

Summary quantitative profile of enterprises and employment in the cable installation industry

David Owen, Institute for Employment Research, University of Warwick.

6th December 2019.

Executive Summary

- There is no clear message about trends in the number of enterprises and employment demand in the (fibre optic) cable installation industry sector.
- The Available data uses the 2007 Standard Industrial Classification, which splits the industry across two industry “classes”, which also contain very different activities within the general headings of civil engineering related to cabling and electrical installation.
- The two industry classes have contrasting trends in overall employment. It is not clear what the contribution of fibre optic cable installation to these trends.
- It is possible to examine the characteristics of workers in these industry classes using the Labour Force Survey (LFS). This indicates that migrant workers form a small part of the workforce, which has a relatively old age structure.
- However, it is difficult to draw clear conclusions from the LFS, because the number of workers found by the survey working in these industries is small and sampling uncertainty is therefore high.

1. Data Sources and industry definitions

There are a limited number of sources of quantitative data on industries in Great Britain. The major sources of data on *business and employment numbers* are:

- The UK Business Counts dataset derived from the Inter-Departmental Business Register (available annually from 2010). This records size of business defined in terms of employment numbers (banded) and turnover.
- The Business Register and Employment Survey (an annual survey of businesses sampled from the IDBR available from 2009 to 2018). It collects data on the number of employees working full- and part-time. It is the successor to the Annual Business Inquiry and Census of Employment.

Data from both of these sources is available from the Office for National Statistics' NOMIS labour market information system.

The major source of data on the characteristics of *workers* is:

- The ONS quarterly Labour Force Survey, a quarterly random survey of around 90 thousand people living in private households.

Microdata from the ONS Quarterly Labour Force Survey is distributed by the UK Data Service. The survey records the SIC code of the industry in which a person works, together with a range of data on their demographic characteristics, earnings and working conditions. Microdata permits bespoke tabulations of the characteristics of people working in particular industries to be produced.

All three sources present information on industry of employment using the 2007 UK Standard Industrial Classification. This is a hierarchical classification, grouping related industries together with the coding identifying how individual industries group together into industrial classes (the most detailed level) through divisions and groups to sections and sectors (the least detailed level). Classes (4 digit coding) identify over 400 individual industries. Unfortunately, even with this level of industrial detail, cable installation is not separately identified. The nearest matches being presented in Table 1.

There is considerable ambiguity in these descriptions. It is unclear whether Class 42.22 is largely concerned with major infrastructure projects for power networks or whether firms working on cabling computer networks would be included as well. It seems that the latter would be included in Class 43.21, but this also includes a lot of unrelated activity, including electricians and domestic wiring. In earlier industry classifications (SIC 1992 and 2003), cable installation activity is also found within catch-all industry codes which also include activities like electrical wiring.

