

Sectoral Skills Assessments

Oxford Economics Forecasts – Technical Note

October 2023

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Introduction

The Sectoral Skills Assessments (SSAs) were developed by the Evidence and Impact Team to provide a high-level evidence base to inform future investment in skills, built up from existing datasets. The SSAs draw on four key types of evidence :

- Published data;
- Real time data;
- Qualitative evidence; and
- Forecast data.

The SSA technical note aims to provide technical and background information on the data provided within the SSAs.

Skills Development Scotland (SDS) has a long-standing partnership with Oxford Economics who produce economic and labour market forecasts to inform a range of SDS products and services including Sectoral and Regional Skills Assessments and the Data Matrix.

The forecasts used in 2023/24 SSAs were produced by Oxford Economics in March 2023, using their Local Authority District Forecasting Model. Results have been provided for Regional Outcome Agreement areas (ROAs), City Region and Growth Deal areas, local authorities as well as Scotland and the UK.

This note is intended to provide information on the coverage, methodology and data sources underpinning the forecasts. The note is structured as follows:

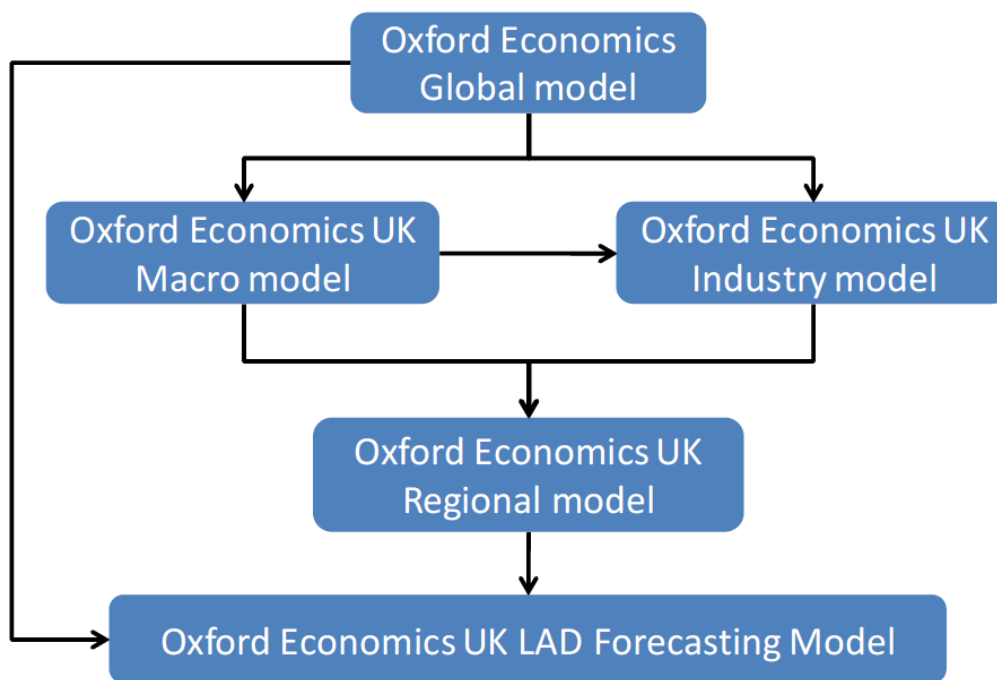
- An overview of the model;
- Details of data sources and forecast approach; and
- Appendices;
 - Appendix A provides an overview of the geographic cuts of data;
 - Appendix B provides definitions for Scotland's key sectors; and
 - Appendix C provides more detailed information on the Office for National Statistics Occupational Classification grouping.

Model Overview

Local Authority Forecasting Model

Oxford Economics's Local Authority District (LAD) Forecasting Model sits within the Oxford suite of forecasting models. This structure is unique as it ensures global and national factors (such as developments in the Eurozone, Government fiscal policy and Brexit) have an appropriate impact on the forecasts for a local authority. This empirical framework (or set of 'controls') is critical in ensuring the local area forecasts are much more than just an extrapolation of historical trends and reflect external economic conditions. Rather, the trends in our global, national and sectoral forecasts have an impact on the local area forecasts.

Fig. 1. Hierarchical structure of Oxford Economics' suite of models



The Oxford Economics local forecasting model depends essentially upon three factors:

