

Article

Understanding towns: industry analysis

Analysis of industry in towns and cities in England and Wales, localities in Scotland, and travel to work areas in Great Britain.

Contact:
Cecilia Campos
subnational@ons.gov.uk
+44 1329 447816

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Correction

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The article has been amended to make clear that the measure used to group towns into the working, mixed, and residential categories is employment to residents ratio and not job density. The “employment to residents ratio” values tend to be smaller than those for “job density” because employment jobs are divided by total resident population instead of resident population aged 16 to 64, but overall trend remains unchanged. Figures for both measures are provided in the accompanying data tables. No other measures are affected.

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1 . Main points

- Towns have a relatively high share of the employment in England and Wales in the high-tech (65%) and medium-tech (62%) manufacturing industries.
- Towns have a relatively low share of the employment in England and Wales in the knowledge-intensive market services (46%), knowledge-intensive financial services (38%) and high-tech services (43%).
- Towns with an industry structure dissimilar to that of Great Britain overall were more likely to have above average employment growth in the decade to 2019.

2 . Overview

Data on industry structures at town level can give important insight into a town's local labour market and its local economy. Local productivity, local skills demand and local employment growth can all be linked to the type of industries that exist in a town. Understanding the industry structure of a town, and the wider travel to work area that it sits within, are therefore important factors for policymakers interested in better understanding towns economic health and potential.

This article provides a range of data to explore the industry structure of towns in Great Britain. It allows investigation of questions such as whether a town has a high share of manufacturing employment, or whether it focuses mostly on services. It helps to show whether a town has a focus on high-tech or knowledge-intensive industries, or whether the focus is on providing localised services. It provides analysis showing whether each town has a similar industrial structure to Great Britain as a whole, or whether it has a structure that greatly differs.

The different industry structures of individual towns can be explored in the article using its interactive maps and the accompanying dataset. Examples of individual towns are discussed throughout and a case study on the towns and cities within the Oxford travel to work area can be found in [Section 6](#).

3 . The industry structure of Great Britain and its travel to work areas

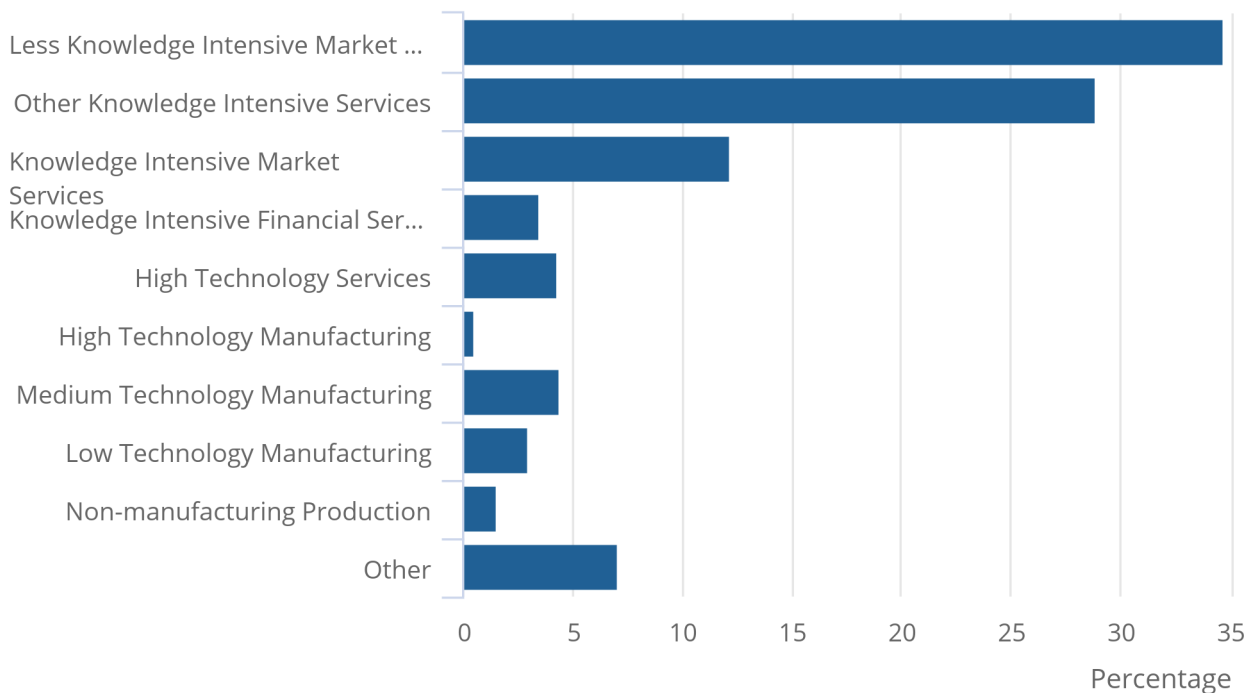
Figure 1 shows how employment in Great Britain is distributed across high, medium and low-tech manufacturing industries, knowledge-intensive services and less knowledge-intensive services. Further detail on this classification of industries is in the High-tech industry and knowledge-intensive services industry groups (HTEC) subsection in the [Glossary](#).