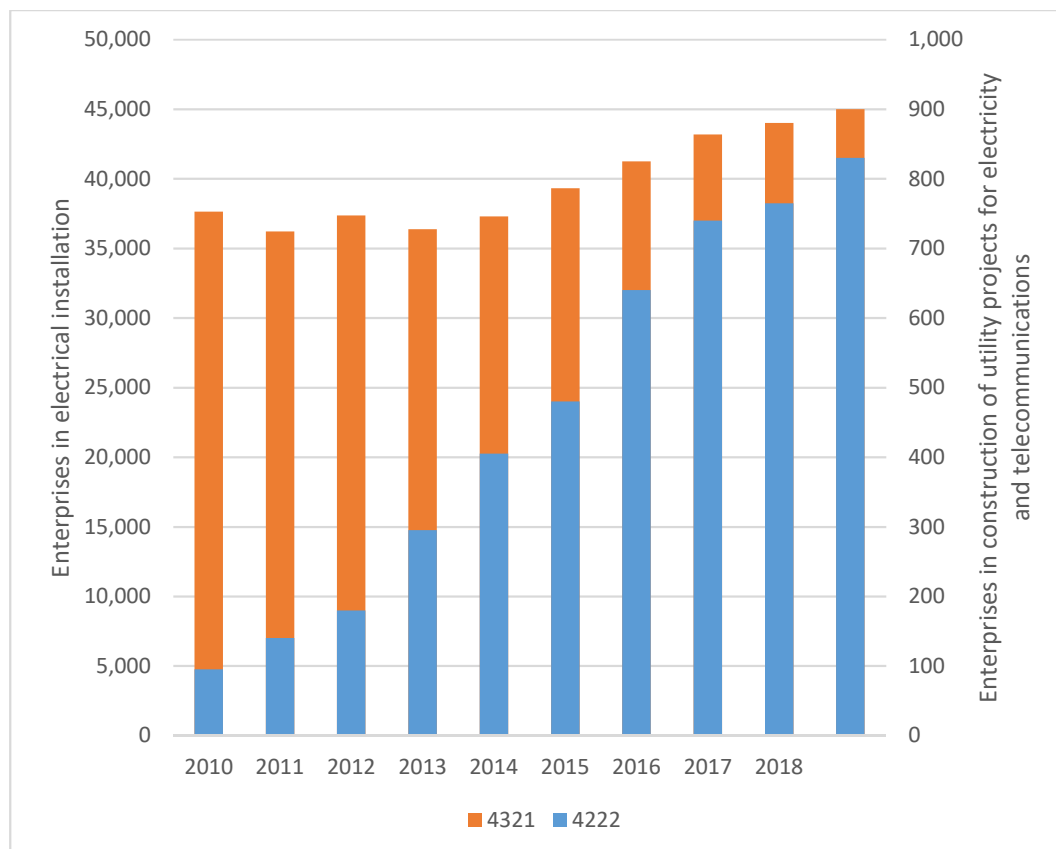
Table 1: The sector and the UK Standard Industrial Classification, 2007

SIC 2007 class	Description
42.22: Construction of utility projects for electricity and telecommunications	<p>This class includes the construction of distribution lines for electricity and telecommunications and related buildings and structures that are an integral part of these systems.</p> <p>It includes:</p> <ul style="list-style-type: none"> • construction of civil engineering constructions for: power plants, long-distance and urban communication and power lines <p>It excludes:</p> <ul style="list-style-type: none"> • project management activities related to civil engineering works
43.21: Electrical installation	<p>This includes the installation of electrical systems in all kinds of buildings and civil engineering structures of electrical systems.</p> <p>It includes installation of:</p> <ul style="list-style-type: none"> • electrical wiring and fittings • telecommunications wiring • computer network and cable television wiring, including fibre optic • satellite dishes • lighting systems • fire alarms • burglar alarm systems • street lighting and electrical signals • airport runway lighting • electric solar energy collectors <p>as well as connecting of electric appliances and household equipment, including baseboard heating</p> <p>It excludes:</p> <ul style="list-style-type: none"> • construction of communications and power transmission lines • monitoring and remote monitoring of electronic security systems, such as burglar alarms and fire alarms, including their installation and maintenance.

2. Trends in number of enterprises in the sector, 2010-2019

Data from the UK Business Counts is used here to illustrate the activity in the two SIC industry classes identified as including relevant businesses in Great Britain as a whole. The number of enterprises in electrical installation greatly outnumbers the number in Construction of utility projects for electricity and telecommunications, with 45,005 in the former and 830 in the latter. Figure 1 shows how the number of enterprises has grown over the period 2010 to 2019. The number of enterprises in class 42.22 increased almost eightfold over the period while growth in enterprises in class 43.21 has been more steady.

Figure 1: Growth in number of enterprises in industry classes 42.22 and 43.21



Source: UK Business Counts. Note: data is for Great Britain.

The changing size structure (in terms of employees) of each industry class is presented in Tables 2 (class 42.22) and 3 (class 43.21). Around 9 in ten of enterprises in both industry classes employ less than ten people, but small enterprises are more common in electrical installation, with their share of all enterprises increasing over the period 2010 to 2019. The mean size of enterprises in class 42.22 is larger than for class 43.21. As the mean size of the latter fell (from 8.4 to 7.7 employees), the mean size of enterprises in class 42.22 increased, being 10.5 in 2019 compared to 7.6 in 2010. The share of large enterprises (employing at least 250 people) increased in mid-decade to reach a peak in 2015 (but these still represented only 1 per cent of enterprises).

