Department for Education

Working Futures 2017-2027: Long-run labour market and skills projections

Headline report

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Preface and acknowledgements

The authors are grateful to the Department for Education for commissioning this research. Special thanks are due to Shivali Chotai, Patrick Vanderpant and Eleanor Adamiw from the Skills Policy Analysis team at the Department for Education.

This report has been a team effort, involving a large number of people. Mike May-Gillings, Shyamoli Patel and Ha Bui from Cambridge Econometrics, together with Luke Bosworth, Rosie Day, Peter Millar, David Owen and Sally-Anne Barnes from the Institute for Employment Research all made important contributions to the data analysis and processing. Derek Bosworth was responsible for developing key elements of the modelling the supply of qualified people. The responsibility for the views expressed and for any remaining errors lies with the authors.

The opinions expressed in this report are those of the authors and do not necessarily reflect the views of the Department. The projections should be regarded as indicative of likely developments for the economy and the labour market given the outcome of the 2016 EU referendum, rather than precise forecasts of what will inevitably happen. Many of the trends presented are resilient and are not sensitive to modest unanticipated shocks. They present a view of medium to longer term trends for the UK economy and labour market (5-10 years ahead). The results should be regarded as a robust benchmark for debate and used in conjunction with a variety of other sources of labour market information.

This report provides a concise overview of Working Futures 2017-2027. It is aimed at the general reader and focuses on the key messages from this very detailed study. It complements the more detailed outputs from the project available on the gov.uk website[1].

[1] See https://www.gov.uk/government/organisations/department-for-education

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Introduction

Working Futures 2017-2027

This report provides a concise overview of Working Futures 2017-2027 results for the UK. It presents historical trends and future prospects by sector for the UK and its constituent nations and the English regions. The prime focus of Working Futures is on the demand for skills as measured by employment by occupation and qualification, although the supply side is also considered. Its prime objective is to provide useful labour market information that can help to inform policy development and strategy around skills, careers and employment, for both policy makers and a much wider audience. The results are intended to provide a sound statistical foundation for reflection and debate among all those with an interest in the demand for and supply of skills. It is aimed at the general reader and focuses on the key messages from this very detailed study. It complements the more detailed outputs and results from the project available from the gov.uk website[2] and cover sectors, occupations, geography and qualifications.

There is a wealth of sectoral and spatial detail available within Working Futures that cannot be captured easily in a brief summary report. Information on how to access the full range of reports and data is provided at the end of this summary. The current summary report:

- examines UK output and employment trends by sector and builds up short sector profiles;
- explores the outlook for skills by examining the occupational profile of UK employment, in terms of changing levels of employment and replacement demands, alongside the formal qualifications held by workers.

Working Futures provides a rich and detailed picture of how current employment patterns may evolve over the next decade and gives explicit assumptions about how the world and UK economies, as well as the UK labour market, are expected to behave.

A particular issue in this round of projections is the uncertainties surrounding Brexit. The Working Futures projections are grounded in a forecast of the future macroeconomic and labour market context. This is especially difficult at the present time. The forecast is therefore subject to a number of risks and uncertainties. Most notable among them is the impact on barriers to trade and the movement of people as a result of Brexit.

The available literature on the possible range of impacts of Brexit on the UK economy was reviewed to inform the Working Futures projections. These suggest a large range of possible scenarios which depend upon: the future trading relationship between the UK and the EU and possible impacts on investment patterns (varying across sectors, and dependent on whether the UK negotiates a bespoke deal); and migration flows (ranging

[2] See: https://www.gov.uk/government/organisations/department-for-education

from a relaxed approach to EU migration to a points-based approach). The possible implications of this for the projections are discussed in more detail in the Working Futures 2017-2027 Main report[3] (especially in Appendix A).

At the time of developing the UK macroeconomic forecast (the Autumn of 2018), the following assumptions were made based on announcements and published reports by think-tanks, non-profit organisations and the UK government:

- there is no "cliff-edge" moment, (i.e. the UK agrees some form of transitional deal with the EU);
- the bespoke arrangement with the EU involves:
  - the UK securing an ability to reduce EU migration;
  - the UK remains in the single market for goods, but not services (so there is no financial services passporting); and
  - there are likely to be some continued payments for continued access to EU markets and reflecting ongoing commitments previously entered into.

The Working Futures projections are based on a comprehensive and detailed model of the UK labour market. This model projects the future size and shape of the labour market by considering prospects for the UK economy generally using a detailed multi-sectoral, multi-regional econometric model. It distinguishes employment by industry, occupation, qualification level, gender and employment status.

Working Futures 2017-2027 is produced by the Institute for Employment Research and Cambridge Econometrics on behalf of the Department for Education. This is the seventh in a series of assessments of UK labour market prospects carried out every 2-3 years since 2002.

Aims and objectives

The main purpose of Working Futures is to provide a rich source of information that can inform choice and facilitate evidence based rather than anecdotal decision making.

For employers, it provides an indication of likely future requirements for skilled labour, including by industry, sector and occupation.

For individuals, it gives a sense of where the future jobs may be – and whether they will be in growth industries, or meeting a need to replace retiring workers.

For education and training providers, it gives an insight into the skills that are likely to be in the greatest demand in the future.

[3] Wilson, R. A., S-A. Barnes, M. May-Gillings, H. Bui and S. Patel, (2019). *Working Futures 2017-2027: Main report.* Department for Education.

And for policymakers, it facilitates considerations about whether the education and training system is going to deliver the right people for the right jobs in the future.

Methodology and assumptions

The projections are based on the use of a multi-sectoral, regional macroeconomic model, combined with occupational, replacement demand and qualification modules. The results take account of the latest official data published by the Office for National Statistics.

The projections are based on a set of explicit assumptions about some of the key economic, technological and social trends. They provide a benchmark against which all users can test their own opinions and expectations. To a large extent, they assume that past patterns of behaviour and performance will continue into the future. However, this is tempered by the need to take into account the uncertainties arising from Brexit.

They should not be interpreted as a concrete snapshot of what the future labour market must be, but rather they set out the implications of the various assumptions detailed below. Despite the uncertainties many of the underlying trends and changing patterns are robust and likely to evolve in any event. Readers are advised to focus on changes in patterns of employment for industries and occupations. The projected values provide broad indicators of scale, but they are not precise estimates.

Working Futures is unique as it is the only freely available set of employment projections available for the UK. It is:

- Comprehensive – It covers the entire UK labour market, investigating how different industry sectors' prospects interact, with some expanding and some contracting, and each changing in different ways;
- Robust – It draws on the full range of published statistics to provide an employment baseline by sector, occupation and local area, and uses sophisticated modelling to forecast how these different dimensions are likely to evolve;[4]
- Granular – It provides a very detailed breakdown by sector and occupation allowing an understanding not only of the likely broad changes in the labour market, but also the implications for the skills mix in each industry sector.

[4] Data sources that underpin *Working Futures* include: the Office for National Statistics' UK National and Regional Accounts, Input-Output Supply and Use Tables; the Labour Force Survey; and the 2011 Census.

Macroeconomic and labour market context

Working Futures projects the shape of future UK employment, particularly in terms of industry sector and occupation. The changing industry mix of employment, which is driven by the evolving pattern of demand for goods and services in the economy, has a significant influence on the demand for skills in the labour market. Occupational employment structure varies considerably across industries and occupations that are concentrated in growing sectors will gain employment, in contrast to those concentrated in declining sectors.

The Working Futures projections are grounded in a forecast of the future macroeconomic and labour market context. As noted in the Introduction, this is especially difficult at the present time with all the uncertainties associated with Brexit.

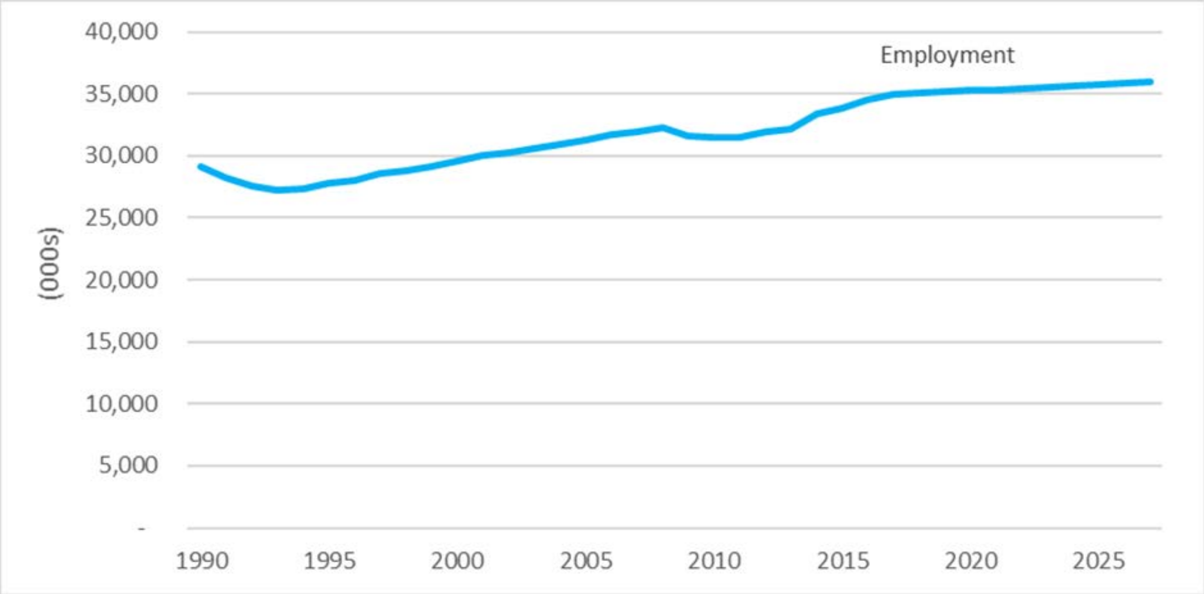
The macroeconomic forecast is based on the use of Cambridge Econometrics' MDM-E3 model. This is used to assess the prospects for the UK economy, based on the likely path of global economic growth, global exchange rates, UK government spending and UK interest rates. It also makes certain assumptions about Brexit. These have been summarised in the introduction and are set out in detail below.

The forecast indicates that despite these uncertainties the most likely outcome is that the UK economy will continue on a sustained path of moderate growth. It is expected that UK GVA growth will peak at 1.7% in 2020, and average 1.1% p.a. for the rest of the forecast period to 2027.

It should be noted that the forecast is subject to a number of risks and uncertainties. Most notable among them is the impact on barriers to trade and the movement of people resulting from Brexit. Further uncertainty lies around US trade policies and the effect that these could have on global trade, as well as the implications of automation and artificial intelligence for employment.

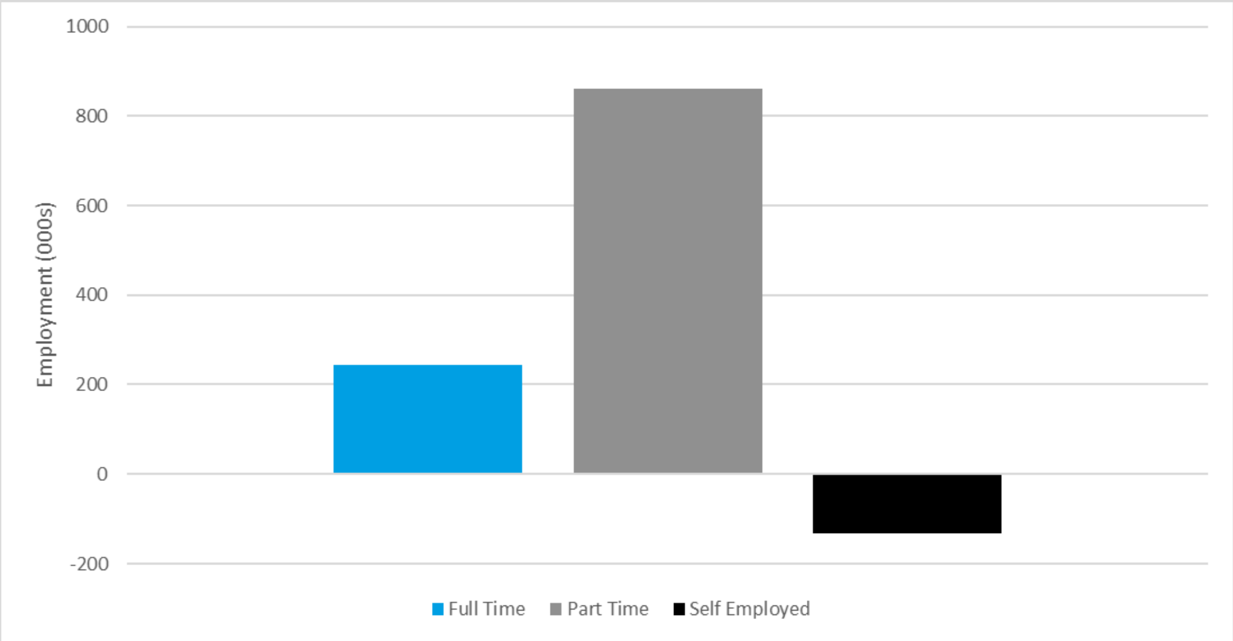
Figure 1 shows that the overall number of jobs in the UK is expected to rise by around 960,000 between 2017 and 2027 (0.3% p.a.). This continues the slowing trend in employment growth seen since the 2016 referendum and reflects the uncertainty surrounding Brexit.

Figure 1: Employment trend in the UK, 1990-2027



While full-time jobs account for about 60% of all jobs going forward, it is expected that most of the newly created jobs will be in part-time roles (see Figure 2), with part-time jobs accounting for just under 30% of all jobs by 2027. This is largely due to the increasing availability and the attractiveness of part-time contracts, as firms try to foster more flexible work environments.

Figure 2: Changes in employment in the UK by status, 2017-2027



Following the recovery of the economy after the 2008 financial crisis, self-employment is also expected to fall over the forecast period across most broad sectors, with self-employment accounting for just over 10% of all jobs by 2027. This ends more than a decade of strong growth in self-employment, which was fuelled by limited job opportunities during the recession (with self-employment providing an alternative to unemployment).

Sectoral prospects

Gross value added (GVA) and employment are important variables to measure the economy's performance. GVA is the measure of the value of goods and services produced in the economy (i.e. the economy's output). It is used as a key indicator of economic growth. The projections of output by sector drive the labour market projections, including employment by sector. Expected employment change also provides a measure of economic growth and prosperity. At the sectoral level, this indicates the types of areas of the economy that are likely to drive growth. This then provides an indication of the future skills needed in the economy.

These two variables can be combined to get GVA per job (employment), which provides a measure of productivity. Productivity is a measure of the efficiency of the economy and how the economy uses its resources. Productivity provides a useful understanding of living standards, competitiveness and economic growth. It is driven by technology, labour market skills and competition, amongst other factors.

Figure 3 provides an overview of the performance by 17 broad sectors of the economy by expected output and employment change for 2017-2027. Sectors that are projected to see growth in both output and employment are located in the top-right quadrant. The size of the bubbles reflect the percentage of the workforce employed in the sector in 2027.