Figure 1: Less knowledge-intensive market services have the highest share of total employment, at 34.7%

Employment by high-tech and knowledge-intensive services (HTEC) industry groups, Great Britain, 2019

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Employment by high-tech and knowledge-intensive services (HTEC) industry groups, Great Britain, 2019



Source: Office for National Statistics – Business Register and Employment Survey

Notes:

1. Percentages may not sum to 100 because of rounding.
2. “Other knowledge intensive services” category combines services including arts, entertainment, human health, social work, education and public administration.
3. “Other” category includes construction and real estate activities.
4. See [Glossary](#) for detailed breakdown of the HTEC industry groups.

Over a third (35%) of people in employment in Great Britain work in less knowledge-intensive service industries. A further 29% work in other knowledge-intensive services with 20% working in high-tech or knowledge-intensive financial and market services. Another 8% work in manufacturing (5% in medium and high-tech manufacturing industries and 3% in low-tech manufacturing).

The employment distribution across industries at local level is not always the same as that at national level. The way industries are spatially distributed across the country differ from industry to industry, resulting in different industry structures existing in different areas of the country.

The geographic distribution of industries

Patterns of spatial distribution at industry level often result from the need for businesses to be either close to their customers, their suppliers or their distribution channels. For some industries, factors related to local labour market skills or knowledge spillovers can also influence business location.

As a result, some industries are widely spread across the country; other industries are clustered. This means that while employment in some industries is broadly similar everywhere in the country, employment in other industries is only in localised parts of the country.

Figure 2 provides an overview of the geographical distribution of the 10 HTEC industry groups, for which location quotient (LQ) values have been calculated at travel to work area (TTWA) level (see [Glossary](#)).

The LQ is an analytical statistic that measures the size of a particular industry in a region. If an industry share of employment in a region is the same as its share of national employment in Great Britain, the LQ value is equal to 1. If a location has an LQ of greater than 1 for a particular industry, it means it has a higher share of employment in that particular industry than the national share.

Figure 2: Explore the spatial distribution of industries across travel to work areas

Notes:

1. See [Glossary](#) for travel to work areas and location quotients definitions.
2. Disclosive data have been suppressed. Areas with suppressed data show as grey in the map and have “data unavailable” text displayed in the bar chart.

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Figure 2 shows that less knowledge-intensive industries, such as the wholesale and retail trade sector, as well as accommodation and food service activities, are widely dispersed across the country. These are industries that provide services directly to the wider population and tend to locate where their customers are. Most areas in the map have an LQ between 0.8 and 1.2, meaning that the share of employment in less knowledge-intensive services is, in most areas, similar to the average in Great Britain (35%, as shown in Figure 1).