Table 2: Size structure of industry class 42.22: “Construction of utility projects for electricity and telecommunications”

Year	Enterprises	Number of employees (Percentage of enterprises)				
		Micro (0 to 9)	Small (10 to 49)	Medium-sized (50 to 249)	Large (250+)	Mean size
2010	95	89.5	10.5	0.0	0.0	7.6
2011	140	89.3	7.1	0.0	0.0	6.6
2012	180	86.1	11.1	0.0	0.0	7.6
2013	295	89.8	8.5	0.0	0.0	7.0
2014	405	90.1	8.6	1.2	0.0	9.0
2015	480	89.6	8.3	1.0	1.0	11.7
2016	640	89.8	8.6	0.8	0.8	10.6
2017	740	90.5	8.1	1.4	0.7	11.0
2018	765	90.2	7.8	0.7	0.7	9.8
2019	830	91.0	7.8	1.2	0.6	10.5

Source: UK Business Counts. Note: data is for Great Britain.

Table 3: Size structure of industry class 43.21: Electrical installation

Year	Enterprises	Number of employees (Percentage of enterprises)				
		Micro (0 to 9)	Small (10 to 49)	Medium-sized (50 to 249)	Large (250+)	Mean size
2010	37,645	91.6	7.5	0.8	0.1	8.4
2011	36,215	92.0	7.0	0.8	0.1	8.3
2012	37,365	92.5	6.8	0.7	0.1	8.0
2013	36,385	91.9	7.2	0.7	0.1	8.3
2014	37,295	92.3	6.9	0.6	0.1	8.0
2015	39,310	92.6	6.7	0.7	0.1	7.9
2016	41,250	93.0	6.3	0.7	0.1	7.8
2017	43,190	93.2	6.1	0.6	0.1	7.7
2018	44,005	93.3	6.0	0.7	0.1	7.7
2019	45,005	93.4	5.9	0.7	0.1	7.7

Source: UK Business Counts. Note: data is for Great Britain.

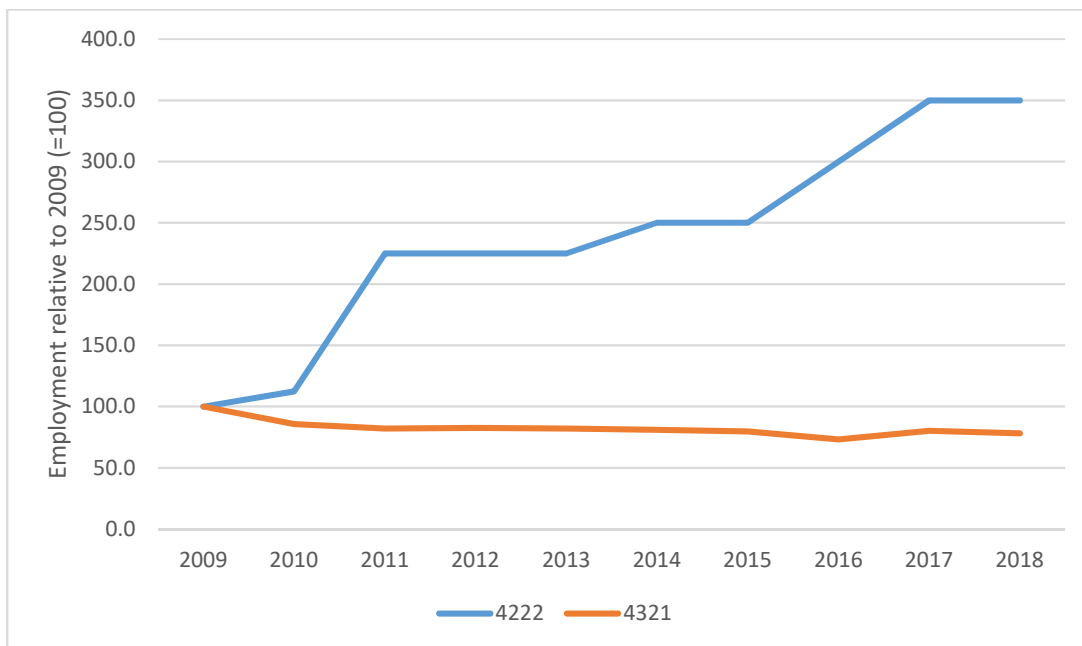
Electrical installation dominates employment, with approaching a quarter of a million people working in these industries in 2009, but this total fell to 201 thousand by 2018 (table 3). The number working in construction of utility projects for electricity and telecommunications was much smaller, but grew from 4 to 14 thousand between 2009 and 2018 (Table 4). Figure 2 demonstrates the contrast in employment trends between the two industry classes.

