ahead of the next two regions, Dublin and the Mid-East.

Dublin clearly dominates all of the media related sectors of the digital economy, accounting for over half of all employment, with the exception of *Publishing activities* where it falls short at 48%. The South-West is the only region with a share of employment greater than 10% in any of the three sub-sectors. The Mid-East performs strongly in the *Telecommunications and Computer programming, consultancy and Information service* sub-sectors with the Mid-West also having a strong showing in the latter. Similar to the manufacturing sub-sectors, Dublin's dominance in the repair sector is much weaker, with the South-West and Mid-East along with the Mid-West accounting for just under half of total employment between them.

Table 6 Adjusted ONS Digital Sector Employment by SIC component by NUTS Region Republic of Ireland 2016

	Border	Dublin	Mid-East	Midland	Mid-West	South-East	South-West	West
Electronic components and boards	1.9	26.8	24.0	4.5	25.5	2.6	10.2	4.4
Computers and peripheral equipment	2.9	17.2	12.7	3.0	7.8	3.2	46.2	7.0
Other electronic and optical products	3.1	24.3	12.8	11.7	20.9	5.1	9.0	13.0
Publishing activities	5.1	48.0	14.5	3.6	5.3	5.7	11.3	6.6
Picture, video and television programmes, sound recording and music publishing	3.9	55.3	14.6	2.5	3.8	5.8	7.3	6.8
Programming and broadcasting activities	3.3	57.1	13.1	2.3	3.9	4.6	7.0	8.7
Telecommunications	4.1	46.4	15.3	5.3	9.6	5.1	7.8	6.5
Computer programming, consultancy and Information service	3.7	52.6	12.3	2.3	4.7	3.3	14.5	6.5
Repair of computers and personal and household goods	7.0	30.4	14.1	6.2	10.5	8.3	14.1	9.4

Source Census of Population

While Table 6 shows how important each region is to each sector of the digital economy, the other way to evaluate regional balance is to look at how important each sub-sector is to each region. Table 7 shows how much of total digital sector employment is accounted for by each sub-sector in each region. The overall picture that emerges is that *Computer programming, consultancy and Information service* is the most important digital subsector in every region in the country. It accounts for more than half of all employment in the Border, Dublin, South-West regions and just under half in the West region. It is still the largest sub-sector overall in the remainder of the regions but only accounts for 44% and 45% in the South-East and the Mid-East region respectively and just around a third in the Mid-West and Midland regions. The Telecommunications sector is strong in all regions with the exception of the South-West where the manufacture of *Computers and peripheral equipment* dominates. The manufacture of *Electronic components and boards* similarly accounts for 27.3% of employment in the Mid-West, the highest of any region.

Table 7 Employment in NUTS region by Adjusted ONS Digital Sector Region Republic of Ireland 2016

	Electronic components and boards	Computers and peripheral equipment	Other electronic and optical products	Publishing activities	Picture, video and television programmes, sound recording and music publishing	Programming and broadcasting activities	Telecommunications	Computer programming, consultancy and Information service	Repair of computers and personal and household goods
Border	4.5	5.9	2.7	6.8	4.8	3.5	15.3	52.6	4.1
Dublin	5.0	2.9	1.7	5.1	5.4	4.8	13.9	59.8	1.4
Mid-East	14.6	6.8	2.9	5.0	4.6	3.6	14.9	45.4	2.1
Midland	11.4	6.7	11.2	5.1	3.3	2.6	21.1	34.9	3.8
Mid-West	27.3	7.4	8.5	3.2	2.1	1.9	16.3	30.6	2.8
South-East	5.7	6.1	4.2	7.0	6.6	4.5	17.7	43.7	4.5
South-West	5.9	23.8	2.0	3.7	2.2	1.8	7.2	51.2	2.0
West	5.6	7.9	6.3	4.7	4.5	5.0	13.1	49.9	3.0

Source Census of Population

The SIC structure is useful in terms of estimating the size of the digital sector as regards output, trade or infrastructure as well as employment. However, labour market data codifies employment not only by the industry in which a person's job is located, but also the nature of the job that they do, their occupation. Using occupation level data can also give us another insight into the size and make-up of the digital sector. Once again, the Office for National Statistics in the UK have devised a list of occupations deemed to be a part of the digital economy. Similar to industries, occupations are organised under Standard Occupational Classification (SOC) and those digital occupations are as set out in Table 8 below.

Table 8 ONS Digital Occupations

SOC	Occupation
1136	IT and telecommunications directors
2133	IT specialist managers
2134	IT project and programme managers
2135	IT business analysts, architects & systems designers
2136	Programmers and software development professionals
2137	Web design & development professionals
2139	IT & telecommunications professionals not elsewhere classified
3131	IT operations technicians
3132	IT user support technicians
5242	Telecommunications engineers
5245	IT Engineers

Conveniently, the Labour Force Survey in Ireland also used the UK SOC classification and so data is even more easily compared. However, as with industry level employment data, detailed occupational level data in the Labour Force Survey suffers from even more stringent limitations due to underlying sample size. While the SOC occupations in the digital sector are described in 4-digit SOC, the LFS can only public 3-digit SOC level. While this does cover some of the occupations outlined in table 8, it is necessarily less precise and includes a lot of sub occupations that should not be included. Note that the size of the digital sector by occupation is significantly larger than that as described by industry of employment.