Similarly, some industries within the other knowledge-intensive services group, such as human health and social work activities, education, and arts, entertainment and recreation, tend to be very dispersed across the country.

In contrast, businesses in high-tech and knowledge-intensive services tend to be located much closer to each other, forming clusters of employment.

For example, high-tech services (such as information and communication service industries and scientific research and development) form a large cluster in the south of England, mostly in Cambridge TTWA and in TTWAs along the M4 like Reading and Newbury and TTWAs such as Oxford, Guilford and Aldershot, and Basingstoke.

Knowledge-intensive market services (which include service industries such as air and water transport, professional, scientific and technical activities, and administrative and support service activities) also form a large cluster that goes from Crawley TTWA, in the South East of England, along the M1 all the way to the North West of England.

The knowledge-intensive financial services, on the other hand, are concentrated in a few small clusters distant to each other, but mostly in TTWAs that include part of a conurbation or a large town or city. This includes Bournemouth, Swindon, Skipton, Halifax and Edinburgh TTWAs.

Employment in manufacturing, although not widely spread like the less and other knowledge-intensive services, is still found scattered around many parts of the country. However, the patterns of concentration vary with the type of manufacturing.

There are pockets of low-tech manufacturing industries in almost all parts of England and Wales, except in London and in the South East regions, but it is in the eastern areas of the country that the concentration of these type of industries is denser.

In contrast, medium-tech manufacturing industries are mostly located in South Wales' TTWAs and in most TTWAs stretching from West Midlands to the south of Yorkshire and The Humber.

High-tech manufacturing is concentrated in a few TTWAs mostly in the South East and in the East of England, with some pockets of concentration scattered around the rest of the country.

4 . Comparing industry structures of towns and cities

Travel to work areas (TTWAs) can include many distinct towns and even cities as well as rural areas. This analysis uses the same town definitions and size bands used in previous Office for Nation statistics (ONS) towns articles (see [Glossary](#)). Only towns in England and Wales are included in this section as towns in Scotland are categorised to a different set of size bands.

The way employment is distributed across towns, cities, other smaller built-up areas and rural areas varies from industry to industry because industries are not evenly spread across the country. As a result, there are differences in the industry structure of these places.