Table 4: Employment in industry class 42.22: “Construction of utility projects for electricity and telecommunications” and 43.21: “Electrical installation”

Year	4222			4321		
	Employed	Business owners	Total employment	Employed	Business owners	Total employment
2009	4,000	0	4,000	235,000	22,000	257,000
2010	4,500	0	4,500	205,000	15,000	220,000
2011	9,000	0	9,000	194,000	17,000	211,000
2012	9,000	0	9,000	197,000	15,000	212,000
2013	9,000	0	9,000	193,000	18,000	211,000
2014	10,000	0	10,000	197,000	11,000	208,000
2015	10,000	0	10,000	193,000	12,000	205,000
2016	11,000	1,000	12,000	177,000	11,000	188,000
2017	14,000	0	14,000	196,000	10,000	206,000
2018	14,000	0	14,000	190,000	11,000	201,000

Source: Business Register and Employment Survey (open version). Note: data is for Great Britain.

Figure 2: Relative employment trends 2009-2018 for in industry class 42.22: “Construction of utility projects for electricity and telecommunications” and 43.21: “Electrical installation”



Source: Business Register and Employment Survey (open version). Note: data is for Great Britain.

3. Characteristics of employment in these sectors

Official statistics on employment are limited in the amount of information they provide on the characteristics of work in an industry. The nature of employment in an industry can be explored in more detail by analysing surveys of the population, such as the Labour Force Survey. This sample survey collects information on the industry in which a person works, as well as their demographic characteristics. This source can thus provide information on the demographic background of workers, the jobs they do and the use of migrant labour by an industry (Table 5). Because small sample numbers may be, data is summarised for three time periods, rather than being presented for individual years. Both industries predominantly employ men, but the percentage of female workers has increased over the period to represent an eighth of all workers in class 42.22, but averaged around a tenth in class 43.21 across the period. Over two-fifths of workers in construction of utility projects are aged 35 to 49, but the percentage of younger workers was increasing over time. In both industry classes, around a quarter of workers are aged over 50. Self-employment has risen to account for a third of all those working in electrical installation during 2016 to 2018,

Table 5: Characteristics of people working in industry class 42.22: “Construction of utility projects for electricity and telecommunications” and 43.21: “Electrical installation”

	42.22: “Construction of utility projects for electricity and telecommunications” (column percentage)				43.21: “Electrical installation” (column percentage)			
	2009-12	2013-15	2016-18	2009-2018	2009-12	2013-15	2016-18	2009-2018
Male	90.1	83.8	87.5	87.6	89.5	88.6	89.9	89.4
Female	9.9	16.2	12.5	12.4	10.5	11.4	10.1	10.6
Persons	19191	16399	23669	19697	256461	211346	201671	226489
16-24	5.0	7.7	13.0	8.5	14.6	13.6	14.2	14.2
25-34	22.9	31.1	22.2	24.7	24.9	26.1	24.2	25.1
35-49	45.9	34.6	44.7	42.6	36.6	35.6	34.3	35.7
50-64	26.2	26.6	20.1	24.1	23.9	24.8	27.3	25.1
All ages	19092	16399	23044	19470	252075	205568	195184	221056
Employee	91.7	82.4	87.7	87.9	73.7	72.3	69.6	72.2
Self-employed	8.9	16.6	15.0	13.0	27.1	29.9	33.4	29.6

Source: ONS Quarterly Labour Force Survey

Around a third of employment in class 42.22 “Construction of utility projects for electricity and telecommunications” is in managerial and professional occupations, compared with about a fifth for “electrical installation”, with a further eighth of workers in class 42.22 in associate professional and technical occupations (Table 6). Around 30 per cent of workers in 42.22 are skilled trades workers, but two-thirds of those in class 43.21 are in skilled trades occupations. Process, plant and machine operatives represent nearly a tenth of workers in class 42.22, but under 2 per cent of those working in class 43.21. The former industry clearly has a greater relative demand for more highly-qualified staff while the latter has a greater reliance on craft occupations. Elementary occupations form a small share of total employment in both industry classes.