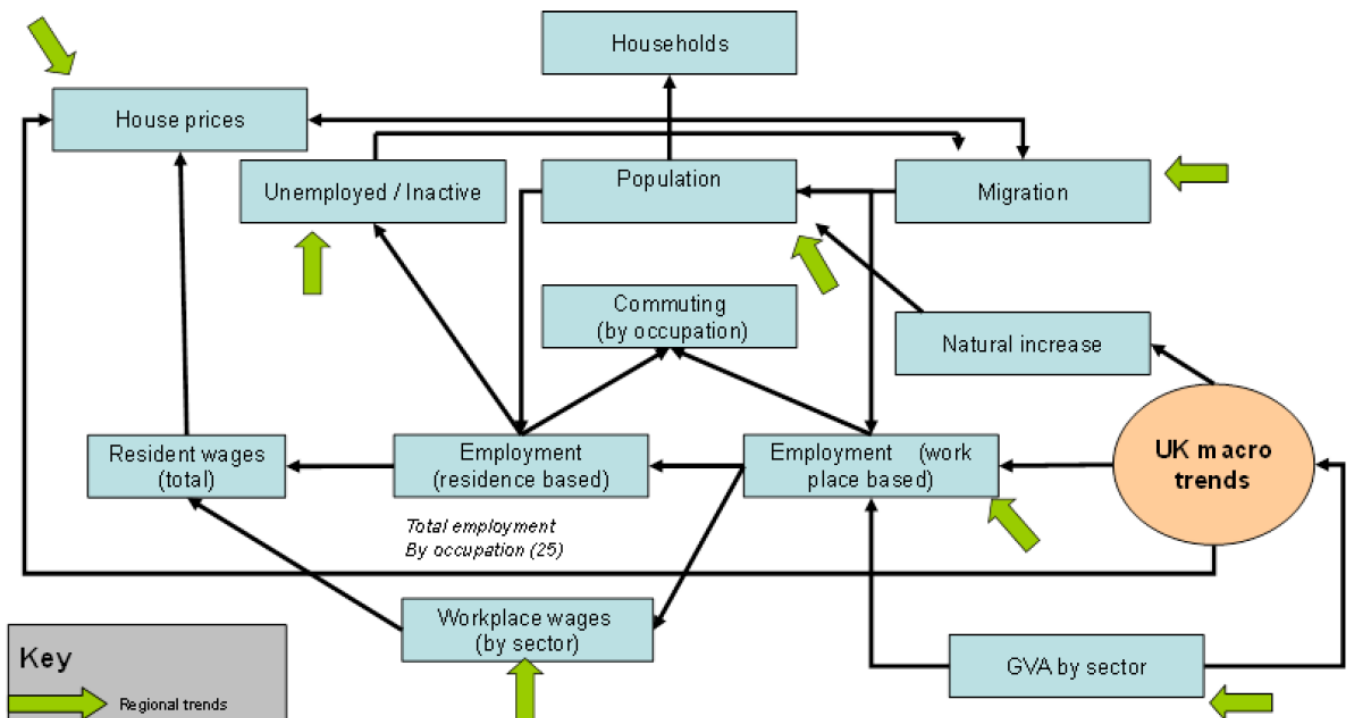
- **International, national and regional outlooks** - all the local area forecasts produced by Oxford Economics are fully consistent with broader regional, national and international models and forecasts. This ensures global events that impact on the performance of UK local economies, such as the strength of global trade, are fully captured in the forecasts for a local area. So too are national level growth and policies, whether that be the impact of monetary policy on consumer spending or government spending on locally provided public services;
- **Historical trends in an area**, which implicitly factor in supply side factors affecting demand, combined with Oxford Economics's staff knowledge of local areas and the patterns of local economic development. This ensures for example, that we recognise and factor into the forecasts any evidence of particularly high/low levels of competitiveness that local economies have in particular activities. It also means national policy programmes that have a particular local impact and that are very likely to happen are appropriately reflected in the forecasts; and

- **Fundamental economic relationships** which interlink the various elements of the outlook. Oxford Economics’s models ensure full consistency between variables in a local area. For example, employment, commuting, migration and population are all affected by one another.

All Oxford Economics models are economically driven, with all aspects of the economy interlinked as they believe that this is the best way to estimate the future outlook for the area. Given changes in economic conditions drive labour market performance, which in turn affects migration patterns and housing demand/make-up, economic based forecasts are essential. For example, if employment or productivity changes in one sector, there are implications for all sectors of the economy through indirect (supply chain) and induced impacts. The employment creation will then put downward pressure on unemployment, while encouraging increased commuting into the economy, and making it a more attractive location for migrants. This would effectively drive up the population and housing demand (and put more demand on public services).

The main internal relationships between variables are summarised in Figure 2. Each variable is related to others within the models. Key variables are also related to variables in the other Oxford Economics models.

Fig. 2. Main Relationships between variables



Time Periods

The model is usually constructed on an annual basis. Historic data for most variables has been collected for 20 or more years to provide a basis for estimating inter-relationships between variables and future trends. Forecasts are currently set up for the period up to 2033 consistent with existing available global, national and regional forecasts.

Using the Model

The model provides projections on a 'policy neutral' basis. Unconfirmed, aspirational or policies at planning/development stage are not included. Though forecasts are built primarily around the

economic relationships above, the use of local knowledge and published material on local development is required to augment the results of the formal modelling process.

According to Oxford Economics, although the UK and EU struck a basic free trade agreement, the switch from EU membership to the new relationship introduced significant new frictions on UK-EU trade. They believe this will result in some degree of trade friction, limiting improvements in total factor productivity, and will reduce the attractiveness of the UK as a destination for Foreign Direct Investment (FDI). Scarring from the pandemic will exert a further drag, albeit smaller than Brexit, with long-term unemployment set to rise and low levels of business investment reducing the degree of capital deepening.

As with all forms of forecasting, there are margins of error associated with the results which get larger over time. Furthermore, the quality of data decreases as geographies gets smaller. Models of this form under current data quality levels are most helpful for identifying trends, growth rates and relativities either across or within areas. The long-term trends are therefore important, and users are encouraged to use the time series information and not rely on 'point-in-time' estimates.

Sectoral Skills Assessment – variables covered

The list below provides a summary of the variables provided. Chapter 3 provides detailed information on the of the variables used within the report.

Gross Value Added (GVA) / Output

GVA data by sector is published on a nominal basis by the Office for National Statistics for Scotland and the local authorities. These are converted to real prices using the chain linked volume measures which are available for Scotland, NUTS2 regions, NUTS3 regions and local authority districts. The GVA forecast is driven by sectoral employment in each area and Scottish productivity forecast adjusted by relative earnings. At the Scotland level, GVA is driven by sectoral employment and sectoral productivity relative to UK. GVA forecasts by key sector are driven by key sector employment and local estimates of productivity adjusted by relative detailed sectoral earnings.

Productivity

Productivity is calculated as GVA per job.

Employment by Industry (People)

To produce a people-based employment forecast, Oxford Economics use the Annual Population Survey (APS) data which is available by sector (on a workplace basis). It is driven by the numbers of full-time and part-time employees by sector in each area. Individuals are assumed to hold only one full-time job each. Part-time jobs are assumed to account for half a full-time job. The self-employed people are added to the full-time employees plus half of the part-time employees to arrive at an estimate of workplace-based employment.