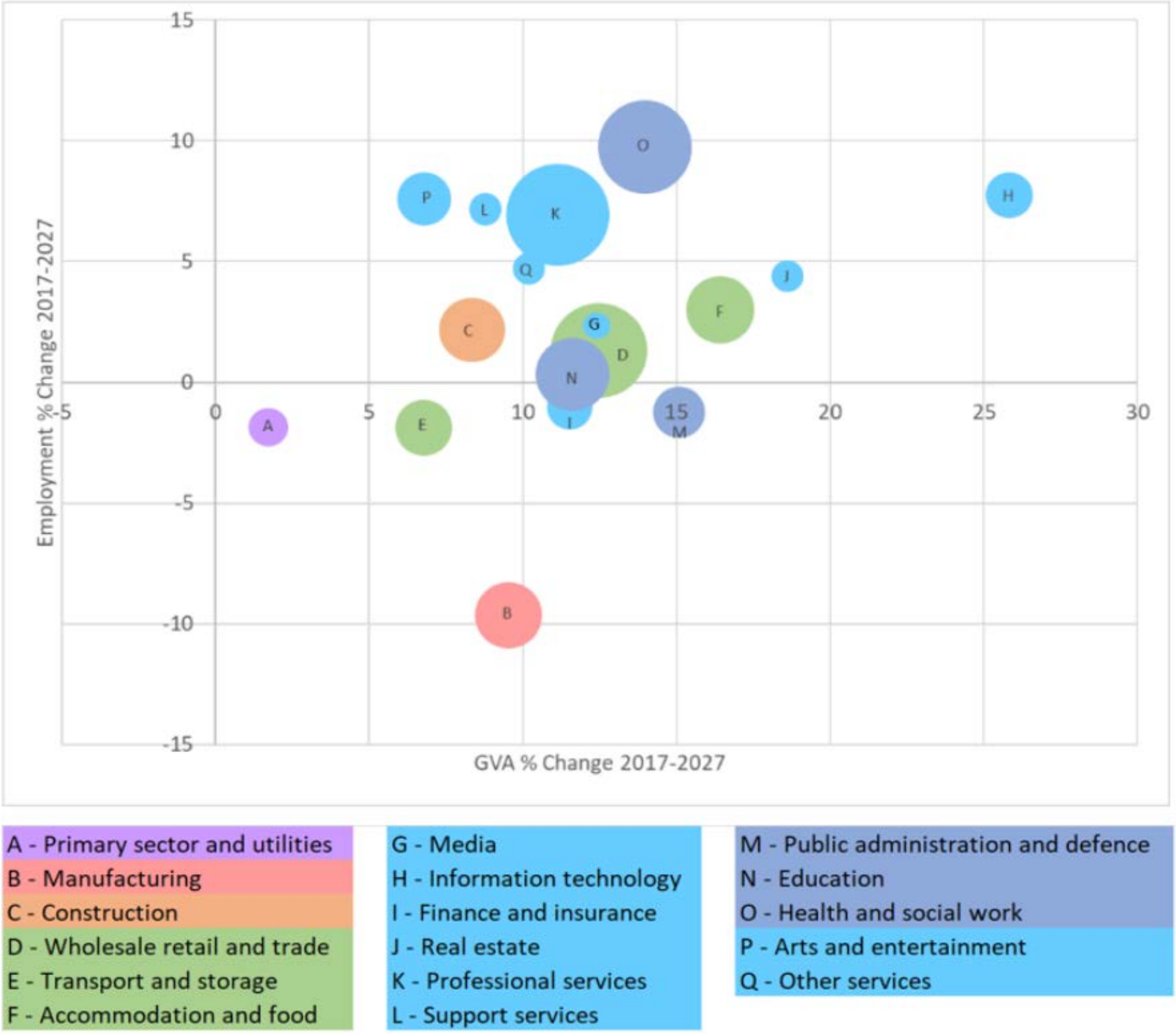
All 17 of the broad sectors are projected to have some growth in output. Employment growth is expected to be concentrated in the service sector although many parts of this such as Transport and storage, Distribution, Finance and insurance and Public administration are expected to feel significant effects of automation and other technological innovation, which are having negative effects on many traditional areas of employment.

The sections that follow then examine broader (6) aggregations of the 17 sectors in more detail. The following profiles examine the forecast performance of the six broad industry sectors, in terms of output and employment. The profiles also examine the influence on the sectors of key drivers, including technological change, globalisation, and public policy.

Each profile includes tables showing:

- the composition of the 6 broader sectors in terms of the 17broad sectors;
- the scale of sector in terms of output and employment;
- trends in output, productivity and employment over the period 2017-2027;
- total replacement demands, reflecting job openings arising to replace those retiring from the workforce (replacement demand is defined in detail in the section on replacement demands and total requirements below).

Figure 3: Broad sector performance, 2017-2027



Note: Public administration and defence includes H.M. Forces

Primary sector and utilities

Output growth is expected to be slow, compared to the UK average, leading to a fall in its share of total output (See Tables 2 and 3). Competition from foreign competitors and cost pressures are expected to drive efficiency savings and productivity improvements, leading to a decline in future employment in the sector. Figure 4 shows the employment status of the workforce, which is mostly full-time. Figure 5 illustrates the sector shares of employment and GVA for 1997-2027.

Table 1: Primary sector and utilities sub-sectors

Sub-sectors
Agriculture, forestry and fishing
Mining and quarrying
Electricity, gas, steam and air conditioning
Water supply, sewerage, waste management

Table 2: Primary sector and utilities industry profile

	2017	2027
Total employment (000s)	858	842
Share of total employment (%)	2.5	2.3
GVA: (£2016m)	78,018	79,360
Share of UK GVA (%)	4.4	4.0

Table 3: Trends in output, productivity and employment in the Primary sector and utilities

2017-2027	Sector	UK Average
Employment change (000s)	-16	962
Employment change (%)	-1.9	2.7
GVA Growth (% p.a)	0.2	1.1
Productivity growth (% p.a)	0.4	0.9
Replacement demand (000s)	269	11,581

Figure 4: Employment by status in the Primary sector and utilities, 2017

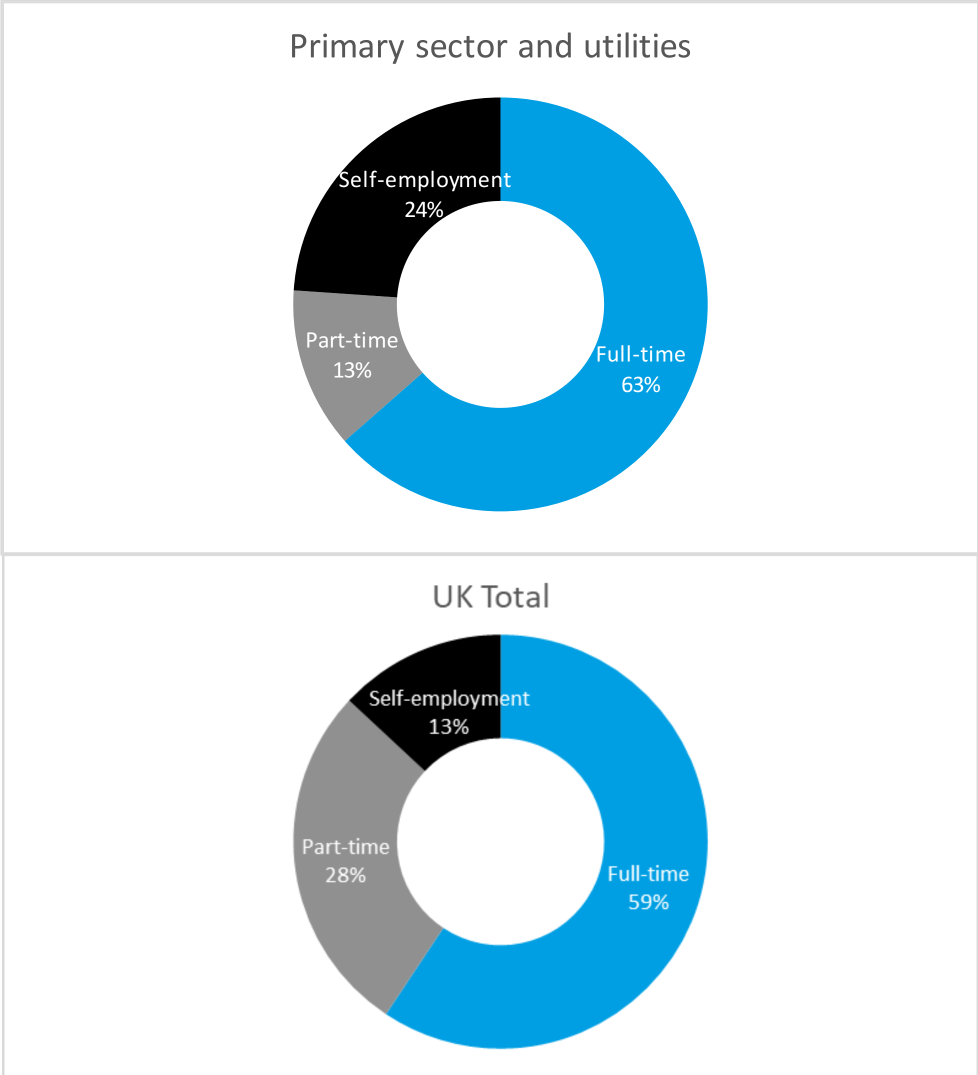
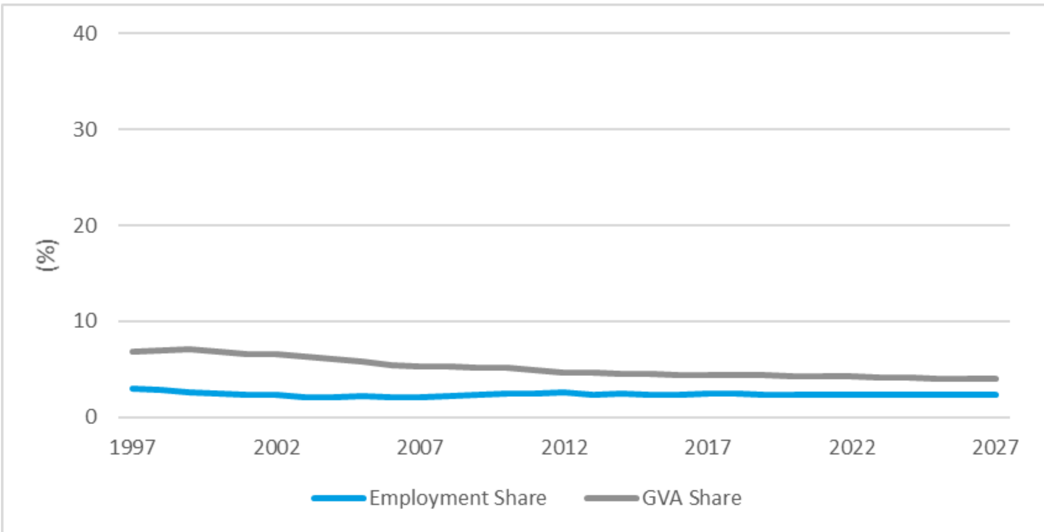


Figure 5: Sector shares of UK employment and GVA in the Primary sector and utilities, 1997-2027



Key factors influencing the sector:

- Agricultural output is expected to grow modestly, driven by changing consumer patterns. However, productivity improvements are expected to result in a fall in employment.
- Energy policies and environmental legislation are likely to grow in importance, creating long-term opportunities and challenges for the sector.
- Coal, oil and gas production is expected to fall due to dwindling domestic reserves and high costs of extraction relative to imports.
- Utilities output is forecast to grow modestly, driven partly by an anticipated increase in household demand.
- Employment levels in utilities are expected to grow at a slower rate as efficiency measures are expected to reduce the demand for labour.

Manufacturing

Output growth in Manufacturing is expected to continue at a moderate pace, however it is forecast to grow at a slower rate than for the wider economy as a whole over the next decade (see Table 5 and Figure 7). This is in the face of intense competition from overseas. Its share of total employment is forecast to decline more than its share of total output, due to strong growth in productivity (through increased efficiency in production methods) leading to a reduction in the demand for labour (See Table 6 and Figure 7). Figure 6 shows the employment status of the workforce of which 84% is full-time, compared to 59% in the UK as a whole.

Table 4: Manufacturing sub-sectors

Sub-sectors
Food, drink and tobacco
Textiles and clothing
Wood and paper products
Printing and recording
Coke and petroleum
Chemicals and chemical products
Rubber and plastic products and other non-metallic mineral products
Pharmaceuticals
Metals and metal products
Electronics
Electrical equipment
Machinery
Motor vehicles
Other transport equipment
Other manufacturing and repair

Table 5: Manufacturing industry profile

	2017	2027
Total employment (000s)	2,672	2,414
Share of total employment (%)	7.6	6.7
GVA: (£2016m)	179,756	196,895
Share of UK GVA (%)	10.0	9.8

Table 6: Trends in output, productivity and employment in Manufacturing

2017-2027	Sector	UK Average
Employment change (000s)	-258	962
Employment change (%)	-9.6	2.7
GVA Growth (% p.a)	0.9	1.1
Productivity growth (% p.a)	1.9	0.9
Replacement demand (000s)	734	11,581

Figure 6: Employment by status in Manufacturing, 2017

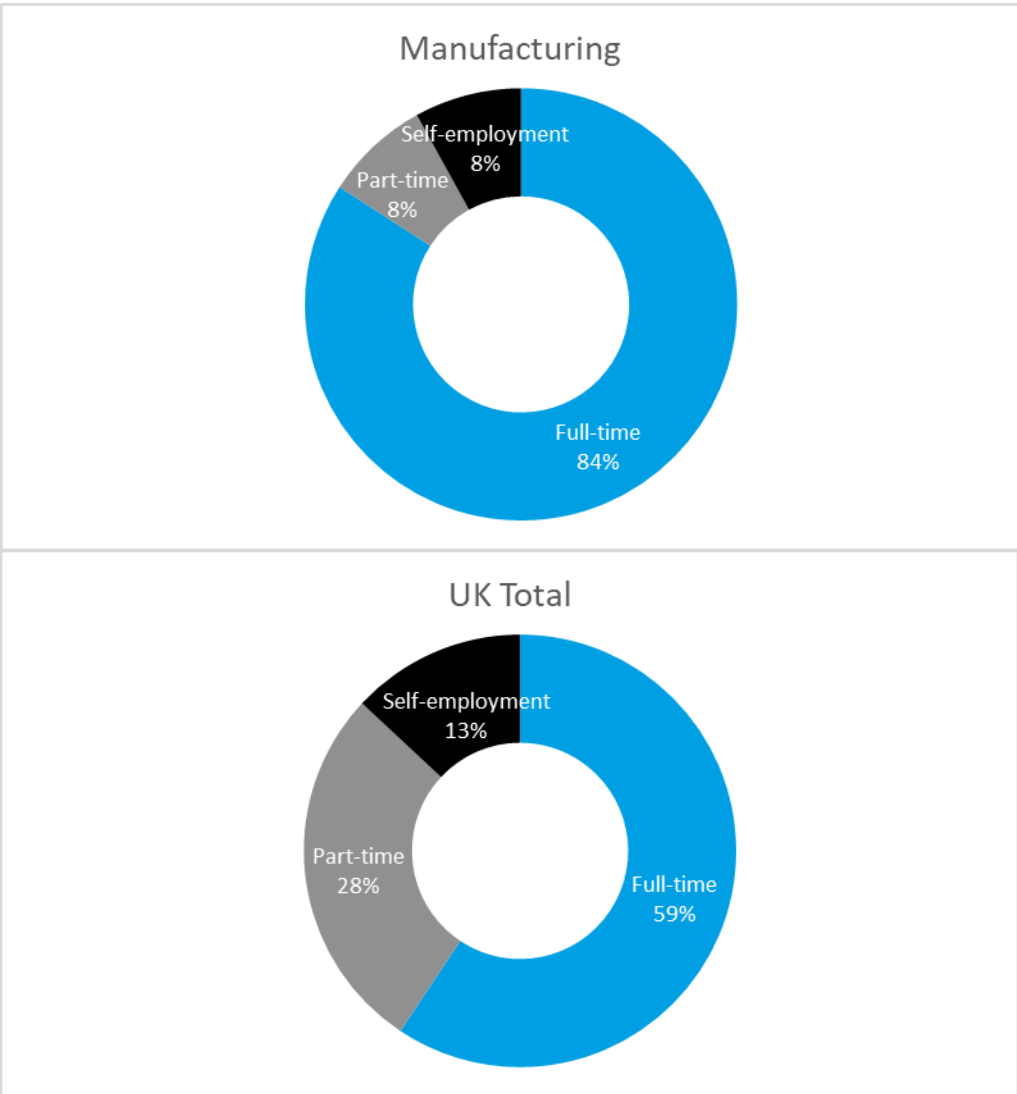
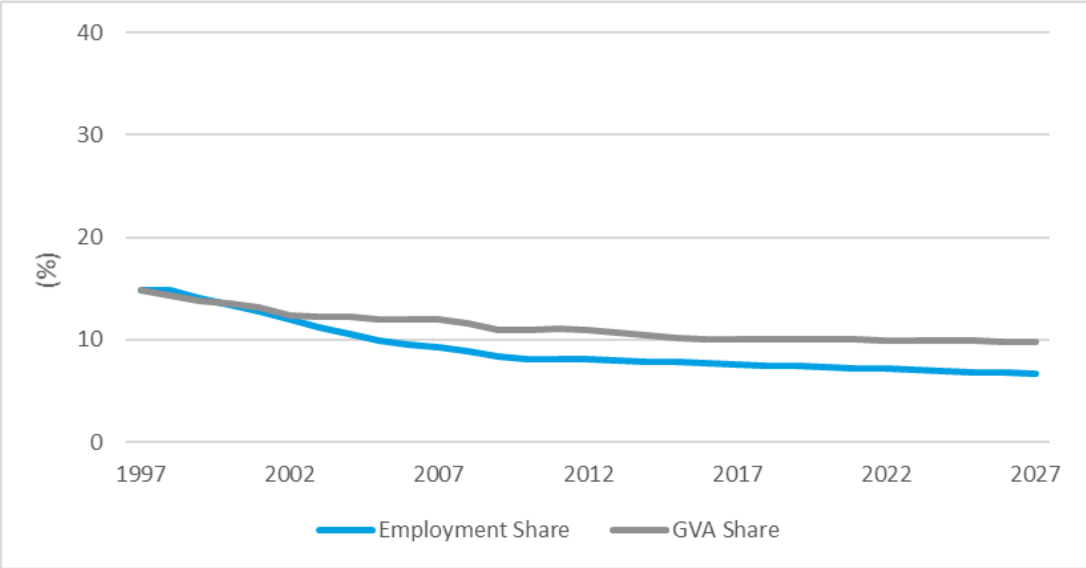