Table 6: Summary occupational profile of people working in industry class 42.22: “Construction of utility projects for electricity and telecommunications” and 43.21: “Electrical installation”

SOC 2010 Major Group	42.22: “Construction of utility projects for electricity and telecommunications” (column percentage)				43.21: “Electrical installation” (column percentage)			
	2010-12	2013-15	2016-18	2009-2018	2010-12	2013-15	2016-18	2009-2018
Managers, directors and senior officials	10.1	12.6	10.8	11.2	7.4	8.5	7.6	7.9
Professional occupations	24.0	28.1	27.2	26.7	13.3	9.9	10.1	10.9
Associate professional and technical	11.3	13.0	12.4	12.3	7.0	4.7	5.3	5.6
Administrative and secretarial	7.3	9.1	4.1	6.4	7.3	8.9	6.5	7.6
Skilled trades occupations	27.0	23.0	34.3	29.1	59.8	61.1	63.2	61.5
Caring, leisure and other service	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Sales and customer service	1.3	2.1	1.8	1.8	1.2	1.5	1.2	1.3
Process, plant and machine operatives	11.9	7.8	8.2	9.0	1.6	1.8	1.5	1.6
Elementary occupations	7.1	4.2	1.2	3.5	2.4	3.6	4.5	3.6
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: ONS Quarterly Labour Force Survey

This is emphasised when examining the largest 15 individual occupations in the two industry classes (Table 7). Examination of the occupational titles provided by BSG suggested that the following SOC 2010 occupations might represent workers in cable installation:

- 2124 Electronics engineers
- 2139 IT and telecommunications professionals n.e.c.
- 5242 Telecommunications engineers

In Class 42.22, telecommunications engineers are the largest single occupation, accounting for 7 per cent of all workers in the industry. They form a slightly smaller percentage of employment in class 43.21, in which 45.8 per cent of workers are “electricians and electrical fitters”. Electronics engineers form 1.4 per cent of employment in class 43.21 and 1.1 per cent of employment in class. 42.22. IT and telecommunications professionals n.e.c represent 0.8 per cent of employment in Class 42.22 and 1.3 percent of employment in Class 43.21.

Table 7: Largest 15 occupations 2010-2018 for people working in industry class 42.22: “Construction of utility projects for electricity and telecommunications” and 43.21: “Electrical installation”

class 42.22: “Construction of utility projects for electricity and telecommunications”		Class 43.21: “Electrical installation”	
SOC 2010 Occupation	Percent	SOC 2010 Occupation	Percent
5242 'Telecommunications engineers'	7.0	5241 'Electricians and electrical fitters'	45.8
5249 'Electrical and electronic trades n.e.c.'	6.5	5242 'Telecommunications engineers'	6.5
2121 'Civil engineers'	6.5	5249 'Electrical and electronic trades n.e.c.'	4.2
5241 'Electricians and electrical fitters'	6.3	4159 'Other administrative occupations n.e.c.'	2.7
1122 'Production mngrs and directors in construction'	4.0	1122 'Production mngrs and directors in construction'	2.0
2436 'Construction project mngrs and related professionals'	3.2	1121 'Production mngrs and directors in manufacturing'	1.9
2123 'Electrical engineers'	2.6	9139 'Elementary process plant occupations n.e.c.'	1.8
3113 'Engineering technicians'	2.4	2133 'IT specialist mngrs'	1.6
4161 'Office mngrs'	2.1	5250 'Skld metal, electrical and electrnc trades sprvsrs'	1.4
5250 'Skld metal, electrical and electrnc trades sprvsrs'	1.9	5244 'TV, video and audio engineers'	1.4
2424 'Business and financial project mngmnt professionals'	1.8	2124 'Electronics engineers'	1.4
5223 'Metal working production and maintenance fitters'	1.8	4122 'Book-keepers, payroll mngrs and wages clerks'	1.4
9120 'Elementary construction occupations'	1.7	2139 'IT and telecommunications professionals'	1.3
4159 'Other administrative occupations n.e.c.'	1.7	3545 'Sales accounts and business development mngrs'	1.2
8149 'Construction operatives n.e.c.'	1.7	2123 'Electrical engineers'	1.2