Employment by Key Sector (People)

Results for the following are included (details of the definitions used are set out in Appendix B.

- Chemical sciences
- Creative industries
- Construction
- Energy
- Engineering
- Food and Drink – Primary Production
- Food and Drink - Manufacturing
- Financial Services

- Professional Services
- Health Care
- Social Care
- Childcare
- Digital Technologies
- Life sciences
- Tourism

The results for the key sectors are calculated using shares from the Business Register and Employment Survey (BRES) of each component of key sector to broad sector. These shares are applied to the broad sector results, to produce an estimate of the occupations within each of the key sectors.

Employment by Occupation (People)

The APS provides data on employment by occupation for Scotland and its local authorities. The forecasts are derived using a SIC/SOC (Standard Industrial Classification/Standard Occupational Classification) matrix. The ratio of occupations within each sector for 2001 and 2011 is calculated from the Census. For all other years, Oxford Economics use the Labour Force Survey for Scotland. The share of each occupation by sector is forecast based upon trends and are applied to the sectoral employment data for each local area, to give an estimate of occupations within each sector. The results are adjusted to reflect the APS data for each local area. The occupations by sector are then aggregated to give occupations by 25 minor occupation groupings. Therefore, the overall economy occupational structure is heavily dependent upon sectoral composition and future trends can be largely explained by sectoral trends.

Employment by key sector and qualification (people)

Employment by key sector and qualification for Scotland and its local authority districts is produced using a matrix of qualifications by broad sector calculated using the Labour Force Survey for Scotland. The share of each qualification category within each broad sector is forecast. The shares of the relevant broad sector are applied to the key sector employment data for each local area, to give an estimate of qualifications in each key sector. The results are adjusted to reflect the APS data for each local area.

Total Requirement – Expansion and Replacement Demand (People)

Expansion demand refers to the net change in total employment over the forecast period and thus the results can be positive or negative.

Replacement demand represents how many more people will be required due to people leaving the workforce. There are many reasons why people leave the labour market - with retirement perhaps the prime example – and need to be replaced. Whilst replacing the vacant position creates additional labour demand, it has no net effect on total employment. Reasons for leaving employment include:

- Unemployment;
- Inactivity;
- Out migration;
- Retirement;
- Death; and
- Leaving for another job in a different occupational group or sector.

This ‘replacement’ category is much larger than expansion demand and explains why even declining sectors still require new staff/advertise vacancies.

Replacement demand and expansion demand are summed to produce total requirement.

Total Requirement by Industry (People)

Expansion demand refers to the net change in total employment by industry over the forecast period and thus the results can be positive or negative. The results presented are jobs based for each of the 1-digit industries and key sectors.

For replacement demand, leaver rates by industry are calculated from the Labour Force Survey for Scotland. These rates are forecast and applied across all geographies. The number of leavers by 1-digit industry are apportioned to key sectors using employment shares from BRES.

Replacement demand and expansion demand are summed to produce total requirement.

Appendix A: Spatial Cuts of Data

Oxford Economics forecasts have been developed using Local Authorities as building blocks and then aggregating this into various spatial levels:

The results have been provided for Regional Outcome Areas (ROAs), City Regions, Growth Deals and at national level – Scotland and UK.

Details of the local authorities used for ROAs, City Regions and Growth Deals are outlined below:

| | Area | Local Authorities |
|--------------------------|--|---|
| ROAs | Aberdeen City and Shire | Aberdeen City, Aberdeenshire |
| | Ayrshire | East Ayrshire, North Ayrshire, South Ayrshire |
| | Borders | Scottish Borders |
| | Dumfries and Galloway | Dumfries and Galloway |
| | Edinburgh and Lothians | East Lothian, Edinburgh, Midlothian |
| | Fife | Fife |
| | Forth Valley | Clackmannanshire, Falkirk, Stirling |
| | Glasgow College Region | East Dunbartonshire, East Renfrewshire, Glasgow |
| | Highlands and Islands | Argyll and Bute, Na h-Eileanan Siar, Highland, Moray, Orkney Islands, Shetland Islands |
| | Lanarkshire | East Dunbartonshire, North Lanarkshire, South Lanarkshire |
| | Tayside | Angus, Dundee, Perth and Kinross |
| | West | East Renfrewshire, Inverclyde, Renfrewshire, West Dunbartonshire |
| | West Lothian | West Lothian |
| South of Scotland | South of Scotland | Dumfries and Galloway, Scottish Borders |
| Rural Scotland | Rural Scotland | <i>Rural Scotland is based on the Scottish Government's Rural and Environment Science and Analytical Services (RESAS) classification of rural areas. The 15 local authorities included are those classified as either 'mainly rural' or 'islands and remote rural'. Aberdeenshire, Angus, Argyll and Bute, Clackmannanshire, Dumfries and Galloway, East Ayrshire, East Lothian, Na h-Eileanan Siar, Highland, Moray, Orkney Islands, Perth and Kinross, Scottish Borders, Shetland Islands, and South Ayrshire</i> |
| City Regions | Edinburgh and South East Scotland City Region Deal | Edinburgh, Midlothian, East Lothian, West Lothian, Fife, Scottish Borders |
| | Glasgow City Region | Glasgow, East Dunbartonshire, East Renfrewshire, Inverclyde, North Lanarkshire, Renfrewshire, South Lanarkshire, West Dunbartonshire |
| | Inverness and Highland City Region Deal | Highland |
| | Stirling and Clackmannanshire City Region Deal | Clackmannanshire, Stirling |
| Growth Deals | Argyll and Bute | Argyll and Bute |
| | Falkirk | Falkirk |
| | Islands | Na h-Eileanan Siar, Orkney Islands, Shetland Islands |
| | Moray | Moray |