Figure 7: Sector shares of UK employment and GVA in Manufacturing, 1997-2027



Key factors influencing the sector:

- Future output growth is likely to be constrained by increasing competition from overseas manufacturers.
- Global growth in advanced manufacturing demand is expected to drive an increase in domestic activity, especially for industries in which the UK has specialised such as aerospace, pharmaceuticals and other technology-intensive industries.
- Processes and techniques such as 3D printing, additive and composite manufacturing and plastic electronics are changing the shape of production within the sector.
- The availability of skilled labour will be an important consideration for the economic outlook in the long-term.
- Global population growth, as well as a rising proportion of individuals with middle-class incomes, are expected to increase the global consumption of manufactured goods.
- Employment is expected to fall despite the growth in output, driven especially by increasing automation in the sector.

Construction

Output growth in the Construction sector is expected to be slightly less than for Manufacturing. Employment and GVA growth are expected to slow notably compared to the previous 20 years (see Tables 8 and 9, Figure 9). This is partly driven by an expected slowdown in investment due to uncertainty around Brexit, as well as the skills shortage facing the sector (City & Guilds Group and The Work Foundation, 2018)[5], which is amplified by the high concentration of EU migrants employed in the sector that may be affected following Brexit. In particular, the sector is struggling to attract and retain young workers and finds that skills demanded by the sector are becoming outdated due to technological advances. However, despite moderate projected employment growth, there is still expected to be substantial skill needs arising because of positive replacement demands (see Table 9). Figure 8 shows the employment status of the workforce of which 54% is full-time, 7% part-time and 39% self-employment, a much larger proportion of self-employment compared to the average in the UK as a whole (13%).

Table 7: Construction sub-sectors

Sub-sectors
Construction of buildings
Civil engineering
Specialised construction activities e.g. demolition, installation, building completion activities

Table 8: Construction industry profile

	2017	2027
Total employment (000s)	2,286	2,336
Share of total employment (%)	6.5	6.5
GVA: (£2016m)	111,877	121,219
Share of UK GVA (%)	6.3	6.0

Table 9: Trends in output, productivity and employment in Construction

2017-2027	Sector	UK Average
Employment change (000s)	50	962
Employment change (%)	2.2	2.7
GVA Growth (% p.a)	0.8	1.1
Productivity growth (% p.a)	0.6	0.9
Replacement demand (000s)	660	11,581

[5] City & Guilds Group and The Work Foundation (2018). *Constructing the future: How the skills needed for success in the workplace are changing*. London: City & Guilds. Available from: http://www.theworkfoundation.com/wp-content/uploads/2018/09/CG_Constructing-the-future_A4_32pp_LR_no-crops.pdf

Figure 8: Employment by status in Construction, 2017

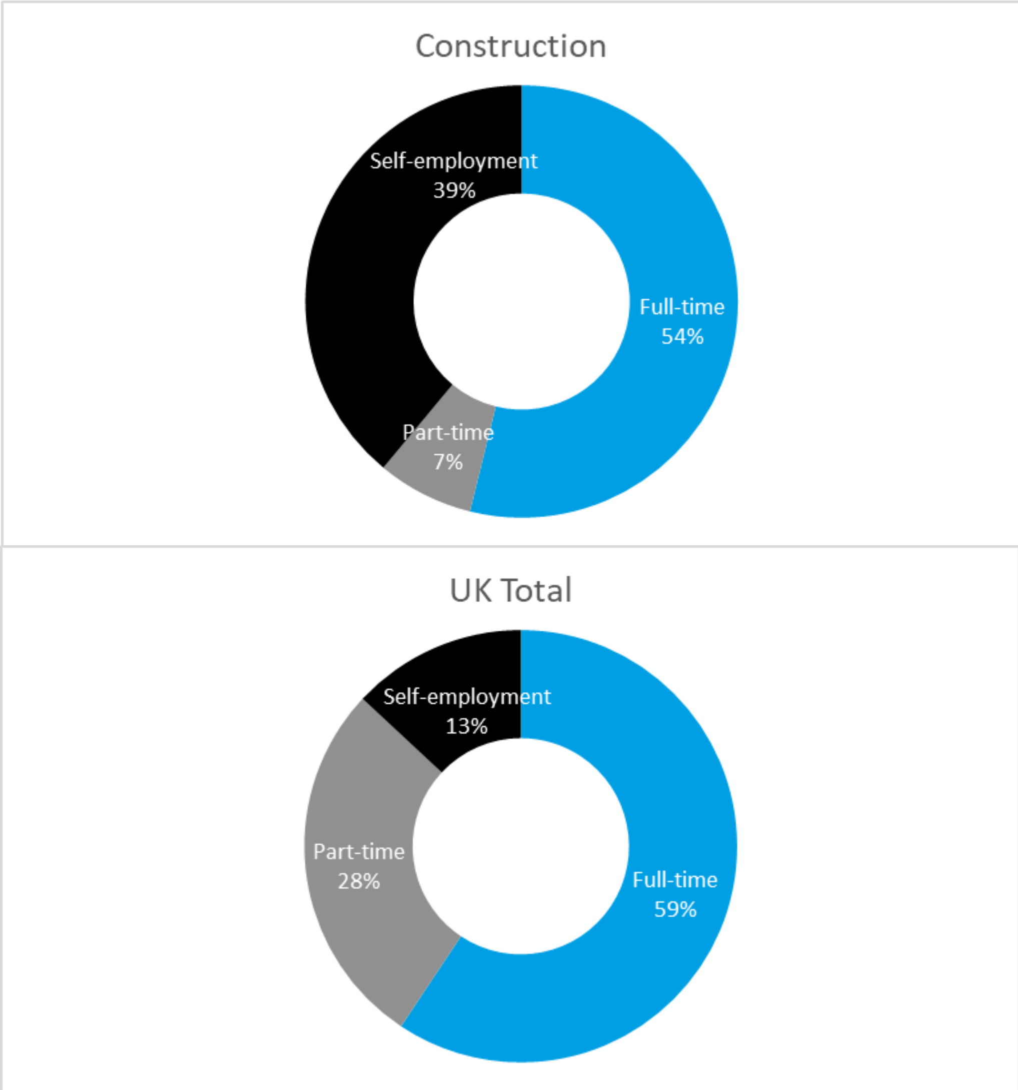
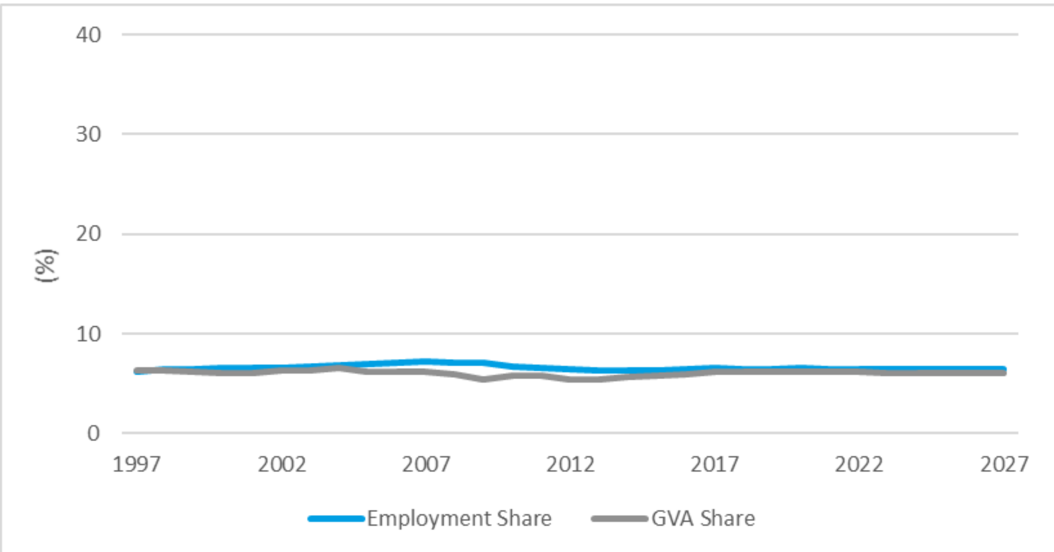


Figure 9: Sector shares of UK employment and GVA in Construction, 1997-2027



Key influencing factors in this sector:

- The sector continues to be faced with skill shortages, and along with the potential restrictions on migration impacting future flows of EU workers, which the sector heavily relies on, constraints to labour supply are expected to dampen the sector's growth prospects.
- While UK population is likely to grow more slowly than previously expected, with fertility rates falling and the government aiming to reduce net-migration, population growth is still expected to lead to increased demand for construction of infrastructure and housing, supported by the government's ambitious targets to build new homes.
- Long-term major public infrastructure projects, such as HS2 and Crossrail 2, are also likely to contribute to output growth.

Trade, accommodation and transport

Although diverse in composition, the performance of the trade, accommodation and transport sector is largely dependent on the amount of activity in the wider economy. The output of the sector is forecast to grow in line with the economy as a whole, whilst employment in the sector is expected to grow much more slowly than employment in the UK as a whole (see Tables 11 and 12, Figure 11). Figure 10 shows the employment status of the workforce of which 55% is full-time, 36% part-time and 9% self-employment, not too dissimilar to the employment by type proportions in the UK as a whole.

Table 10: Trade, accommodation and transport sub-sectors

Sub-sectors
Wholesale and retail trade; repair of motor vehicles
Transport and storage
Accommodation and food activities

Table 11: Trade, accommodation and transport industry profile

	2017	2027
Total employment (000s)	9,218	9,323
Share of total employment (%)	26.3	25.9
GVA: (£2016m)	316,266	353,476
Share of UK GVA (%)	17.7	17.6

Table 12: Trends in output, productivity and employment in Trade, accommodation and transport

2017-2027	Sector	UK Average
Employment change (000s)	105	962
Employment change (%)	1.1	2.7
GVA Growth (% p.a)	1.1	1.1
Productivity growth (% p.a)	1.0	0.9
Replacement demand (000s)	2,957	11,581

Figure 10: Employment by status in Trade, accommodation and transport, 2017

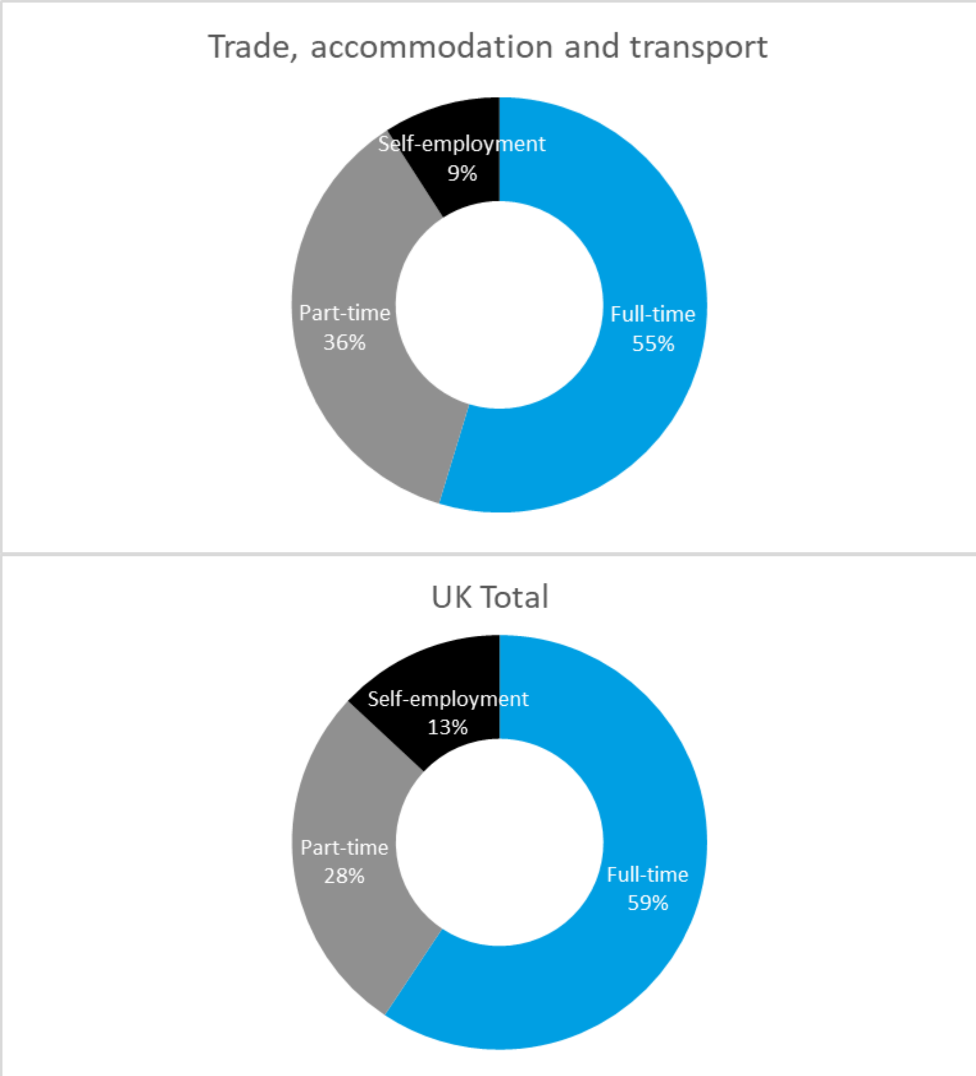
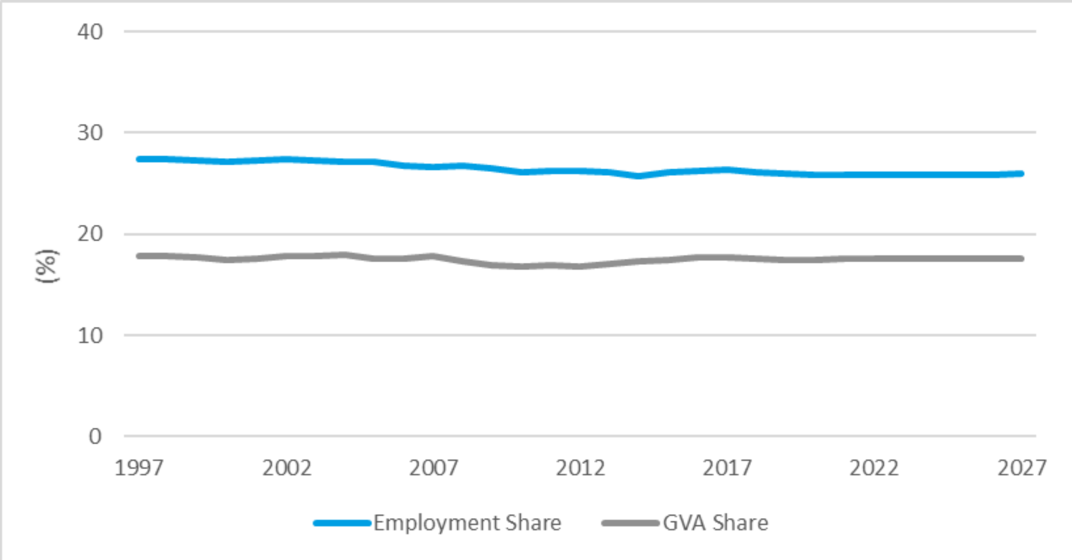