Table 9 ONS Digital Occupations Republic of Ireland 2021

SOC	Occupation	Numbers	% of Digital Employment	% of Total Employment
113	Functional managers and directors	51700	24.7	2.1
213	Information technology and telecommunications professionals	81900	39.1	3.3
313	Information technology technicians	33400	16.0	1.3
524	Electrical and electronic trades	42200	20.2	1.7
	Total	209200	100	8.3

Source LFS

Once again, this is where census data can provide more detail in the breakdown of the sector. The census data provides occupational detail to the 4-digit SOC level and it is set out in Table 10. Once again, given that this data is from 2016, much is likely to have changed, but it does give some indication of how the breakdown of occupations sits at the national level.

Table 10 ONS Digital Occupations Republic of Ireland 2016

SOC	Occupation	% of Digital Employment
2133	IT specialist managers	15.4
2134	IT project and programme managers	6.2
2135	IT business analysts, architects and systems designers	6.0
2136	Programmers and software development professionals	29.1
2137	Web design and development professionals	3.4
2139	Information technology and telecommunications professionals n.e.c.	9.5
3131	IT operations technicians	10.2
3132	IT user support technicians	8.1
5242	Telecommunications engineers	6.5
5245	IT engineers	5.5
		100.0

Source Census of Population

What the figures in Table 10 show is that *programmers and software developers* account for the overwhelming majority of occupations and make up just under 30% of all occupations within the digital sector. *IT specialist managers* account for the next largest share followed by *Information technology and telecommunications professionals*. Within the Information technology technicians, there is a more even split between *operations technician* and *user support technicians*.

Once again, the advantage of census data is that it allows us to present a much fuller picture of digital occupations at the regional level. Table 11 below shows how each of the digital occupations is spread across the regions of Ireland. Once again, percentage figures are used, as employment figures are likely to have changed considerably over the time period. Dublin dominates the regions accounting for between 40% and 55% in all occupations except for *Telecommunications engineers*, where it accounts for a third of all employment. However, Dublin is strongest in *Information technology and telecommunications professionals*, where it accounts for just over 55% of all employment. The Mid-East and the South-West are the next two best performing regions accounting for an average of 13% and 14% of all employment across the occupations. Either one of these regions has the second highest proportion of employment in each occupations sector after Dublin.

Table 11 ONS Digital Occupations by NUTS Region Republic of Ireland 2016

Sub-sector	Border	Dublin	Mid-East	Midlands	Mid-West	South-East	South-West	West
IT specialist managers	3.3	49.8	16.8	2.7	5.8	3.7	11.5	6.4
IT project and programme managers	3.2	50.5	15.3	2.1	7.5	2.5	13	5.9
IT business analysts, architects and systems designers	6	44.9	13	2.6	7.2	5.5	14.4	6.5
Programmers and software development professionals	3.7	50.4	10.4	4.2	6.5	3.7	12.2	8.9
Web design and development professionals	4.6	48	13.6	3	7	6.4	9.6	7.8
Information technology and telecommunications professionals n.e.c.	3.7	55.1	15.2	2.4	5.1	4	9.6	4.9
IT operations technicians	5.4	40.4	15.9	4.2	8.4	5.1	13.9	6.7
IT user support technicians	3.7	42.4	12.3	2.4	6	5.4	21.1	6.6
Telecommunications engineers	7.1	33.9	15.5	6.5	11.1	7.2	11.4	7.3
IT engineers	4.3	42.6	13.2	3.8	8.2	4.5	15.9	7.4

Source Census of Population

Table 12 shows how important each digital occupation is to each region in Ireland. What stands out most clearly from this table is that *Programmers and software development professionals* are the most important digital occupation in all regions in Ireland. They account for between 22% of all occupations in the Mid-East region up to a high of 36% in the West region. *IT specialist managers* are the next most important occupation in the Dublin and South-West regions with *IT user support technicians* also equally important to the South-West region. While there are obviously differences in terms of the exact percentage of employment, there is a discernible pattern among the regions with regard to the importance of each occupation. No one region stands apart as having a significantly different occupational structure which is in contrast to the digital industrial structure of each region as shown in Table 7.

Table 12 Employment in NUTS Region by Digital Occupation Republic of Ireland 2016

	IT specialist managers	IT project and programme managers	IT business analysts, architects and systems designers	Programmers and software development professionals	Web design and development professionals	Information technology and telecommunications professionals n.e.c.	IT operations technicians	IT user support technicians	Telecommunications engineers	IT engineers
Border	12.1	4.8	8.6	25.8	3.7	8.4	13.1	7.2	10.9	5.6
West	13.7	5.1	5.5	36.3	3.7	6.5	9.5	7.5	6.6	5.7
Mid-West	12.8	6.8	6.3	27.2	3.4	7.1	12.5	7.1	10.3	6.6
South-East	13	3.5	7.4	24.6	4.9	8.5	11.8	9.9	10.6	5.7
South-West	13.6	6.2	6.7	27.4	2.5	7.1	10.9	13.2	5.7	6.8
Dublin	16.2	6.7	5.7	31.1	3.5	11.1	8.7	7.3	4.6	5
Mid-East	19	7	5.8	22.2	3.4	10.7	11.9	7.3	7.4	5.4
Midlands	11.7	3.8	4.5	34.7	2.9	6.6	12.2	5.5	12	6

Source Census of Population

**No one region stands apart as having
a significantly different occupational
structure which is in contrast to the digital
industrial structure**





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