Appendix B: SIC Definitions for Scotland's Key Sectors

The Office for National Statistics Standard Industrial Classifications can be found [here](#). The SIC definitions for the SDS Key Sectors are as follows:

Construction

| SIC Code | Description | Attributable Activity |
|----------|--|-----------------------|
| 02.2 | Logging | 20% |
| 08.11 | Quarrying of ornamental and building stone, limestone, gypsum, chalk and slate | 70% |
| 08.12 | Operation of gravel and sand pits; mining of clays and kaolin | 70% |
| 16.23 | Manufacture of other builders' carpentry and joinery | 40% |
| 20.30/1 | Manufacture of paints, varnishes and similar coatings, mastics and sealants | 25% |
| 20.30/2 | Manufacture of printing ink | 25% |
| 22.11 | Manufacture of rubber tyres and tubes; retreading and rebuilding of rubber tyres | 20% |
| 22.19 | Manufacture of other rubber products | 20% |
| 22.23 | Manufacture of builders' ware of plastic | 35% |
| 23.32 | Manufacture of bricks, tiles and construction products, in baked clay | 85% |
| 23.41 | Manufacture of ceramic household and ornamental articles | 60% |
| 23.42 | Manufacture of ceramic sanitary fixtures | 60% |
| 23.43 | Manufacture of ceramic insulators and insulating fittings | 60% |
| 23.44 | Manufacture of other technical ceramic products | 60% |
| 23.49 | Manufacture of other ceramic products | 60% |
| 23.51 | Manufacture of cement | 25% |
| 23.52 | Manufacture of lime and plaster | 25% |
| 23.61 | Manufacture of concrete products for construction purposes | 90% |
| 23.62 | Manufacture of plaster products for construction purposes | 90% |
| 23.63 | Manufacture of ready-mixed concrete | 90% |
| 23.64 | Manufacture of mortars | 90% |
| 23.65 | Manufacture of fibre cement | 90% |
| 23.69 | Manufacture of other articles of concrete, plaster and cement | 90% |
| 25.11 | Manufacture of metal structures and parts of structures | 60% |
| 25.12 | Manufacture of doors and windows of metal | 60% |
| 25.21 | Manufacture of central heating radiators and boilers | 40% |
| 25.29 | Manufacture of other tanks, reservoirs and containers of metal | 40% |
| 25.3 | Manufacture of steam generators, except central heating hot water boilers | 40% |
| 26.11 | Manufacture of electronic components | 35% |
| 41.10 | Development of building projects | 100% |
| 41.20/1 | Construction of commercial buildings | 100% |
| 41.20/2 | Construction of domestic buildings | 100% |
| 42.11 | Construction of roads and motorways | 100% |
| 42.12 | Construction of railways and underground railways | 100% |
| 42.13 | Construction of bridges and tunnels | 100% |
| 42.21 | Construction of utility projects for fluids | 100% |
| 42.22 | Construction of utility projects for electricity and telecommunications | 100% |
| 42.91 | Construction of water projects | 100% |
| 42.99 | Construction of other civil engineering projects n.e.c. | 100% |
| 43.11 | Demolition | 100% |
| 43.12 | Site preparation | 100% |
| 43.13 | Test drilling and boring | 100% |
| 43.21 | Electrical installation | 100% |
| 43.22 | Plumbing, heat and air-conditioning installation | 100% |
| 43.29 | Other construction installation | 100% |
| 43.31 | Plastering | 100% |
| 43.32 | Joinery installation | 100% |
| 43.33 | Floor and wall covering | 100% |

| | | |
|---------|---|------|
| 43.34/1 | Painting | 100% |
| 43.34/2 | Glazing | 100% |
| 43.39 | Other building completion and finishing | 100% |
| 43.91 | Roofing activities | 100% |
| 43.99/1 | Scaffold erection | 100% |
| 43.99/9 | Specialised construction activities (other than scaffold erection) n.e.c. | 100% |
| 46.13 | Agents involved in the sale of timber and building materials | 50% |
| 46.63 | Wholesale of mining, construction and civil engineering machinery | 50% |
| 46.73 | Wholesale of wood, construction materials and sanitary equipment | 50% |
| 71.11/1 | Architectural activities | 100% |
| 71.11/2 | Urban planning and landscape architectural activities | 50% |
| 71.12/1 | Engineering design activities for industrial process and production | 50% |
| 71.12/2 | Engineering related scientific and technical consulting activities | 50% |
| 71.12/9 | Other engineering activities (not including engineering design for industrial process and production or engineering related scientific and technical consulting activities) | 50% |
| 74.90/2 | Quantity surveying activities | 100% |

Creative Industries

| SIC Code | Description | Attributable Activity |
|----------|---|-----------------------|
| 31.09 | Manufacture of other furniture | 100% |
| 16.29 | Manufacture of other wood products | 100% |
| 32.12 | Manufacture of jewellery and related products | 100% |
| 32.13 | Manufacture of imitation jewellery and related articles | 70% |
| 23.41 | Manufacture of ceramic household and ornamental articles | 100% |
| 23.49 | Manufacture of other ceramic products | 100% |
| 23.13 | Manufacture of hollow glass | 30% |
| 23.19 | Manufacture of other glass | 100% |
| 13 | Manufacture of textiles | 100% |
| 14 | Manufacture of wearing apparel | 35% |
| 15 | Manufacture of leather and related products | 35% |
| 18.20/1 | Reproduction of sound recording | 15% |
| 32.2 | Manufacture of musical instruments | 15% |
| 18.20/2 | Reproduction of video recording | 100% |
| 18.11 | Printing of newspapers | 100% |
| 18.129 | Other printing (not labels) | 25% |
| 18.13 | Pre press and media services | 20% |
| 47.78/1 | Retail sale in commercial art galleries | 20% |
| 47.79/1 | Retail sale of antiques and antique books | 25% |
| 59.2 | Sound recording and music publishing activities | 100% |
| 59.11/1 | Motion picture production activities | 75% |
| 59.11/2 | Video production activities | 100% |
| 59.12 | Motion picture, video and television programme post-production activities | 100% |
| 59.13/1 | Motion picture distribution activities | 100% |
| 59.13/2 | Video distribution activities | 100% |
| 59.14 | Motion picture projection activities | 100% |
| 58.21 | Publishing of computer games | 100% |
| 62.01/1 | Ready-made interactive leisure and entertainment software development | 100% |
| 59.11/3 | Television programme production activities | 100% |
| 59.13/3 | Television programme distribution activities | 100% |
| 59.12 | Motion picture, video and television programme post-production activities | 100% |
| 60.1 | Radio broadcasting | 100% |
| 60.2 | Television programming and broadcasting activities | 100% |
| 58.11 | Book publishing | 100% |
| 58.13 | Publishing of newspapers | 25% |
| 58.14 | Publishing of journals and periodicals | 100% |
| 58.19 | Other publishing activities | 100% |