Figure 11: Sector shares of UK employment and GVA in Trade, accommodation and transport, 1997-2027



Key factors influencing the sector:

- The performance of this broad sector hinges on factors such as household disposable income and business activities.
- Employment growth in the sector is expected to be mainly driven by jobs growth in Retail, Accommodation and catering.
- The strongest output growth is likely to be observed in Accommodation and Air transport services, although there may be capacity constraints, especially in London.
- Changing consumer behaviour, such as continued switching to purchasing goods online, is expected to increase demand in postal and courier activities, and transportation and distributional services. At the same time, this shift in consumer patterns is likely to dampen employment growth in retail, as high streets continue to suffer from the rise of online shopping, particularly as new technologies improve the ease and efficiencies in online browsing and delivery.
- In addition, increased automation and improvements in technology are likely to reduce labour demand in some traditional roles, such as retail check-out staff, resulting in a slowdown in employment growth in the sector following decades of strong growth up to the recession.
- Retail, Accommodation and food services, as well as Transportation services are likely to be partly dependent on the outlook for tourism growth.

Business and other services

The Business and other services sector is forecast to see a moderation in its rate of growth in output and employment compared with the previous decade (see Tables 14 and 15, Figure 13), although it is expected that it will still outpace growth in the wider economy as a whole. As the largest of the six broad sectors, it will make a considerable contribution to growth in absolute terms. Business services in particular is expected to drive employment and GVA growth, accounting for 80-90% of total growth in the broad sector over 2017-27. Whilst Other services (e.g. Arts and Recreational services) account for less of the growth in this sector, employment growth in Other services is expected to be slightly higher than in Business services. Figure 12 shows the employment status of the workforce of which 62% is full-time, 22% part-time and 16% self-employment, not too dissimilar to the employment by type proportions in the UK as whole.

Table 13: Business and other services sub-sectors

Sub-sectors
Information technology
Financial and insurance activities
Real estate activities
Professional services
Support service activities
Arts, entertainment and recreation
Other service activities

Table 14: Business and other services industry profile

	2017	2027
Total employment (000s)	11,176	11,838
Share of total employment (%)	31.9	32.9
GVA: (£2016m)	615,240	700,150
Share of UK GVA (%)	34.4	34.9

Table 15: Trends in output, productivity and employment in Business and other services

2017-2027	Sector	UK Average
Employment change (000s)	662	962
Employment change (%)	5.9	2.7
GVA Growth (% p.a)	1.3	1.1
Productivity growth (% p.a)	0.7	0.9
Replacement demand (000s)	3,776	11,581

Figure 12: Employment by status in Business and other services, 2017

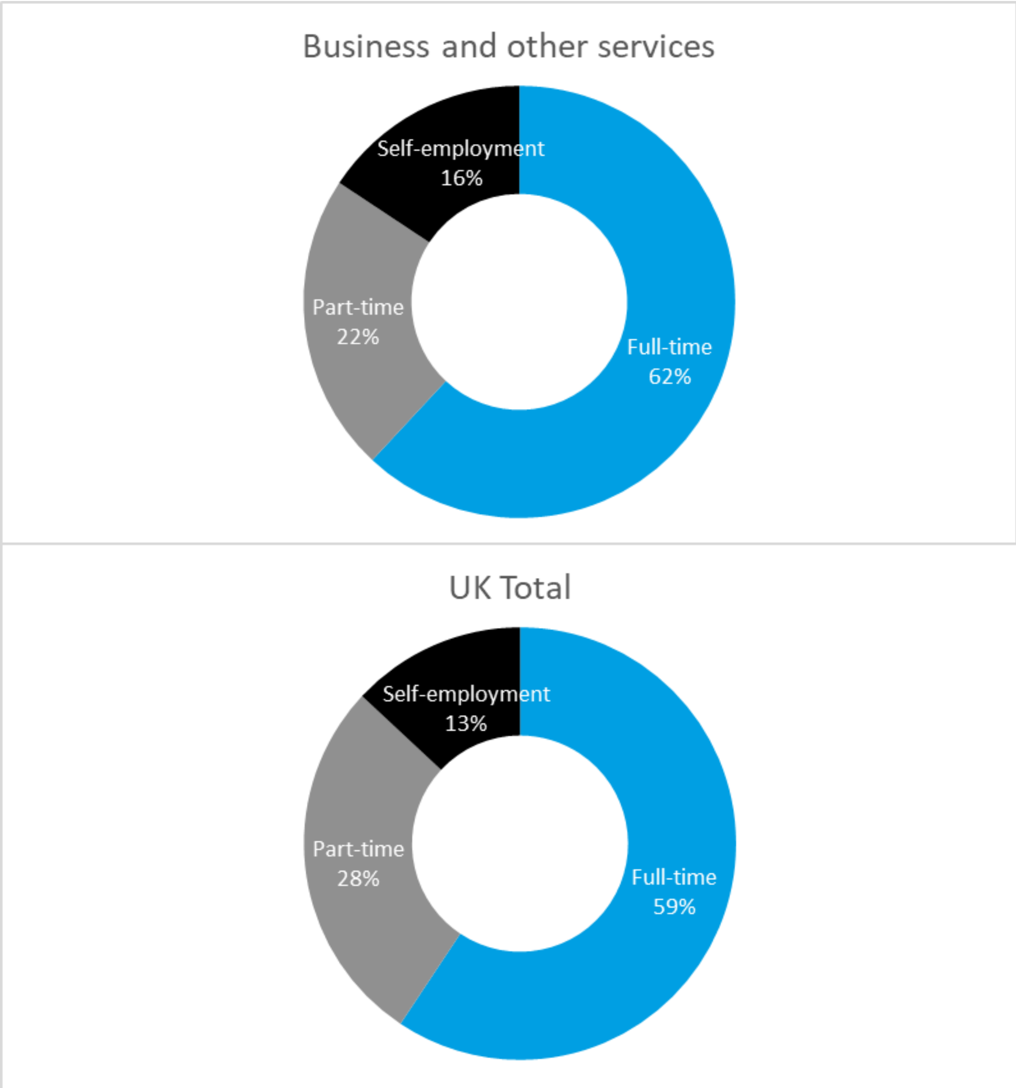
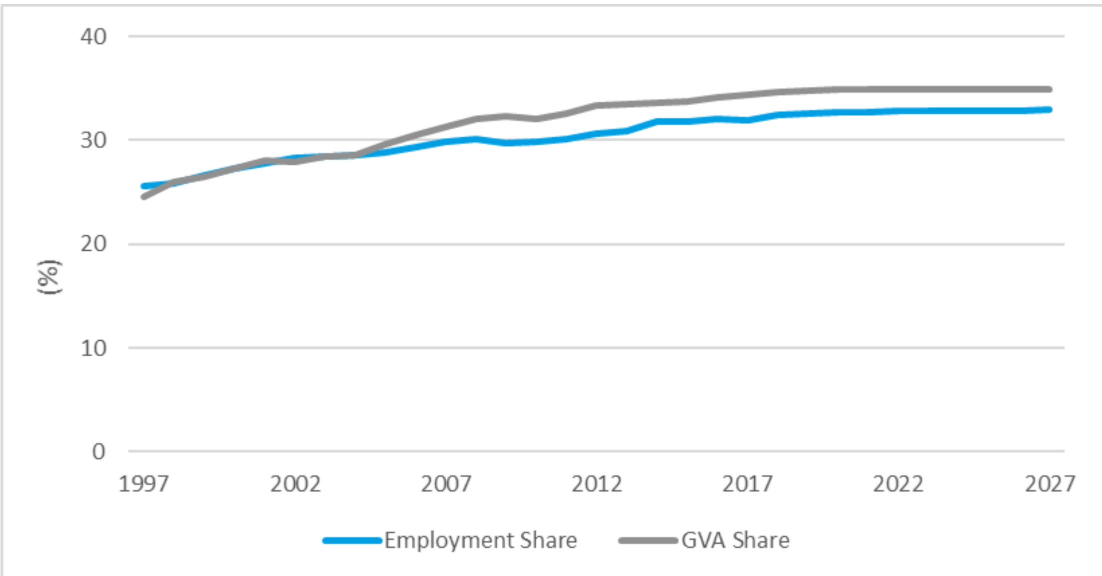


Figure 13: Sector shares of UK employment and GVA in Business and other services, 1997-2027



Key factors influencing the sector:

- Overall, the comparative advantage of the UK, relatively strong investment into the sector, and technological progress are anticipated to be major factors driving long-term growth.
- Although the country's comparative advantage in professional and business services could come under pressure in the long-run, these activities are likely to continue to attract investment into the UK over this period.
- The sector is expected to see strong growth in labour demand in the long run; much of this demand is likely to be in high-skilled and low-skilled roles, continuing the trend of occupational polarisation.
- The industries expected to make the largest contribution to output growth are financial services, professional, scientific and technical activities, and information technology. However, output growth in sectors such as Financial and insurance activities is expected to be driven by continued rapid growth in productivity, brought about by technological improvements, to the detriment of employment growth.
- Technological progress supported by strong capital investment within the information technology industry is likely to be a major factor in stimulating long-term growth, even though it is likely to weaken employment growth in some traditional roles.

Public administration, health and education

The Public administration, health and education (or non-marketed services) sector is expected to see some of the strongest growth in both employment and GVA compared with the other broad sectors, supported largely by increased demand for health services as the population increases and ages (See Tables 17 and 18, Figure 13). Employment growth in the sector as a whole is dampened by a decline in employment in public administration, as the government continues to keep a tight control on spending in other areas. Figure 14 shows the employment status of the workforce of which 53% is full-time, 39% part-time and 8% self-employment, not too dissimilar to the employment by type proportions in the UK as a whole.

Table 16: Public administration, health and education sub-sectors

Sub-sectors
Public administration and defence
Education
Health and social work

Table 17: Public administration, health and education industry profile

	2017	2027
Total employment (000s)	8,793	9,212
Share of total employment (%)	25.1	25.6
GVA: (£2016m)	317,601	360,438
Share of UK GVA (%)	17.7	18.0

Table 18: Trends in output, productivity and employment in Public administration, health and education

2017-2027	Sector	UK Average
Employment change (000s)	418	962
Employment change (%)	4.8	2.7
GVA Growth (% p.a)	1.3	1.1
Productivity growth (% p.a)	0.8	0.9
Replacement demand (000s)	3,186	11,581

Figure 14: Employment by status in Public administration, health and education, 2017

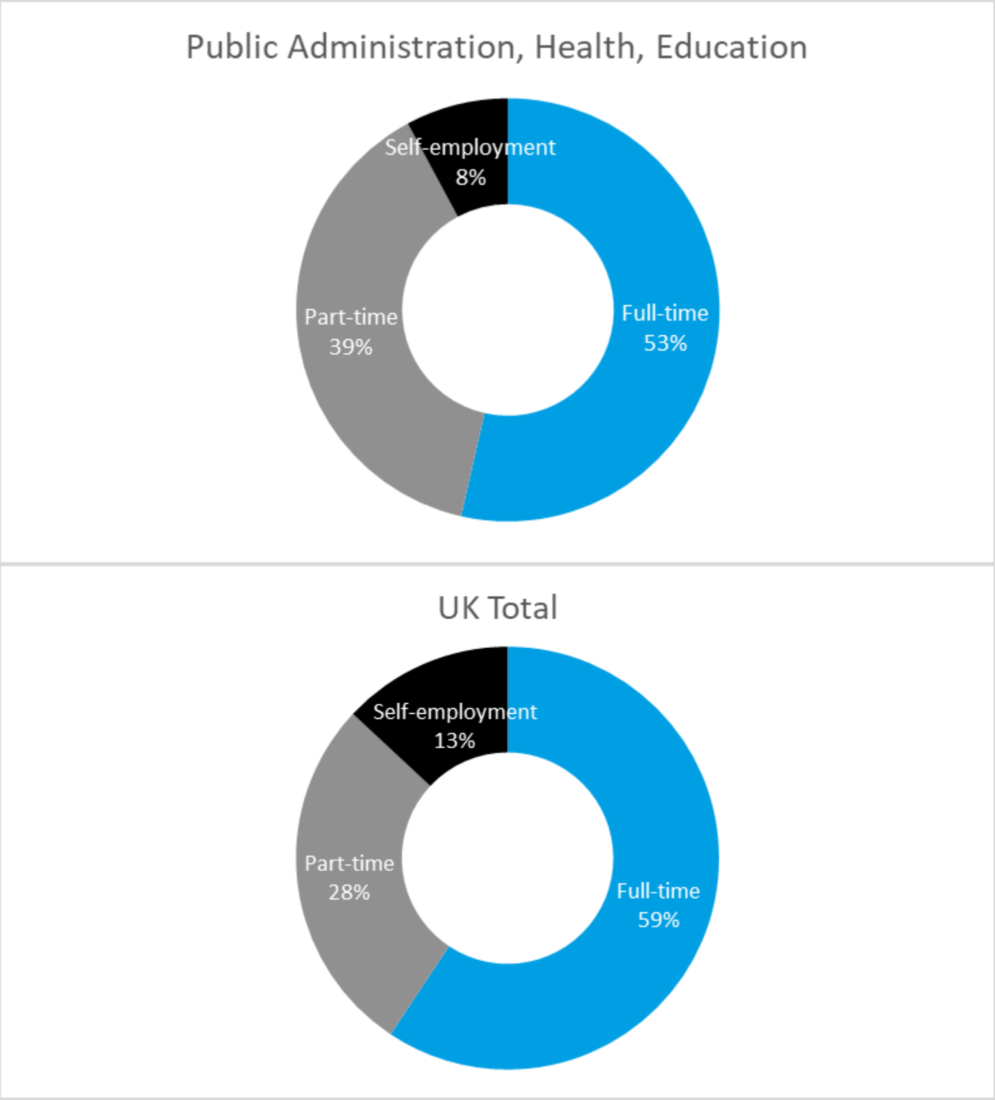
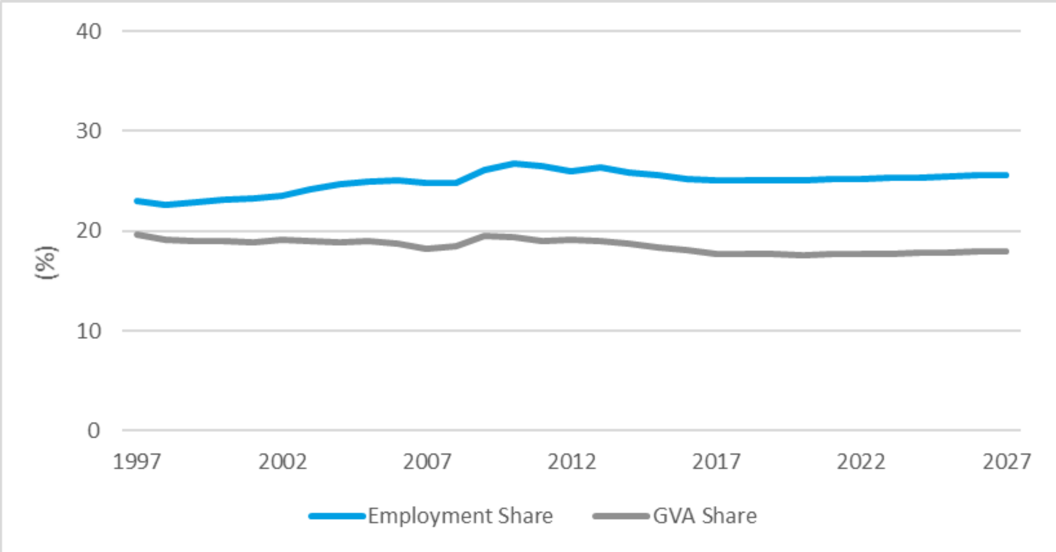