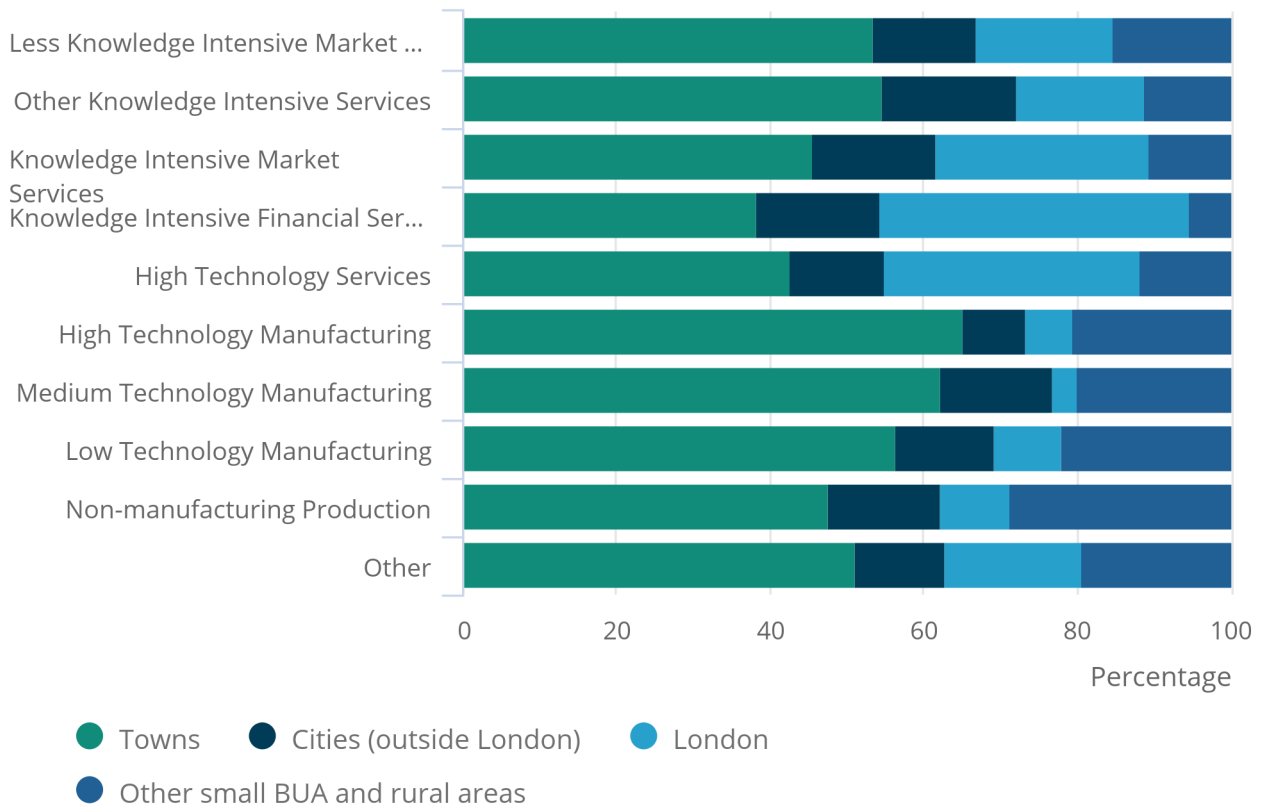
Figure 3 shows that more than 60% of employment in the high- and medium-tech manufacturing industries is located in towns, compared with 55% of total employment located in towns in England and Wales.

Figure 3: Towns have relatively high shares of England and Wales’ employment in manufacturing, particularly high-tech and medium-tech manufacturing

Towns and cities employment shares by high-tech and knowledge-intensive services (HTEC) industry groups, England and Wales, 2019

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Towns and cities employment shares by high-tech and knowledge-intensive services (HTEC) industry groups, England and Wales, 2019



Source: Office for National Statistics – Business Register and Employment Survey

Notes:

1. Percentages may not sum to 100 because of rounding.
2. “Other knowledge intensive services” category combines services including arts, entertainment, human health, social work, education and public administration.
3. “Other” category includes construction and real estate activities.
4. See [Glossary](#) for detailed breakdown of the HTEC industry groups.
5. London is the aggregation of employment in 33 built-up area subdivisions in Greater London.
6. “Other small BUA and rural areas England and Wales” is the sum of all areas not categorised as a town, city or London.