| | | |
|---------|--|------|
| 63.91 | News agency activities | 100% |
| 58.29 | Other software publishing | 100% |
| 62.01/2 | Business and domestic software development | 100% |
| 62.02 | Computer consultancy activities | 100% |
| 73.11 | Advertising agencies | 100% |
| 73.12 | Media representation | 75% |
| 71.11 | Architectural activities | 100% |
| 74.1 | Specialised design activities | 100% |
| 71.12/1 | Engineering design activities for industrial process and production | 30% |
| 74.1 | Specialised design activities | 100% |
| 74.20/1 | Portrait photographic activities | 100% |
| 74.20/2 | Other specialist photography (not including portrait photography) | 100% |
| 74.20/9 | Other photographic activities (not including portrait and other specialist photography and film processing) n.e.c. | 100% |
| 78.10/1 | Motion picture, television and other theatrical casting | 100% |
| 85.52 | Cultural Education | 100% |
| 90.03 | Artistic creation | 100% |
| 90.01 | Performing arts | 100% |
| 90.02 | Support activities to performing arts | 100% |
| 90.04 | Operation of arts facilities | 100% |
| 90.03 | Artistic creation | 100% |
| 91.01 | Libraries and archive activities | 100% |
| 95.24 | Repair of furniture and home furnishings | 100% |

Digital Technologies

| SIC Code | Description | Attributable Activity |
|----------|--|-----------------------|
| 18.20/3 | Reproduction of computer media | 100% |
| 26.11 | Manufacture of electronic components | 100% |
| 26.12 | Manufacture of loaded electronic boards | 100% |
| 26.20 | Manufacture of computers and peripheral equipment | 100% |
| 26.30 | Manufacture of communication equipment | 100% |
| 26.40 | Manufacture of consumer electronics | 100% |
| 26.8 | Manufacture of magnetic and optical media | 100% |
| 27.31 | Manufacture of fibre optic cables | 100% |
| 58.21 | Publishing of computer games | 100% |
| 58.29 | Other software publishing | 100% |
| 61.1 | Wired telecommunications activities | 100% |
| 61.2 | Wireless telecommunications activities | 100% |
| 61.3 | Satellite telecommunications activities | 100% |
| 61.9 | Other telecommunications activities | 100% |
| 62.01 | Computer programming activities | 100% |
| 62.02 | Computer consultancy activities | 100% |
| 62.03 | Computer facilities management activities | 100% |
| 62.09 | Other information technology and computer service activities | 100% |
| 63.11 | Data processing, hosting and related activities | 100% |
| 63.12 | Web portals | 100% |
| 63.99 | Other information service activities n.e.c. | 100% |
| 95.11 | Repair of computers and peripheral equipment | 100% |
| 95.12 | Repair of communication equipment | 100% |

Childcare

| SIC Code | Description | Attributable Activity |
|----------|---------------------------|-----------------------|
| 85.1 | Pre-primary education | 100% |
| 88.91 | Child day-care activities | 100% |

Energy

| SIC Code | Description | Attributable Activity |
|----------|--|-----------------------|
| 05 | Mining of coal and lignite | 100% |
| 06 | Extraction of crude petroleum and natural gas | 100% |
| 09 | Mining support service activities | 100% |
| 19 | Manufacture of coke and refined petroleum products | 100% |
| 20.14 | Manufacture of other organic basic chemicals | 100% |
| 35 | Electricity, gas, steam and air conditioning supply | 100% |
| 36 | Water collection, treatment and supply | 100% |
| 38.22 | Treatment and disposal of hazardous waste | 100% |
| 71.12/2 | Engineering related scientific and technical consulting activities | 100% |
| 74.90/1 | Environmental consulting activities | 100% |

Engineering

| SIC Code | Description | Attributable Activity |
|----------|---|-----------------------|
| 24 | Manufacture of basic metals | 100% |
| 25 | Manufacture of fabricated metal products, except machinery and equipment | 100% |
| 26 | Manufacture of computer, electronic and optical products | 100% |
| 27 | Manufacture of electrical equipment | 100% |
| 28 | Manufacture of machinery and equipment n.e.c. | 100% |
| 29 | Manufacture of motor vehicles, trailers and semi-trailers | 100% |
| 30 | Manufacture of other transport equipment | 100% |
| 33 | Repair and installation of machinery and equipment | 100% |
| 71 | Architectural and engineering activities; technical testing and analysis | 100% |
| 72.19 | Other research and experimental development on natural sciences and engineering | 100% |
| 13.94 | Manufacture of cordage, rope, twine and netting | 100% |
| 38.31 | Dismantling of wrecks | 100% |