Source: ONS Quarterly Labour Force Survey

4. Migrant workers in the two sectors

Table 8: Migration profile 2010-2018 for people working in industry class 42.22: “Construction of utility projects for electricity and telecommunications” and 43.21: “Electrical installation”

	42.22: “Construction of utility projects for electricity and telecommunications” (column percentage)				43.21: “Electrical installation” (column percentage)			
	2009-2012	2013-2015	2016-2018	2009-2018	2009-2012	2013-2015	2016-2018	2009-2018
UK-born UK citizen	93.4	88.2	87.8	90.1	93.3	93.2	93.4	93.3
Overseas born UK citizen	0.9	3.3	5.7	3.2	3.7	4.2	3.3	3.7
Overseas born non citizen	5.7	8.5	6.5	6.7	3.0	2.6	3.2	3.0
Total	76206	49196	71006	196408	1022293	632762	600966	2256021
UK	93.4	88.2	86.8	90.5	93.3	93.2	93.5	93.3
EU15	0.0	2.4	1.9	1.1	1.1	0.8	2.1	1.2
EU8	1.7	2.7	0.7	1.8	0.5	0.4	0.6	0.5
EU2	0.0	0.7	0.0	0.2	0.4	0.3	0.5	0.4
Other EU	0.0	1.4	2.8	1.0	0.0	0.2	0.0	0.1
Other Europe	0.0	0.0	1.4	0.3	0.2	0.6	0.4	0.4
Middle East and Central Asia	0.0	0.0	0.0	0.0	0.3	0.2	0.3	0.3
East Asia	1.3	0.0	0.0	0.6	0.1	0.0	0.0	0.0
South Asia	1.0	0.8	6.4	2.0	1.2	1.1	1.1	1.1
South East Asia	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.2
North Africa	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sub-Saharan Africa	0.7	1.9	0.0	0.9	1.4	1.7	0.9	1.4
North America	1.5	2.0	0.0	1.4	0.6	0.9	0.2	0.6
Central and South America	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1
Oceania	0.4	0.0	0.0	0.2	0.5	0.3	0.4	0.4
Total	76206	49196	30680	156082	1022293	633083	302389	1957765
0-2 years	21.5	13.7	15.1	16.3	1.3	1.2	10.7	3.8
2 to 4 years	5.9	12.2	0.0	4.9	9.1	1.5	4.4	5.7
4 to 6 years	19.1	7.6	0.0	6.9	8.8	0.7	10.7	7.0
6 to 10 years	15.9	8.0	2.4	7.4	17.9	19.5	7.1	15.5
Over 10 years	37.6	58.5	82.5	64.5	62.9	77.1	67.0	68.0
Total	4607	5278	8634	18519	67794	42392	39545	149731

Source: ONS Quarterly Labour Force Survey

The share of people born outside the UK in the workforce of industry class 42.22 has increased over the last decade, representing about one-twelfth of the workforce during 2016 to 2019, but the migrant percentage in the workforce of industry class 43.21 is somewhat lower (Table 8). International migrants with UK citizenship are likely to have been in the UK longer and/or to have originated in countries which are/were part of the British Commonwealth, and hence have an easier path to UK citizenship. Non-citizens are more likely to have been more recent migrants or to have originated in the EU and hence have had little incentive to obtain UK citizenship.