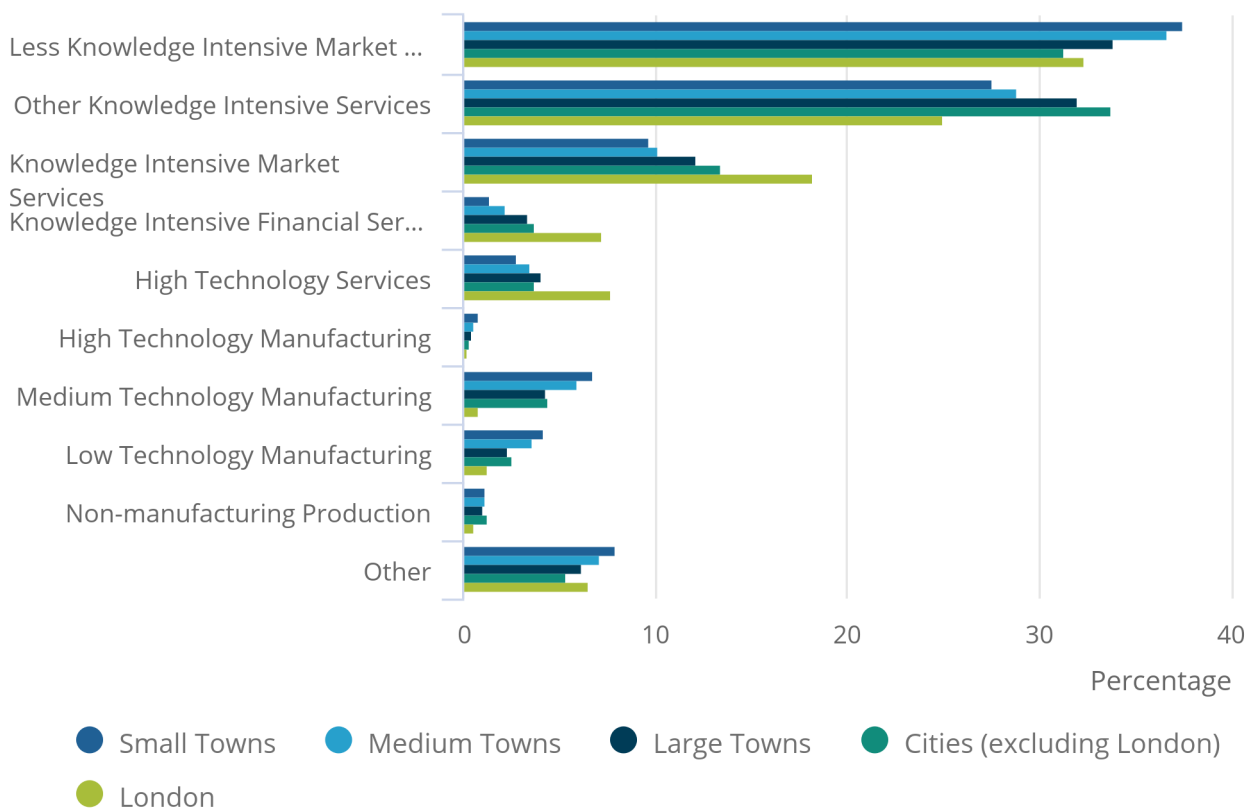
These trends are evident in Figure 4 which shows that small and medium towns have higher shares of less knowledge-intensive services and low- and medium-tech manufacturing. In contrast, large towns and cities have higher shares of employment in all the knowledge-intensive services: financial, market and other services.

Figure 4: Small and medium towns have higher shares of less knowledge-intensive services and low- and medium-tech manufacturing

Industry employment shares by high-tech and knowledge-intensive services (HTEC) industry groups, England and Wales, 2019

Figure 4: Small and medium towns have higher shares of less knowledge-intensive services and low- and medium-tech manufacturing

Industry employment shares by high-tech and knowledge-intensive services (HTEC) industry groups, England and Wales, 2019



Source: Office for National Statistics – Business Register and Employment Survey

Notes:

1. Percentages may not sum to 100 because of rounding.
2. “Other knowledge intensive services” category combines services including arts, entertainment, human health, social work, education and public administration.
3. “Other” category includes construction and real estate activities.
4. See [Glossary](#) for towns, cities and detailed breakdown of the HTEC industry groups.
5. London is the aggregation of employment in 33 built-up area subdivisions in Greater London.

5 . Examining industry structures by town type

This section explores how similar or different industry structures are for different towns using a measure known as the Krugman index. We use this to determine how similar or dissimilar the industry structure is for each town compared with the industry structure for Great Britain overall. We also provide some analysis on how employment growth in the decade to 2019 varied according to the industry mix of towns.

The Krugman index is a measure that compares two industry structures (see [Glossary](#)). For the purpose of this analysis, the Krugman index provides an indicator of how similar (values closer to 0) or dissimilar (values closer to 2) the industry structure in a given town or city is compared with Great Britain's industry employment shares.