Financial Services

| SIC Code | Description | Attributable Activity |
|----------|---|-----------------------|
| 64.1 | Monetary intermediation | 100% |
| 64.3 | Trusts, funds and similar financial entities | 100% |
| 64.9 | Other financial service activities, except insurance and pension funding | 100% |
| 65 | Insurance, reinsurance and pension funding, except compulsory social security | 100% |
| 66 | Activities auxiliary to financial services and insurance activities | 100% |

Food and Drink (Manufacturing)

| SIC Code | Description | Attributable Activity |
|----------|------------------------------|-----------------------|
| 10 | Manufacture of food products | 100% |
| 11 | Manufacture of beverages | 100% |

Food and Drink (Primary Production)

| SIC Code | Description | Attributable Activity |
|----------|--|-----------------------|
| 01 | Crop and animal production, hunting and related service activities | 100% |
| 03 | Fishing and aquaculture | 100% |

Health Care

| SIC Code | Description | Attributable Activity |
|----------|--|-----------------------|
| 86.1 | Hospital activities | 100% |
| 86.21 | General medical practice activities | 100% |
| 86.22 | Specialist medical practice activities | 100% |
| 86.23 | Dental practice activities | 100% |
| 86.9 | Other human health activities | 100% |

Life and Chemical Sciences

| SIC Code | Description | Attributable Activity |
|----------|---|-----------------------|
| 20.11 | Manufacture of industrial gases | 100% |
| 20.12 | Manufacture of dyes and pigments | 100% |
| 20.13 | Manufacture of other inorganic basic chemicals | 100% |
| 20.14 | Manufacture of other organic basic chemicals | 100% |
| 20.15 | Manufacture of fertilisers and nitrogen compounds | 100% |
| 20.16 | Manufacture of plastics in primary forms | 100% |
| 20.17 | Manufacture of synthetic rubber in primary forms | 100% |
| 20.20 | Manufacture of pesticides and other agrochemical products | 100% |
| 20.30/1 | Manufacture of paints, varnishes and similar coatings, mastics and sealants | 100% |
| 20.30/2 | Manufacture of printing ink | 100% |
| 20.41/1 | Manufacture of soap and detergents | 100% |
| 20.41/2 | Manufacture of cleaning and polishing preparations | 100% |
| 20.51 | Manufacture of explosives | 100% |
| 20.52 | Manufacture of glues | 100% |
| 20.53 | Manufacture of essential oils | 100% |
| 20.59 | Manufacture of other chemical products n.e.c. | 100% |
| 20.60 | Manufacture of man-made fibres | 100% |
| 21.1 | Manufacture of basic pharmaceutical products | 100% |
| 21.2 | Manufacture of pharmaceutical preparations | 100% |
| 21 | Manufacture of basic pharmaceutical products and pharmaceutical preparations | 100% |
| 26.6 | Manufacture of irradiation, electromedical and electrotherapeutic equipment | 100% |
| 32.5 | Manufacture of medical and dental instruments and supplies | 100% |
| 72.11 | Research and experimental development on biotechnology | 100% |
| 72.19 | Other research and experimental development on natural sciences and engineering | 100% |

Professional Services

| SIC Code | Description | Attributable Activity |
|----------|--|-----------------------|
| 69 | Legal activities and accounting activities | 100% |
| 70.2 | Management consultancy activities | 100% |
| 82.91 | Activities of collection agencies and credit bureaus | 100% |

Social Care

| SIC Code | Description | Attributable Activity |
|----------|--|-----------------------|
| 87.1 | Residential nursing care activities | 100% |
| 87.2 | Residential care activities for learning disabilities, mental health and substance abuse | 100% |
| 87.3 | Residential care activities for the elderly and disabled | 100% |
| 87.9 | Other residential care activities | 100% |
| 88.1 | Social work activities without accommodation for the elderly and disabled | 100% |
| 88.91 | Child day-care activities | 100% |
| 88.99 | Other social work activities without accommodation n.e.c. | 100% |

Tourism

| SIC Code | Description | Attributable Activity |
|----------|---|-----------------------|
| 55.1 | Hotels and similar accommodation | 100% |
| 55.2 | Holiday and other short-stay accommodation | 100% |
| 55.3 | Camping grounds, recreational vehicle parks and trailer parks | 100% |
| 56.1 | Restaurants and mobile food service activities | 100% |
| 56.3 | Beverage serving activities | 100% |
| 79.12 | Tour operator activities | 100% |
| 79.9 | Other reservation service and related activities | 100% |
| 91.02 | Museum activities | 100% |
| 91.03 | Operation of historical sites and buildings and similar visitor attractions | 100% |
| 91.04 | Botanical and zoological gardens and nature reserve activities | 100% |
| 93.11 | Operation of sports facilities | 100% |
| 93.19/9 | Other sports activities (not including activities of racehorse owners) n.e.c. | 100% |
| 93.21 | Activities of amusement parks and theme parks | 100% |
| 93.29 | Other amusement and recreation activities | 100% |

Appendix C: Occupational Groupings

The Office for National Statistics Standard Occupational Classifications can be found [here](#).