Figure 15: Sector shares of UK employment and GVA in Public administration, health and education, 1997-2027



Key factors affecting the sector:

- Activity in Public administration, health and education are dependent on political decisions, as government policies determine demand for the sectors' outputs and services.
- Employment in Public administration is expected to decline, as local councils continue to face tight controls on government funding.
- Wider demographic trends, such as the ageing population, are expected to be a major driver of increased demand in the long run, especially in health, residential care and social work.

Implications for skills: Occupational trends

The changing industry mix of employment has a significant influence on the demand for skills in the labour market. Occupational employment structure varies considerably across industries. Occupations that are concentrated in growing sectors will gain employment in contrast to those concentrated in declining sectors. Building on its assessment of the UK economy and industry sectors, Working Futures therefore provides detailed projections of employment by occupation.

This analysis is useful because it gives an insight into the future prospects for different types of job, addressing the question of where will future jobs be? At the same time, it gives an indication of the kind of skills that are likely to be in greatest demand (this issue is explored further below).

Such information is important for people making careers decisions, but also for other groups with an interest in the labour market, such as education and training providers, employers and policymakers.

Data from official sources, including the Labour Force Survey, are used to develop a historical picture of the occupational and qualification structure of employment within industries. A combination of econometric methods and judgement is then used to generate projections of these patterns forward to 2027.

Changes in occupational employment structures are largely driven by long-term trends, including those related to sectoral employment patterns and technological and organisational trends that influence the patterns of demand within sectors.

At a broad level the pattern of change has been extremely resilient. In recent years the underlying trend in occupational employment shares has continued more or less unabated in spite of recession or other factors. For example, in most occupations the trend since the recession of 2008 is indiscernible from that prior to the global financial crisis which precipitated it.

Over the next decade, these well-established trends are expected to continue. The key emerging pattern is one of polarisation. This involves strong growth for higher level, white collar occupations, while at the same time there is growth for some lower skilled occupations, particularly service-related jobs that are harder to automate. In contrast, employment for middle-skilled occupations is projected to fall.

The key features (see Figures 16, 17 and 18) are as follows:

- Significant employment growth is expected for higher level occupations, including managers, most professional occupations and many associate professional and technical roles;

- Caring, leisure and other service occupations are also projected to see significant employment growth;
- Net job losses are projected for administrative and secretarial occupations, skilled trade occupations, and process, plant and machine operatives;
- Elementary occupations are projected to experience mixed fortunes, with some modest growth in jobs where tasks are not so easily subject to automation, but job losses in other areas.

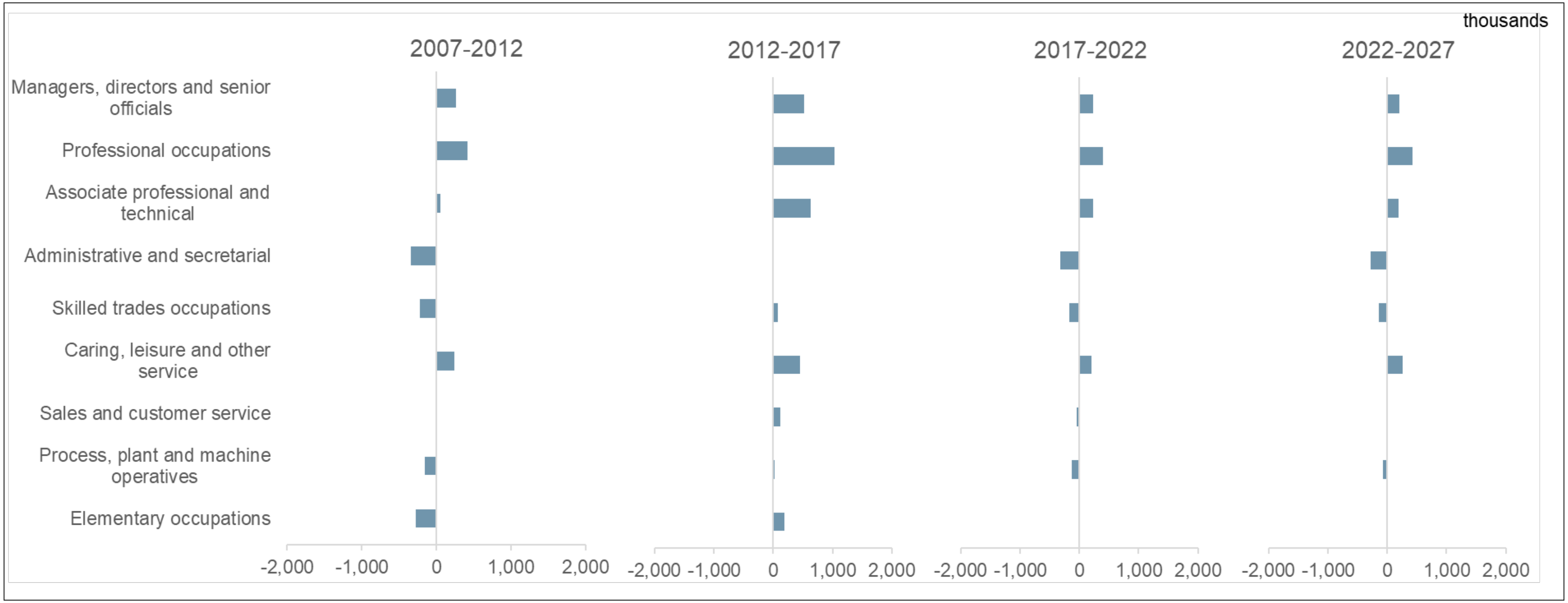
Table 19: Changes in occupational employment, 1-digit level, 2007-2027

Change	2007-2012	2012-2017	2017-2022	2022-2027	2017-2027
Managers, directors and senior officials	267	523	231	207	439
Professional occupations	416	1,032	402	419	821
Associate professional and technical	53	639	239	186	425
Administrative and secretarial	-337	-6	-322	-282	-604
Skilled trades occupations	-223	72	-164	-143	-307
Caring, leisure and other service	244	456	204	261	466
Sales and customer service	17	120	-48	-5	-52
Process, plant and machine operatives	-157	22	-133	-73	-206
Elementary occupations	-271	190	-8	-1	-9
All occupations	**10**	**3,048**	**402**	**571**	**973**

	Levels (000s)					Growth % per annum	
	2007	2012	2017	2022	2027	2007-2017	2017-2027
Managers, directors and senior officials	2,776	3,043	3,566	3,798	4,005	2.5	1.2
Professional occupations	5,426	5,842	6,873	7,275	7,695	2.4	1.1
Associate professional and technical	4,192	4,245	4,884	5,123	5,310	1.5	0.8
Administrative and secretarial	4,023	3,687	3,681	3,359	3,077	-0.9	-1.8
Skilled trades occupations	3,584	3,361	3,433	3,269	3,126	-0.4	-0.9
Caring, leisure and other service	2,646	2,890	3,345	3,550	3,811	2.4	1.3
Sales and customer service	2,792	2,809	2,929	2,881	2,877	0.5	-0.2
Process, plant and machine operatives	2,314	2,158	2,180	2,047	1,974	-0.6	-1.0
Elementary occupations	4,037	3,766	3,956	3,948	3,947	-0.2	0.0
All occupations	**31,790**	**31,800**	**34,848**	**35,250**	**35,821**	**0.9**	**0.3**

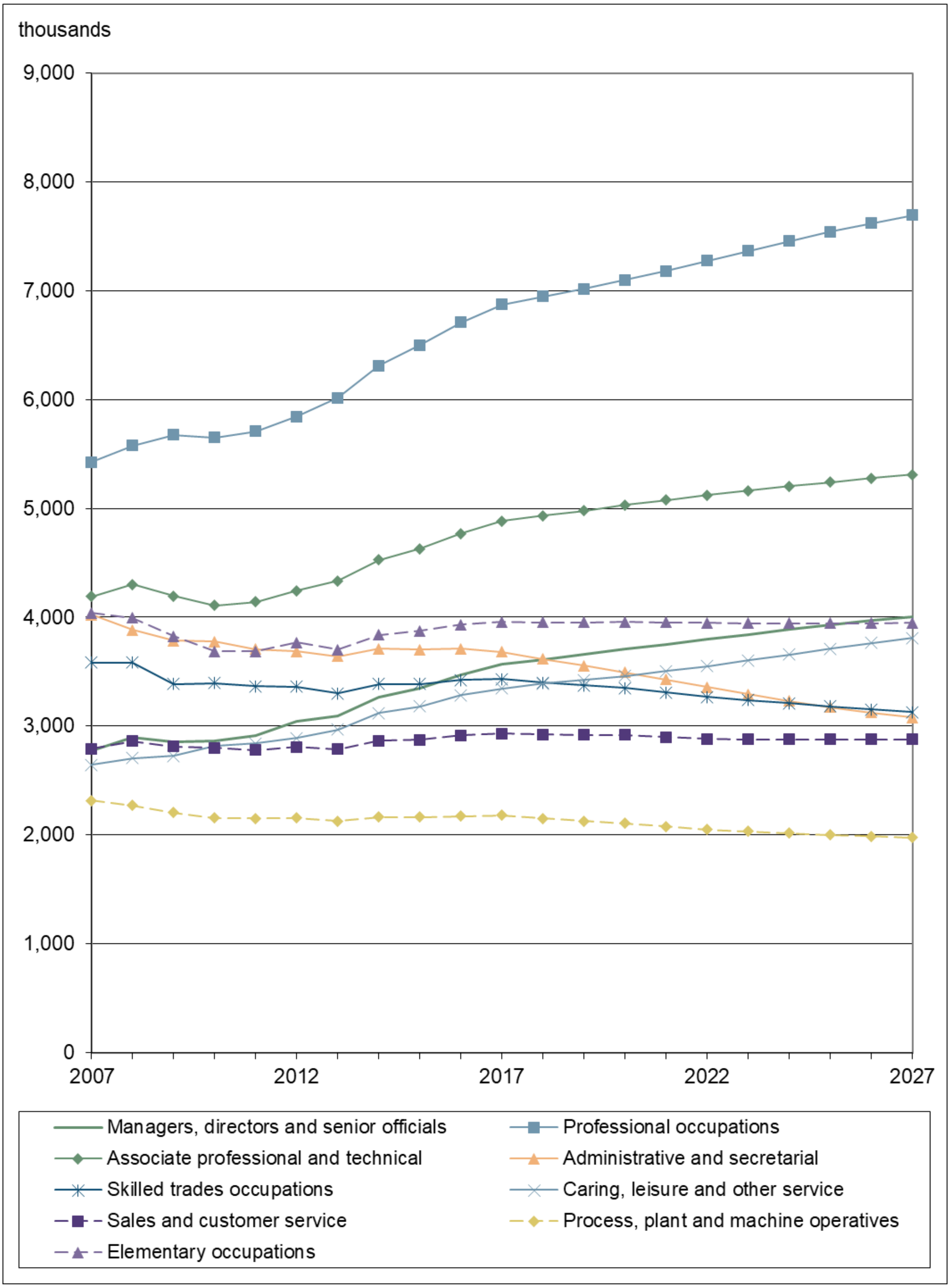
Source: IER estimates, MDM C182IND - revision 13405. IER report tables and charts.xlsm

Figure 16: Net changes in employment levels by occupation (000s), 2007-2027



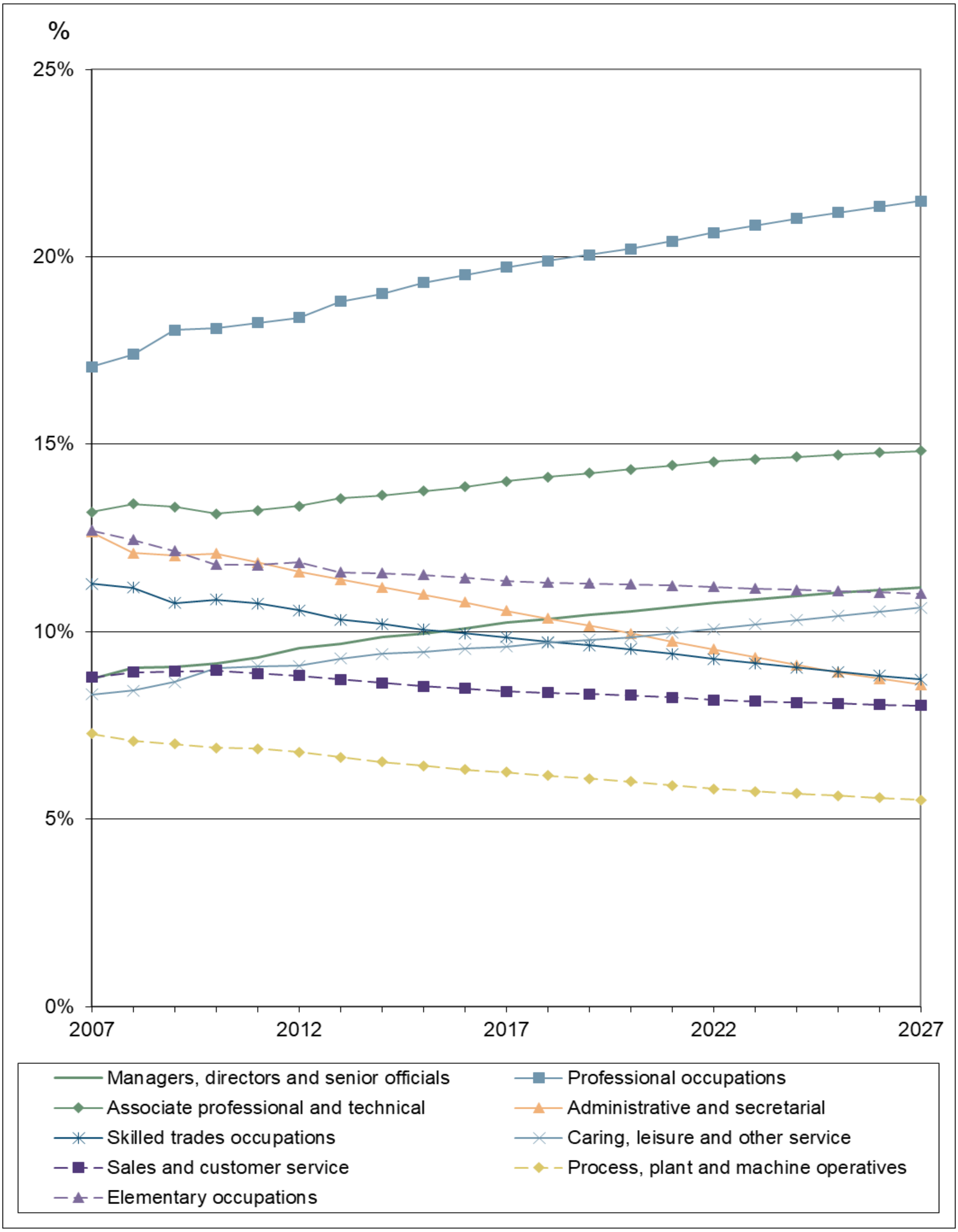
Source: IER estimates, MDM C182IND - revision 13405. IER report tables and charts.xlsm