Figure 5 presents the Krugman index for all the towns and cities of England and Wales included in this article. The data is presented within the different size groups, because the Krugman index does not account for differences in the size of each area, and larger areas are more likely to be similar to the Great Britain average than a smaller area. Therefore, the main interest is in exploring the differences amongst towns within each of the size groups and how they compare to the industry structure in Great Britain.

In [Understanding towns in England and Wales: spatial analysis](#), we distinguished between towns that have high levels of employment (working towns) and others that are more residential in nature (residential towns) and we reuse this categorisation in Figure 5 (more details in the [Glossary](#)).

Figure 5: Explore towns and GB industry structures similarity

Krugman index, England and Wales, 2019

Notes:

1. See [glossary](#) for towns, cities and Krugman index definitions.
2. Each point represents an area with its corresponding Krugman index value.

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Small residential towns

Residential towns, by definition, do not have high employment to residents ratio, there are not many jobs as a proportion of usual resident population. Many of those jobs that do exist are in local businesses and services such as shops and restaurants, schools, post offices, retirement homes and hairdressers (the less and other knowledge-intensive services as shown in Figure 2). For most residential towns, these type of services account for the majority of the jobs in the area.

However, that is clearly not the case for all residential towns, as Figure 5 suggests. The wide spread of Krugman values in the distribution of small residential towns reflects that there are differences in their industry structures.

Among the small residential towns with most dissimilar structures are some of the coastal towns (see Glossary), namely Seaton (in Cumbria), Caister-on-Sea in Norfolk, Shanklin and Ventnor on the Isle of Wight, Mablethorpe in Lincolnshire, and Rhose in Wales.

These are mostly seaside towns in relatively remote locations within travel to work areas (TTWAs) that only encompass small towns and rural areas. They have higher-than-average shares of employment in accommodation, food and beverage service activities, and in residential care activities. All these towns experienced a lower-than-average population and employment growth (see [Data sources and quality](#)) in the decade to 2019 or even some decline.

Other small residential towns with relatively dissimilar structures are located within TTWAs that include part of a conurbation or a large town or city. These small residential towns happen to serve as a location for some business sites which end up accounting for a large share of the total employment in the area, above and beyond the typical service industries that serve the daily needs of their residents.

For example, Shaw (Oldham), a residential town located within Manchester TTWA, once home to some of the largest cotton mills in the UK, is now a base for distribution companies as a result of its location, good transport and large mills turned into storage and sorting facilities. However, despite this employment, the towns in this residential section are still towns with a relatively low share of employment to population.

Small working and mixed towns

Looking at the small working and mixed towns, the shape of the distribution of Krugman values shown in Figure 5 for this group is very similar to the distribution of the small residential towns. This suggests that industry structures across small working and mixed towns can also vary a great amount from the reference structure of Great Britain and between each other.

Focusing on the 25 most dissimilar small working/mixed towns, almost half (12) had higher-than-average shares in one or more medium-tech manufacturing industries. Some of them also have higher-than-average shares in low- or high-tech manufacturing industries as well, and occasionally even in high-tech industries. Examples of these towns include Norton-on-Derwent, Abercarn and Stonehouse.

Norton-on-Derwent, in Malton TTWA, had 46% of its local employment concentrated in (low-tech) manufacture of food products. It also had employment growth more than twice the average of England and Wales between 2009 and 2019.

Abercarn, in Newport (Wales) TTWA, had 39% of its local employment shared between (low-tech) manufacture of wood and of products of wood and cork, and (medium-tech) manufacture of rubber and plastic products. Employment growth in Abercarn over the 2009 to 2019 period was also above the England and Wales average.

Stonehouse, in Gloucester TTWA, had 46% of its local employment shared between high-tech manufacturing (manufacture of computer, electronic and optical products), medium-technology manufacturing (manufacture of machinery and equipment, and manufacture of fabricated metal products) and low-technology manufacturing. In this case, however, employment growth for the town was below the England and Wales average for the period between 2009 and 2019.