| Occupational Group | Job Description | Occupations within group include |
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| Corporate Managers and Directors | Job holders in this sub-major group formulate government policy; direct the operations of major organisations, local government, government departments and special interest organisations; organise and direct production, processing, maintenance and construction operations in industry; formulate, implement and advise on specialist functional activities within organisations; direct the operations of branches of financial institutions; organise and co-ordinate the transportation of passengers, the storage and distribution of freight, and the sale of goods; direct the operations of the emergency services, revenue and customs, the prison service and the armed forces; and co-ordinate the provision of health and social services. | <ul style="list-style-type: none"> • Chief Executives and Senior Officials • Production Managers and Directors • Functional Managers and Directors • Financial Institution Managers and Directors • Managers and Directors in Transport and Logistics • Senior Officers in Protective Services • Health and Social Services Managers and Directors • Managers and Directors in Retail and Wholesale |
| Other Managers and Proprietors | Job holders in this sub-major group, either as employees or proprietors, manage agriculture related services; manage and co-ordinate the operations of health service general practices, residential and day care establishments and domiciliary care services; co-ordinate and direct the activities of businesses such as restaurants, hotels, entertainment establishments, sports and leisure facilities, travel and property agencies, independent shops, garages, waste disposal and environmental services, hairdressing establishments, and agencies providing services outsourced by other organisations. | <ul style="list-style-type: none"> • Managers and Proprietors in Agriculture Related Services • Managers and Proprietors in Hospitality and Leisure Services • Managers and Proprietors in Health and Care Services • Managers and Proprietors in Other Services |
| Science, Research, Engineering and Technology Professionals | Professionals in this sub-major group undertake research and consultancy activities within the physical and social sciences and in the humanities; technically supervise the development, installation and maintenance of mechanical, chemical, structural and electrical systems; advise upon and direct the technical aspects of production programmes; provide consultancy and development services in the provision and utilisation of information technology and telecommunications; direct and advise upon the conservation and protection of the environment; and direct and advise upon the research and development operations of an organisation. | <ul style="list-style-type: none"> • Natural and Social Science Professionals • Engineering Professionals • Information Technology and Telecommunications Professionals • Conservation and Environment Professionals • Research and Development Managers |
| Health Professionals | Health professionals provide medical treatments and diagnosis for people and animals, conduct research into treatment and drugs, dispense pharmaceutical compounds, provide therapeutical treatments for medical conditions, and administer nursing and midwifery care. | <ul style="list-style-type: none"> • Health Professionals • Therapy Professionals • Nursing and Midwifery Professionals |
| Teaching and Educational Professionals | Teaching and educational professionals plan, organise and undertake teaching and research activities within educational establishments; plan, organise, direct and co-ordinate the administrative work and financial | <ul style="list-style-type: none"> • Teaching and Educational Professionals |

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| | resources of these establishments; and inspect and advise schools and training establishments. | |
| Business, Media and Public Service Professionals | Jobholders in this sub-major group advise and act on behalf of clients in legal matters, preside over judicial proceedings, collect and analyse financial information, perform accounting duties, advise on business and management matters, and perform a variety of other professional occupations within the public, welfare, regulatory and voluntary sectors, and within the media. | <ul style="list-style-type: none"> • Legal Professionals • Business, Research and Administrative Professionals • Business and Financial Project Management Professionals • Architects, Town Planners and Surveyors • Welfare Professionals • Librarians and Related Professionals • Quality and Regulatory Professionals • Media Professionals |
| Science, Engineering and Technology Associate Professionals | Science, engineering and technology associate professionals perform a variety of technical support functions to scientists, technologists, engineers and architects, prepare technical drawings, undertake building inspections, provide technical support for IT operations and users. | <ul style="list-style-type: none"> • Science, Engineering and Production Technicians • Draughtpersons and Related Architectural Technicians • Information Technology Technicians |
| Health and Social Care Associate Professionals | Health and social care associate professionals provide a variety of technical support functions and services for health professionals in the treatment of patients to assist physical and psychological recovery, and provide social care and related community services. | <ul style="list-style-type: none"> • Health Associate Professionals • Welfare and Housing Associate Professionals |
| Protective Service Occupations | Workers in protective service occupations serve in the armed forces, the police force, fire service, prison service and perform other protective service roles. | <ul style="list-style-type: none"> • Protective Service Occupations |
| Culture, Media and Sports Occupations | Workers in this sub-major group create and restore artistic works; write, edit and evaluate literary material; perform in acts of entertainment; arrange and perform musical compositions; produce television, film and stage presentations; present television and radio broadcasts; operate camera, sound and lighting equipment; design commercial and industrial products; compete in sporting events for financial reward; and provide training and instruction for sporting and recreational activities. | <ul style="list-style-type: none"> • Artistic, Literary and Media Occupations • Design Occupations • Sports and Fitness Occupations |
| Business and Public Service Associate Professionals | Business and public service associate professionals command and control the movement of air and sea traffic; organise the administrative work of legal practices; perform specialist financial tasks; purchase goods and materials; provide technical sales advice to clients; undertake market research; arrange for the trading and leasing of property on behalf of clients; organise conferences and related events; undertake recruitment, training and industrial relations activities; promote and maintain areas of the environment; perform administrative functions in government; and undertake statutory inspections of health and safety. | <ul style="list-style-type: none"> • Transport Associate Professionals • Legal Associate Professionals • Business, Finance and Related Associate Professionals • Sales, Marketing and Related Associate Professionals • Public Services and Other Associate Professionals |
| Administrative Occupations | Workers in this sub-major group undertake administrative and clerical work in national and local government departments and non-governmental organisations; perform specialist clerical tasks in | <ul style="list-style-type: none"> • Administrative Occupations: Government and Related Occupations |