Figure 17: Occupational trends (000s), 2007-2027



Source: IER estimates, MDM C182IND - revision 13405. IER report tables and charts.xlsm

Figure 18: Occupational trends (% shares), 2007-2027



Source: IER estimates, MDM C182IND - revision 13405. IER report tables and charts.xlsm

Occupational trends by gender and employment status

Occupational employment prospects vary considerably by gender and employment status. For example, female employment is projected to increase more quickly than male employment in higher skilled management, professional and associate professional occupations (see Figure 19). On the other hand, prospects for males are better than for females in administrative and secretarial occupations. However, employment levels are expected to fall for both males and females, but more significantly for the former.

In the case of employment status, employment prospects are generally expected to be much more positive for those in part time jobs, with the numbers of self-employment and full-time jobs generally expected to decline in many occupations (see Figure 20). For males, employment prospects are generally more positive for those in full-time jobs (namely Managers, directors and senior officials, and Professional occupations), with the numbers of self-employment and part-time jobs expected to decline in many occupations (Figures 21). For females, similarly, employment prospects are more positive for those in full-time jobs and decline in self-employment (see Figure 22). However, the prospects for female part-time jobs are expected to be positive for Caring, leisure and other service occupations (see Figure 22).

Table 20: Changes in employment for females by occupation, SOC2010 – Major Groups

Levels (000s)	2007	2012	2017	2022	2027
Managers, directors and senior officials	836	1,012	1,279	1,431	1,569
Professional occupations	2,691	2,880	3,487	3,811	4,155
Associate professional and technical	1,708	1,773	2,135	2,329	2,493
Administrative and secretarial	3,146	2,823	2,756	2,449	2,166
Skilled trades occupations	365	339	361	355	345
Caring, leisure and other service	2,123	2,347	2,708	2,864	3,061
Sales and customer service	1,759	1,765	1,778	1,710	1,695
Process, plant and machine operatives	293	265	251	215	192
Elementary occupations	2,082	1,855	1,861	1,804	1,732
All occupations	**15,004**	**15,060**	**16,616**	**16,967**	**17,407**

Shares (%)	2007	2012	2017	2022	2027
Managers, directors and senior officials	5.6	6.7	7.7	8.4	9.0
Professional occupations	17.9	19.1	21.0	22.5	23.9
Associate professional and technical	11.4	11.8	12.8	13.7	14.3
Administrative and secretarial	21.0	18.7	16.6	14.4	12.4
Skilled trades occupations	2.4	2.3	2.2	2.1	2.0
Caring, leisure and other service	14.1	15.6	16.3	16.9	17.6
Sales and customer service	11.7	11.7	10.7	10.1	9.7
Process, plant and machine operatives	2.0	1.8	1.5	1.3	1.1
Elementary occupations	13.9	12.3	11.2	10.6	10.0
All occupations	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Change	2007-2012	2012-2017	2017-2022	2022-2027	2017-2027
Managers, directors and senior officials	176	267	152	138	290
Professional occupations	189	607	323	344	667
Associate professional and technical	65	361	194	164	358
Administrative and secretarial	-323	-67	-307	-283	-590
Skilled trades occupations	-26	22	-6	-10	-16
Caring, leisure and other service	224	361	156	197	353
Sales and customer service	6	13	-68	-15	-84
Process, plant and machine operatives	-29	-14	-36	-23	-59
Elementary occupations	-227	5	-57	-72	-129
All occupations	**57**	**1,556**	**351**	**440**	**791**

Source: IER estimates, MDM C182IND - revision 13405. IER report tables and charts.xlsm

Table 21: Changes in employment for males by occupation, SOC2010 – Major Groups

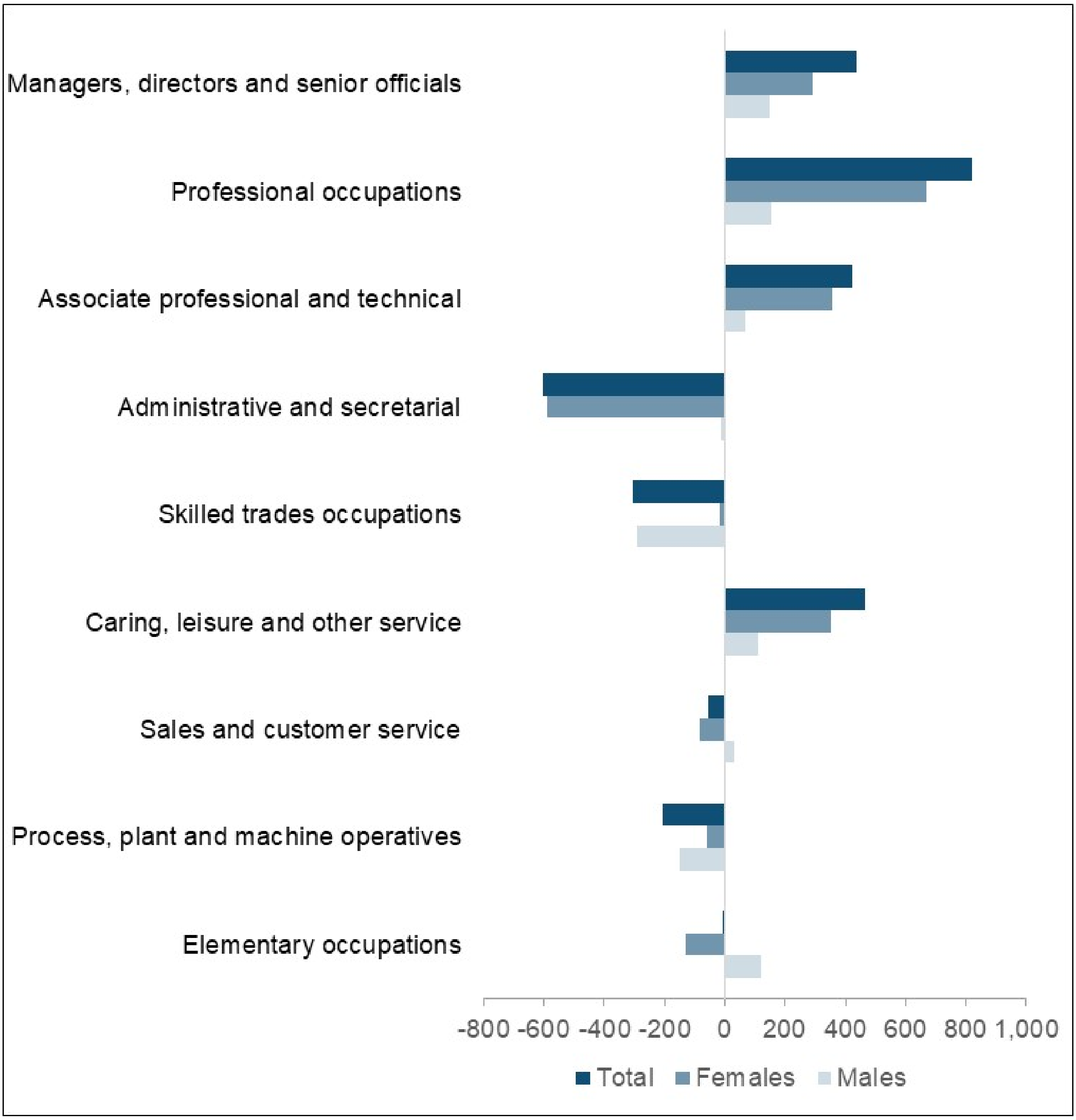
Levels (000s)	2007	2012	2017	2022	2027
Managers, directors and senior officials	1,940	2,031	2,287	2,367	2,436
Professional occupations	2,735	2,962	3,386	3,464	3,540
Associate professional and technical	2,484	2,472	2,750	2,795	2,817
Administrative and secretarial	877	863	925	910	911
Skilled trades occupations	3,218	3,022	3,071	2,914	2,781
Caring, leisure and other service	523	542	637	685	750
Sales and customer service	1,033	1,044	1,151	1,172	1,182
Process, plant and machine operatives	2,021	1,893	1,929	1,832	1,782
Elementary occupations	1,955	1,911	2,095	2,144	2,215
All occupations	**16,786**	**16,740**	**18,232**	**18,283**	**18,414**

Shares (%)	2007	2012	2017	2022	2027
Managers, directors and senior officials	11.6	12.1	12.5	12.9	13.2
Professional occupations	16.3	17.7	18.6	18.9	19.2
Associate professional and technical	14.8	14.8	15.1	15.3	15.3
Administrative and secretarial	5.2	5.2	5.1	5.0	4.9
Skilled trades occupations	19.2	18.1	16.8	15.9	15.1
Caring, leisure and other service	3.1	3.2	3.5	3.7	4.1
Sales and customer service	6.2	6.2	6.3	6.4	6.4
Process, plant and machine operatives	12.0	11.3	10.6	10.0	9.7
Elementary occupations	11.6	11.4	11.5	11.7	12.0
All occupations	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Change	2007-2012	2012-2017	2017-2022	2022-2027	2017-2027
Managers, directors and senior officials	91	257	79	70	149
Professional occupations	227	424	78	75	154
Associate professional and technical	-12	278	45	22	67
Administrative and secretarial	-14	61	-15	1	-13
Skilled trades occupations	-197	50	-157	-133	-291
Caring, leisure and other service	20	95	48	64	113
Sales and customer service	11	107	21	10	31
Process, plant and machine operatives	-128	36	-97	-50	-147
Elementary occupations	-45	185	49	71	120
All occupations	**-47**	**1,492**	**51**	**131**	**182**

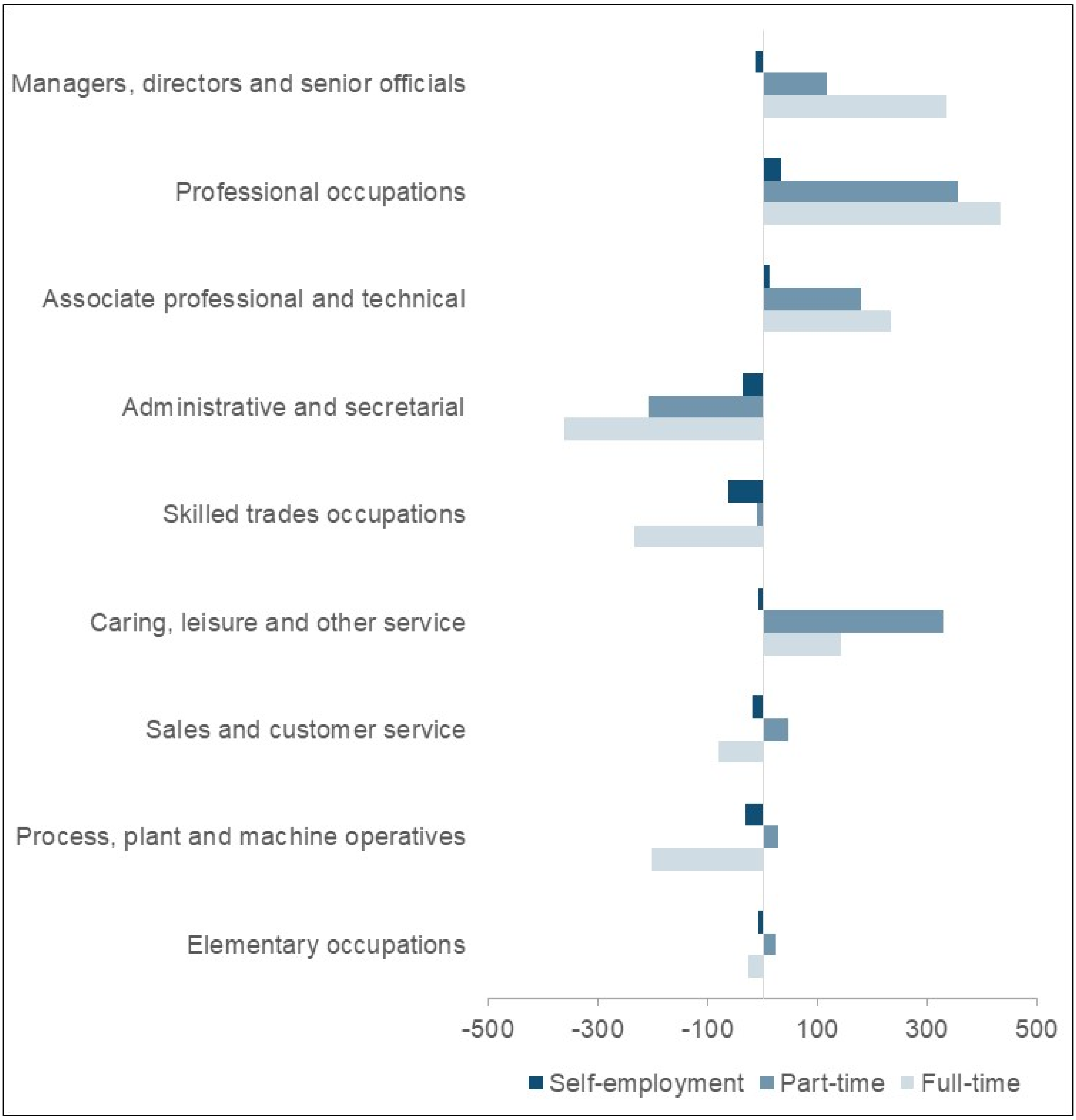
Source: IER estimates, MDM C182IND - revision 13405. IER report tables and charts.xlsm