The share of workers in industry class 42.22 who had been born in the UK fell markedly after 2012. The most common countries of origin for migrant workers are the EU8, EU15, South Asia and North America. The percentage born in the EU8 fell during 2016-18, with an increase in the percentage born in South Asia and "Other EU". In industry class 43.21, migrant shares were smaller, with the EU15 being the largest source of migrants, followed by sub-Saharan Africa and South Asia. The percentage of migrants who had been in the UK more than 10 years was high in both industry classes. The percentage of recent migrants declined over time for industry class 42.22, but there was an increase in recent migrants in class 43.21 during 2016 to 2018. Thus, migrants to industry class 42.22 appear to have arrived less recently than those in industry class 43.21 (but this may be because the LFS is more likely to pick up more settled migrants).

Table 9 presents the migrant status of telecommunications engineers (SOC 2010 code 5242) in the two industry classes. The number of migrant telecommunications engineers in "construction of utility projects for electricity and telecommunications" is too small to provide reliable information. However, migrants form a small percentage of the much larger number of telecommunications engineers in the electrical installation industry and hence more can be said about them. The main sources of migrants are the EU15, EU2, South Asia and Africa south of the Sahara. A small percentage are recent migrants.

Table 9: Migration profile 2010 to 2018 for 'Telecommunications engineers' (SOC 2010 occupation 5242) working in industry class 42.22: "Construction of utility projects for electricity and telecommunications" and 43.21: "Electrical installation"

	42.22: "Construction of utility projects for electricity and telecommunications" (column percentage)				43.21: "Electrical installation" (column percentage)			
	2009-2012	2013-2015	2016-2018	2009-2018	2009-2012	2013-2015	2016-2018	2009-2018
UK-born UK citizen	100.0	87.1	100.0	96.3	93.5	93.1	94.8	93.7
Overseas born UK citizen	0.0	12.9	0.0	3.7	4.0	3.7	4.4	4.0
Overseas born non citizen	0.0	0.0	0.0	0.0	2.5	3.1	0.9	2.3
Total	3259	3164	4569	10992	41886	40620	30148	112654
UK	100.0	87.1	100.0	95.4	93.5	93.2	94.6	93.6
EU15	0.0	0.0	0.0	0.0	0.0	1.4	0.0	0.6
EU8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
EU2	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.5
Other EU	0.0	0.0	0.0	0.0	0.7	0.8	0.0	0.6
Other Europe	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Middle East and Central Asia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
East Asia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
South Asia	0.0	0.0	0.0	0.0	1.7	2.9	5.4	2.8
South East Asia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
North Africa	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.3
Sub-Saharan Africa	0.0	0.0	0.0	0.0	2.2	0.0	0.0	0.9
North America	0.0	12.9	0.0	4.6	0.0	0.0	0.0	0.0
Central and South America	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Oceania	0.0	0.0	0.0	0.0	0.0	1.7	0.0	0.7
Total	3259	3164	2360	8783	41886	40941	17027	99855
0-2 years	-	0.0	-	0.0	0.0	0.0	0.0	0.0
2 to 4 years	-	0.0	-	0.0	16.9	0.0	16.6	10.2
4 to 6 years	-	0.0	-	0.0	0.0	0.0	0.0	0.0
6 to 10 years	-	0.0	-	0.0	41.5	20.1	0.0	23.8
Over 10 years	-	100.0	-	100.0	41.5	80.0	83.4	66.0
Total	0	407	0	407	2703	2793	1574	7070

Source: ONS Quarterly Labour Force Survey

9. Conclusions

This short report has described the difficulty of measuring the cable installation industry using official statistics and surveys.

The industrial and occupational classifications do not capture the industry and its workers adequately. Earlier published data using the 1992 and 2003 Standard Industrial Classifications do not even break the construction sector down in sufficient detail to approximate the sector.

Sample surveys can provide more detailed information for an industry than published statistics. Unfortunately, they are also limited not only by the official industry and occupation classifications, but the small sample sizes for very detailed industries mean that it is not possible to produce detailed migration and socio-economic profiles of each of the individual occupations working in cable installation.

Furthermore, because the LFS is a sample of permanent households, it is not good at capturing highly mobile people or temporary migrants. Therefore, the share of international migrants in the industry will be understated.