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| | relation to financial records and transactions, the administration of pension and insurance policies, the storage and transportation of freight, the activities of libraries and of human resources operations; and perform other general administrative tasks. They also coordinate and oversee the day-to-day running of offices and supervise office staff. | <ul style="list-style-type: none"> • Administrative Occupations: Finance • Administrative Occupations: Records • Other Administrative Occupations • Administrative Occupations: Office Managers and Supervisors |
| Secretarial and Related Occupations | Secretarial occupations perform general secretarial, clerical and organisational duties in support of management and other workers, and provide specialist secretarial support for medical and legal activities. | <ul style="list-style-type: none"> • Secretarial and Related Occupations |
| Customer Service Occupations | Customer service occupations receive and respond to enquiries regarding products or services, deal with customer complaints and perform a variety of tasks in the provision of additional services to customers after the point of sale; operate switchboards and receive and direct calls in a variety of establishments; operate telecommunications equipment to transmit and receive messages; conduct market research interviews; and perform other customer service tasks. | <ul style="list-style-type: none"> • Customer Service Occupations • Customers Service Managers and Supervisors |
| Process, Plant and Machine Operatives | Process, plant and machine operatives operate and attend machinery to manufacture, process or otherwise treat foodstuffs, beverages, textiles, chemicals, glass, ceramics, rubber, plastic, metal, synthetic and other products, operate plant and machinery to produce paper, wood and related products, extract coal and other minerals from the earth, attend and operate power generation and water treatment systems, perform routine operations in the manufacture of motor vehicles, metal goods, electrical and electronic products, clothing and other goods, and perform a variety of tasks in relation to the construction and repair of buildings, public highways, underground piping systems, railway tracks and other structures. | <ul style="list-style-type: none"> • Process Operatives • Plant and Machine Operatives • Assemblers and Routine Operatives • Construction Operatives |
| Transport and Mobile Machine Drivers and Operatives | Transport and mobile machine drivers and operatives drive motor vehicles to transport goods and people; drive trains and guide and monitor the movement of rail traffic; operate mechanical equipment on board boats, ships and other marine vessels; assist in the boarding, fuelling and movement of aircraft at airports; operate lifting, earth moving and earth surfacing equipment, agricultural equipment and other mobile machinery. | <ul style="list-style-type: none"> • Road Transport Drivers • Mobile Machine Drivers and Operatives • Other Drivers and Transport Operatives |
| Elementary Trades and Related Occupations | Occupations in this sub-major group perform agricultural, fishing and forestry related tasks, undertake general labouring duties, assist building and construction trades workers, and perform a variety of duties in foundry, engineering and other process plant related trades. | <ul style="list-style-type: none"> • Elementary Agricultural Occupations • Elementary Construction Occupations • Elementary Process Plant Occupations |
| Elementary Administration and Service Occupations | Workers in this sub-major group collect, sort and deliver written correspondence, undertake elementary clerical tasks within offices, undertake elementary cleaning tasks, protect and supervise people and property, perform elementary sales related tasks, assist in the storage and transportation of goods, and perform a variety of carrying, preparation and serving | <ul style="list-style-type: none"> • Elementary Administration Occupations • Elementary Cleaning Occupations • Elementary Security Occupations |

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| | tasks within hospitals, catering, domestic and other establishments. | <ul style="list-style-type: none"> • Elementary Sales Occupations • Elementary Storage Occupations • Other Elementary Services Occupations |
| Skilled Agricultural and Related Trades | Skilled agricultural and related trades cultivate crops, raise animals and catch fish for consumption, grow plants and trees for sale, tend gardens, parks, sports pitches and other recreational areas, and maintain areas of forestry. | <ul style="list-style-type: none"> • Agricultural and Related Trades |
| Skilled Metal, Electrical and Electronic Trades | Workers in this sub-major group shape and join metal, erect and maintain metal structures and fixtures; set up and operate metal working machinery and install and repair industrial plant and machinery; assemble parts in the manufacture of metal goods; make and calibrate precision instruments; install, test and repair air conditioning systems; maintain and repair motor vehicles; and install, test and repair industrial, domestic and commercial electrical and electronic equipment. | <ul style="list-style-type: none"> • Metal Forming, Welding and Related Trades • Metal Machining, Fitting and Instrument Making Trades • Vehicle Trades • Electrical and Electronic Trades • Skilled Metal, Electrical and Electronic Trades Supervisors |
| Skilled Construction and Building Trades | Skilled construction and building trades erect steel frames, lay stone, brick and similar materials, construct and repair roofs, install heating, plumbing and ventilating systems, fit windows, doors and other fixtures, and apply coverings and decorative material to walls, floors and ceilings. | <ul style="list-style-type: none"> • Construction and Building Trades • Building Finishing Trades • Construction and Building Trades Supervisors |
| Textiles, Printing and Other Skilled Trades | Workers in this sub-major group weave fabrics, make articles of clothing, soft furnishings and leather goods, upholster vehicle interiors, set and operate printing machines, prepare meat, poultry and fish, bake bread and flour-based confectionery products, prepare food and manage catering and bar operations within hotels, restaurants and other establishments, and perform a variety of other skilled trades. | <ul style="list-style-type: none"> • Textiles and Garments Trades • Printing Trades • Food Preparation and Hospitality Trades • Other Skilled Trades |
| Caring Personal Service Occupations | Workers in this sub-major group assist health professionals in the care of patients; undertake caring personal services within the community; supervise the activities of pre-school age children and assist teachers with non-teaching duties; provide technical assistance to veterinarians and provide other services in the care of animals; provide funeral services; and control pests hazardous to public health. | <ul style="list-style-type: none"> • Childcare and Related Personal Services • Animal Care and Control Services • Caring Personal Services |
| Leisure, Travel and Related Personal Service Occupations | Workers within Leisure, Travel and Related Personal Service Occupations provide services and facilities for sporting and recreational activities; make travel arrangements for clients and provide ancillary services for travellers; provide hairdressing and beauty services; undertake domestic and care-taking duties in private households, public buildings and other establishments. | <ul style="list-style-type: none"> • Leisure and Travel Services • Hairdressers and Related Services • Housekeeping and Related Services • Cleaning and Housekeeping Managers and Supervisors |
| Sales Occupations | Workers in this sub-major group sell goods and services in retail and wholesale establishments, accept payment in respect of sales, obtain orders and collect payments for goods and services from private households, replenish stocks of goods in stores, create displays of merchandise and perform other sales related occupations. | <ul style="list-style-type: none"> • Sales Assistants and Retail Cashiers • Sales Related Occupations • Sales Supervisors |