Figure 19: Occupational change by gender, Total employment (000s), 2017-2027



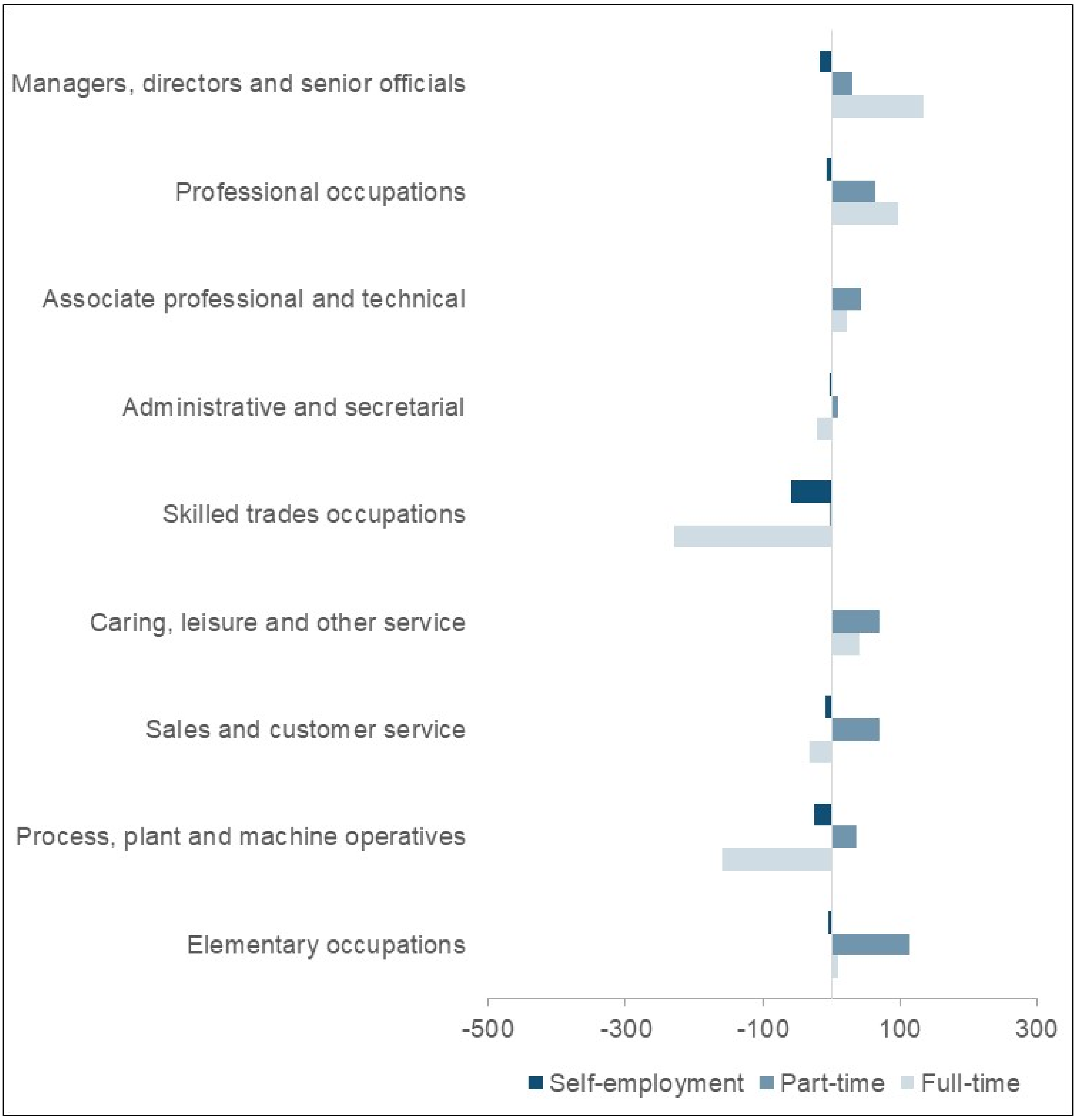
Source: IER estimates, MDM C182IND - revision 13405. IER report tables and charts.xlsm

Figure 20: Occupational change by status, Total employment (000s), 2017-2027



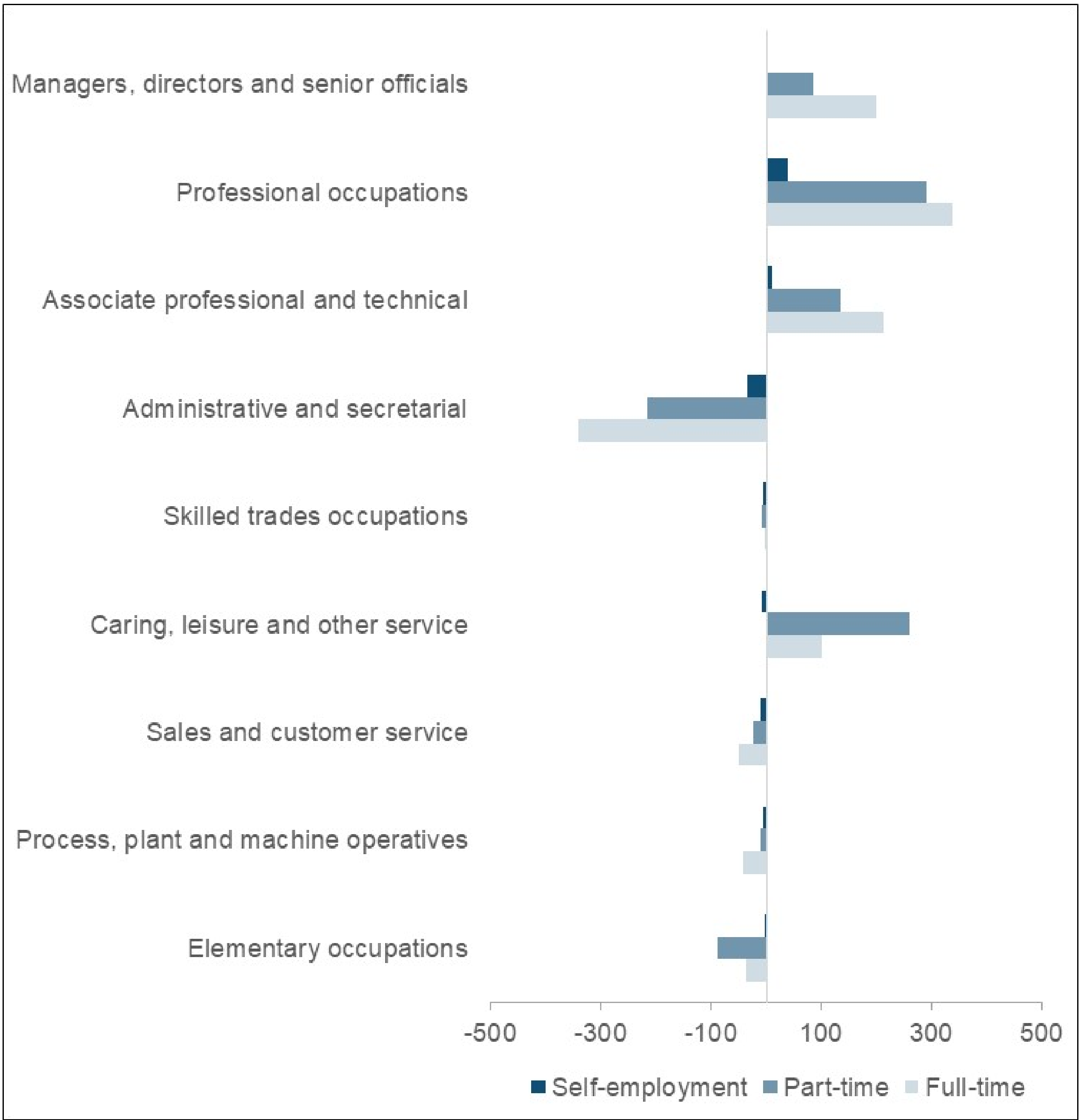
Source: IER estimates, MDM C182IND - revision 13405. IER report tables and charts.xlsm

Figure 21: Occupational change by status, males (000s), 2017-2027



Source: IER estimates, MDM C182IND - revision 13405. IER report tables and charts.xlsm

Figure 22: Occupational change by status, females (000s), 2017-2027



Source: IER estimates, MDM C182IND - revision 13405. IER report tables and charts.xlsm

Replacement demand and total requirements

Trends in Occupational Employment provide a useful indicator of changing patterns of the demand for skills. However, it is important to focus not just on projections of changing levels of employment by occupation, but also on Replacement Demands. The latter are the job openings created by the outflow of workers from the labour force. The Net changes expected in employment levels by occupation (or other bases) are often referred to as Expansion Demands (although these can be negative as well as positive). These have been the focus of the results so far. The sum of the job openings arising from replacement demands and expansion demands are referred to as Total Requirements or Total Job Openings. These are illustrated at the 2-digit level of Standard Occupational Classification (SOC) in Figure 23.

Workers leave the labour market for a variety of permanent and temporary reasons including retirement, family reasons (e.g. maternity leave) and mortality. But the important point to note is that these outflows from the labour force have a significant influence on job opportunities. Over the next decade, replacement demands are expected to generate seven times as many job openings in the labour market as result from net job growth.

Occupations where employment levels are growing will require additional workers on top of those being replaced. For example, in the decade to 2027, professional occupations are expected to see both substantial net growth in the number of jobs as well as significant replacement demands (a forecast of 2,362,000 during 2017-2027) as people leave current jobs due to retirement, etc.

In contrast, areas where employment levels are falling, such as the manufacturing sector or particular occupations such as those employed in administrative and secretarial roles (a total requirement of 549,000 during 2017-2027), will offset replacement needs. However, the strength of replacement demands mean that there will still be job openings that need to be filled in such areas. Even though some occupational areas and industries are likely to see significant declines in the number of jobs, replacement demands are much larger than any negative change in the level of jobs. This means that we can still expect job openings across all broad occupational groups. Individuals need to consider this when making careers decisions and employers need to be conscious of the need to replace key workers.

Table 22 summarises the expected patterns of change at the 1-digit occupational level. Figure 23 (below) provides more detail at the 2-digit level.

Table 22: Replacement demands and total job openings, 1-digit level

	thousands					thousands		
						2017-2027		
Levels (000s)	2007	2012	2017	2022	2027	Net Change	Replacement Demand	Total Requirement
Managers, directors and senior officials	2,776	3,043	3,566	3,798	4,005	439	1,380	1,819
Professional occupations	5,426	5,842	6,873	7,275	7,695	821	2,362	3,183
Associate professional and technical	4,192	4,245	4,884	5,123	5,310	425	1,599	2,024
Administrative and secretarial	4,023	3,687	3,681	3,359	3,077	-604	1,152	549
Skilled trades occupations	3,584	3,361	3,433	3,269	3,126	-307	929	623
Caring, leisure and other service	2,646	2,890	3,345	3,550	3,811	466	1,335	1,801
Sales and customer service	2,792	2,809	2,929	2,881	2,877	-52	907	855
Process, plant and machine operatives	2,314	2,158	2,180	2,047	1,974	-206	657	452
Elementary occupations	4,037	3,766	3,956	3,948	3,947	-9	1,258	1,249
All occupations	**31,790**	**31,800**	**34,848**	**35,250**	**35,821**	**973**	**11,581**	**12,554**

	%					%		
						2017-2027		
Shares (%)	2007	2012	2017	2022	2027	Net Change	Replacement Demand	Total Requirement
Managers, directors and senior officials	8.7	9.6	10.2	10.8	11.2	12.3	38.7	51.0
Professional occupations	17.1	18.4	19.7	20.6	21.5	11.9	34.4	46.3
Associate professional and technical	13.2	13.4	14.0	14.5	14.8	8.7	32.7	41.4
Administrative and secretarial	12.7	11.6	10.6	9.5	8.6	-16.4	31.3	14.9
Skilled trades occupations	11.3	10.6	9.9	9.3	8.7	-8.9	27.1	18.1
Caring, leisure and other service	8.3	9.1	9.6	10.1	10.6	13.9	39.9	53.8
Sales and customer service	8.8	8.8	8.4	8.2	8.0	-1.8	31.0	29.2
Process, plant and machine operatives	7.3	6.8	6.3	5.8	5.5	-9.4	30.2	20.7
Elementary occupations	12.7	11.8	11.4	11.2	11.0	-0.2	31.8	31.6
All occupations	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**2.8**	**33.2**	**36.0**

Table 22 (continued): Replacement demands and total job openings, 1-digit level

Growth	2007	2012	2017	2022	2027
					% per annum
Managers, directors and senior officials	1.9	3.2	1.3	1.1	1.2
Professional occupations	1.5	3.3	1.1	1.1	1.1
Associate professional and technical	0.3	2.8	1.0	0.7	0.8
Administrative and secretarial	-1.7	0.0	-1.8	-1.7	-1.8
Skilled trades occupations	-1.3	0.4	-1.0	-0.9	-0.9
Caring, leisure and other service	1.8	3.0	1.2	1.4	1.3
Sales and customer service	0.1	0.8	-0.3	0.0	-0.2
Process, plant and machine operatives	-1.4	0.2	-1.2	-0.7	-1.0
Elementary occupations	-1.4	1.0	0.0	0.0	0.0
All occupations	**0.0**	**1.8**	**0.2**	**0.3**	**0.3**

Net Change	Replacement Demand	Total Requirement
		% per annum
		2017-2027
1.2	3.3	4.2
1.1	3.0	3.9
0.8	2.9	3.5
-1.8	2.8	1.4
-0.9	2.4	1.7
1.3	3.4	4.4
-0.2	2.7	2.6
-1.0	2.7	1.9
0.0	2.8	2.8
0.3	**2.9**	**3.1**

Occupations 2027 in more detail

The pattern of change in occupational employment is explored in more detail below. The results shown in Figure 16 and Table 19 are at the broadest level of classifying jobs by occupation (the nine 1-digit categories of the SOC2010). Results are also available at the 2-digit level in the Working Futures 2017-2027 Main report[6]. Even greater detail is available at the 3- and 4-digit levels, the latter distinguishing over 350 different occupational categories or types of jobs.

The occupational sub-major groups expected to see the greatest employment growth in absolute terms are (in descending order): Caring personal service occupations, Corporate managers and directors and Business and public service associate professionals. Conversely, the groups expected to see the greatest decline are (in ascending order) Secretarial occupations, Process, plant and machine operatives and Skilled metal, electrical and electronic trades.

Within occupations, growth prospects vary considerably by gender. For example, it is projected that female employment will, in general, increase more quickly than male employment in higher skilled management, professional and associate professional occupations. On the other hand, prospects for male employment are better than for female employment in administrative and secretarial occupations although job losses are expected for both genders.

[6] Wilson, R. A., S-A. Barnes, M. May-Gillings, H. Bui and S. Patel, (2019). *Working Futures 2017-2027: Main report.* Department for Education.

Qualifications

Along with occupation, formal qualifications are an important means of defining and measuring skills in the labour market.

The latest Working Futures projections indicate that, based on recent trends, the qualification profile of employment will continue to see a shift towards more people holding more high-level qualifications (see Table 26 and Figure 23).

The projections here focus on the qualification levels of people in employment in 2027, based on a continuation of current educational trends and certain assumptions about how newly qualified people obtain and retain jobs. It is not a projection of the qualification levels required for skill supply to match skill demand.[7]

By 2027, around 55.2% of people in employment are expected to be qualified at level 4[8] and above, whilst the proportion of people with level 1 or no formal qualifications at all is expected to fall to 10.6%.

The changing qualification profile reflects both supply and demand factors, although since they interact it is difficult to separate out the individual influences of each. This is discussed in more detail in the Working Futures 2017-2027 Main report[9].

The supply of skills in the labour market is set to continue to grow, as educational participation levels remain strong and more people (especially young people) are acquiring higher level qualifications. At the same time, older people, who are less well-qualified on average, will retire from the labour force.

Growing demand for formal qualifications is most clearly reflected in the marked shift in occupational employment structure in favour of the three highest skilled occupational major groups, which tend to employ higher qualified people (see above).

Looking at the qualification profiles within occupations (the shares of employment qualified at different levels) in almost all cases these have changed in favour of higher level qualifications (RQF4+), combined with sharp reductions in the employment shares of those less well qualified (RQF1 and below). How much this is due to increasing skill requirements within jobs, as opposed to “qualifications inflation” (as supply has risen) remains a bone of contention.

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[7] The supply projections are based on a continuation of previous education trends (in terms of the proportions of people obtaining certain levels of formal qualifications). The patterns in employment depend on how these people then obtain and retain jobs. It is assumed that the better qualified are more likely to obtain and retain a job. Other more detailed tables included in the *Main Report* set this out step by step.
[8] For more information on RQF4 and other qualification levels, see https://www.gov.uk/what-different-qualification-levels-mean/list-of-qualification-levels.
[9] Wilson, R. A., S-A. Barnes, M. May-Gillings, H. Bui and S. Patel, (2019). *Working Futures 2017-2027: Main report.* Department for Education.

Figure 23: Qualification profile of workforce, 2007-2027

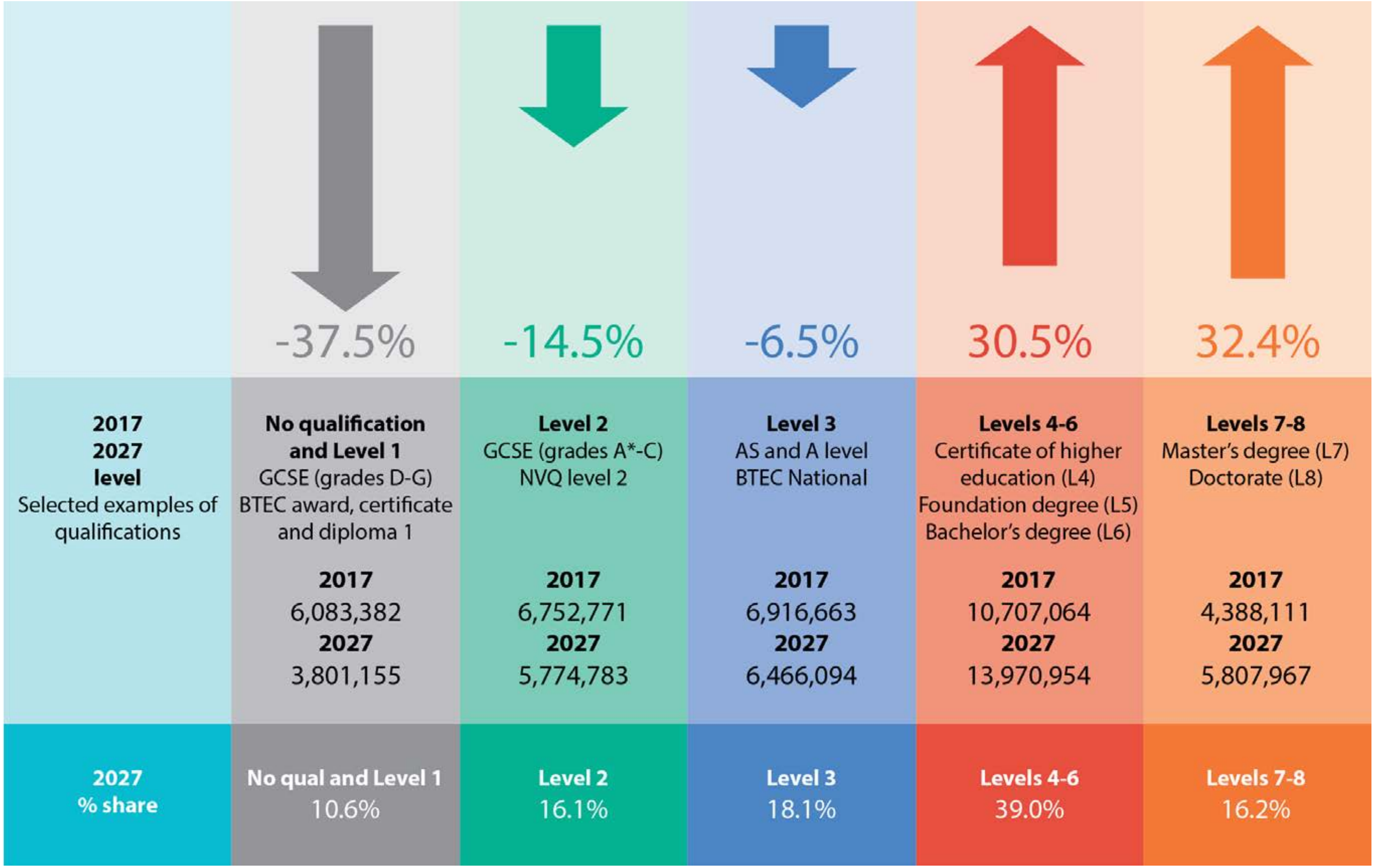


Table 23: Employment by qualification, 2017-2027

Levels (000s)	2007	2012	2017	2022	2027
RQF8 Doctorate	294	368	549	637	732
RQF7 Other higher degree	2,152	2,572	3,839	4,454	5,076
RQF6 First degree	4,602	5,901	6,851	8,320	9,224
RQF5 Foundation degree; Nursing; Teaching	1,896	1,985	1,966	2,170	2,289
RQF4 HE below degree level	1,559	1,755	1,890	2,248	2,458
RQF3 A level & equivalent	6,198	6,242	6,917	6,564	6,466
RQF2 GCSE(A-C) & equivalent	6,851	6,672	6,753	6,187	5,775
RQF1 GCSE(below grade C) & equivalent	5,531	4,480	4,477	3,568	2,934
No Qualification	2,708	1,826	1,607	1,102	867
All qualifications	**31,790**	**31,800**	**34,848**	**35,250**	**35,821**

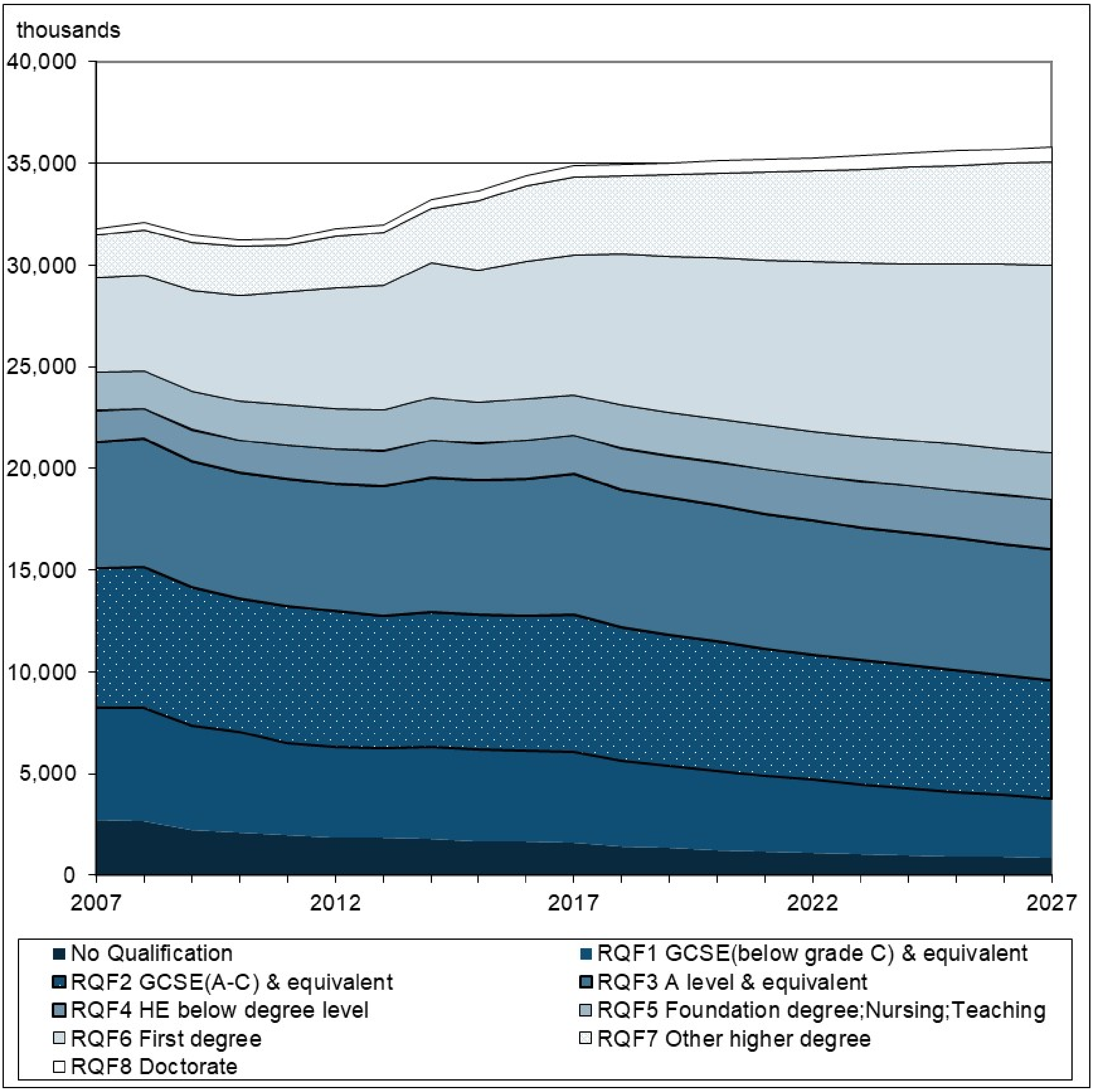
Shares (%)	2007	2012	2017	2022	2027
RQF8 Doctorate	0.9	1.2	1.6	1.8	2.0
RQF7 Other higher degree	6.8	8.1	11.0	12.6	14.2
RQF6 First degree	14.5	18.6	19.7	23.6	25.8
RQF5 Foundation degree; Nursing; Teaching	6.0	6.2	5.6	6.2	6.4
RQF4 HE below degree level	4.9	5.5	5.4	6.4	6.9
RQF3 A level & equivalent	19.5	19.6	19.8	18.6	18.1
RQF2 GCSE(A-C) & equivalent	21.5	21.0	19.4	17.6	16.1
RQF1 GCSE(below grade C) & equivalent	17.4	14.1	12.8	10.1	8.2
No Qualification	8.5	5.7	4.6	3.1	2.4
All qualifications	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Table 23 (continued): Employment by qualification, 2017-2027

Growth (% per annum)	**2007-2012**	**2012-2017**	**2017-2022**	**2022-2027**	**2017-2027**
RQF8 Doctorate	4.6	8.3	3.0	2.8	2.9
RQF7 Other higher degree	3.6	8.3	3.0	2.6	2.8
RQF6 First degree	5.1	3.0	4.0	2.1	3.0
RQF5 Foundation degree; Nursing; Teaching	0.9	-0.2	2.0	1.1	1.5
RQF4 HE below degree level	2.4	1.5	3.5	1.8	2.7
RQF3 A level & equivalent	0.1	2.1	-1.0	-0.3	-0.7
RQF2 GCSE(A-C) & equivalent	-0.5	0.2	-1.7	-1.4	-1.6
RQF1 GCSE(below grade C) & equivalent	-4.1	0.0	-4.4	-3.8	-4.1
No Qualification	-7.6	-2.5	-7.3	-4.7	-6.0
All qualifications	**0.0**	**1.8**	**0.2**	**0.3**	**0.3**

Change (000s)	**2007-2012**	**2012-2017**	**2017-2022**	**2022-2027**	**2017-2027**
RQF8 Doctorate	74	181	88	95	183
RQF7 Other higher degree	420	1,268	615	622	1,237
RQF6 First degree	1,299	950	1,469	904	2,373
RQF5 Foundation degree; Nursing; Teaching	89	-19	204	119	323
RQF4 HE below degree level	196	136	358	210	568
RQF3 A level & equivalent	44	675	-353	-98	-451
RQF2 GCSE(A-C) & equivalent	-179	81	-566	-412	-978
RQF1 GCSE(below grade C) & equivalent	-1,050	-4	-909	-634	-1,543
No Qualification	-882	-220	-505	-235	-739
All qualifications	**10**	**3,048**	**402**	**571**	**973**

Figure 24: Trends in employment by qualification level, 2007-2027



Conclusions and Headline messages

Following the UK referendum vote to leave the EU in 2016, there has been political and economic uncertainty on what the nature of the deal between the EU and UK will look like. While some of the ambiguity has been mitigated, the long-term impact of any exit arrangement still remains uncertain at the time of writing. It is assumed that the UK agrees a withdrawal deal with the EU.

This report identifies a number of important messages concerning the future shape of the UK economy and labour market based on these assumptions. The headline messages are drawn together below.

With regard to expected **Sectoral trends**:

- Business and other services activities, including professional services, scientific research and development and information technology are expected to be the main engine of employment growth and see the strongest rates of job growth;
- Many parts of the service sector, such as Distribution and Finance and insurance will continue to see significant impacts of technological and other innovations, which are reducing the demand for labour;
- Manufacturing is expected to see a continued decline in employment, although this will be coupled with output and productivity growth, implying that jobs in the sector will become more skilled;
- The construction sector is forecast to slow down, with the sector likely to continue to face labour supply constraints as a result of skills shortages and a potential decline in availability of EU workers;
- Uncertainty around the outcomes of Brexit is also likely to slow investment in the short-term, dampening demand in the construction sector.
- With regard to public sector activities, an ageing population is expected to generate a large number of additional jobs in health and social care, whilst employment in public administration is expected to decline as a result of continued tight controls on government funding.

With regard to **Occupational trends**: We expect to see continuing polarisation of employment but with a strong bias towards higher skilled occupations. Net combined growth of close to 2m jobs is projected for managers, professionals and associate professionals over the course of the decade.

The other main source of growth is expected to be Caring, leisure and other service roles, with more than 400,000 additional jobs. The largest source of net decline over the course of the decade is projected to be administrative and secretarial occupations, with 390,000 fewer jobs. Process, plant and machine operatives (-130,000) and skilled trades occupations (-100,000) are also projected to see job losses. Although some occupations will be “winners” and others “losers” in terms of net change in levels of employment.

It is crucial to recognise that **Replacement demands** will mean continued job openings (and career opportunities) across all broad occupational areas, including those projected to see net decline. For example, Professional occupations are projected to see employment levels increase by over 800,000 between 2017 and 2027 but replacement demands add almost three times as many more job openings. In the case of Administrative and secretarial employment levels are expected to fall by 600,000 but this is more than offset by replacement demands of almost twice as many jobs.

With regard to **Qualifications**: The projections indicate that we will continue to see a shift towards more people holding more high level qualifications. By 2027, it is expected that 55.2% of jobs will be held by people qualified at Level 4 and above. The average qualification level held is expected to rise within all occupations. How much this is due to increasing skill requirements within jobs, as opposed to “qualifications inflation” (as supply has risen) is a matter of debate.

Department for Education

Other outputs available from Working Futures include:

Working Futures 2017-2027 Main report and associated technical reports. Full details on sources and methods are to be found in the technical report.

The full length evidence report and associated Annexes contain:

- More detailed results for both sectors and occupations in the UK;
- Results for the various devolved administrations with the UK and the English regions;
- Comparisons with previous projections;
- Methodological details relating to the projections, including the macroeconomic model, methods used to derive implications for the demand for and supply of skills and the spatial analysis.
- Excel workbooks containing analysis for the UK, nations and English regions (to be published in due course).

For further details and to access the Working Futures 2017-2027 reports see www.gov.uk/government/publications and for previous Working Futures reports see warwick.ac.uk/fac/soc/ier/research/wf/.

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