Among the 25 most dissimilar small working/mixed towns, there are also some towns that stand out because of higher-than-average share of employment in high-tech services and knowledge-intensive market services, and lower-than-average shares in less knowledge-intensive services. An example is Cranfield, in Bedford TTWA.

In terms of employment growth, out of the 25 small working or mixed towns identified as having industry structure most dissimilar to the average in Great Britain, 15 had employment growth above the England and Wales average between 2009 and 2019, including 10 with more than twice the average growth.

Table 1 shows an interesting distinction between the small towns with the highest Krugman values and those with the lowest Krugman values.

Table 1: Employment growth is more likely in small working/mixed towns with an industry structure dissimilar to the Great Britain structure

Krugman index in small working and mixed towns by employment growth, Great Britain, 2009 to 2019

Small working/mixed towns	Highest Krugman values (most dissimilar)	Lowest Krugman values (most similar)
Twice above average growth	10	3
Above average growth	5	3
Below average growth	8	8
Decline	2	11
Grand Total	25	25

Source: Office for National Statistics – Business Register and Employment Survey

Out of the 25 towns with the lowest Krugman values (an industry structure most similar to that of Great Britain), 19 experienced employment growth below the England and Wales average, including 11 towns where the employment declined between 2009 and 2019. In contrast, only two towns with a high Krugman value (a dissimilar industry structure to Great Britain) experienced employment decline over the same period.

Meanwhile, only three towns in the most similar small mixed and working towns groups (including Ely and Romsey) have experience employment growth that was twice or more the England and Wales average growth rate, a much smaller number compared with the most dissimilar group which had 10 towns with this high level of employment growth.

Medium-size working towns

Large differences in the way employment is shared across industries can be found when examining the 25 most dissimilar medium-sized working towns. Among these towns, there are more towns located within TTWAs that are part of a conurbation (11 out of 25 towns) than in any other type of TTWAs

Out of the 25 towns, 10 had an employment share in medium-tech manufacturing more than twice the Great Britain average share (location quotient greater than 2); some of these towns have an equally high share in low-tech manufacturing. However, when looking into more detailed industry breakdowns, their industry mix can be quite different, which may explain some differences seen in terms of employment growth in these towns.

For example, in Newton Aycliffe, Washington and Dukinfield more than 30% of the local employment was in medium-tech and low-tech manufacturing. In Washington, most of that employment was concentrated in a single industry, the medium-tech manufacture of motor vehicles, trailers and semi-trailers. In Newton Aycliffe, that employment was shared across different industries, including medium-tech manufacture of fabricated metal products and manufacture of machinery and equipment. In Dukinfield, employment is divided between an even larger number of industries, such as low-tech manufacture of food products, of textiles, of wood and products of wood and cork, and medium-tech manufacture of rubber and plastic products and manufacture of fabricated metal products.

During the period from 2009 to 2019, employment growth in Newton Aycliffe was above the England and Wales average (by more than twice the average). Over the same period, employment growth in Washington was below the average, while in Dukinfield employment has declined.

There are also among this group of 25 most dissimilar towns, some towns with relative high shares of employment in high-tech and knowledge-intensive market service industries. For example, almost 50% of the employment in Woodley (in Reading TTWA) was in high-tech services (20%) and in a couple of knowledge-intensive market services (advertising and market research; and architectural and engineering activities). Another example is Egham (in Slough and Heathrow TTWA) with almost 20% of its local employment in high-tech services. Both towns had above average employment growth over the 2009 to 2019 period.

In contrast, Felixstowe (in Ipswich TTWA), with higher-than-average shares of employment in less knowledge-intensive market services (warehousing and support activities to transportation) had declining employment; and the seaside town of Skegness (in Skegness and Lough TTWA) with higher shares of employment in accommodation and food services, experienced below average employment growth over the same period.

Overall, in terms of employment growth, Table 2 shows that 14 of the 25 most dissimilar medium-sized working/mixed towns had employment growth above the average for England and Wales (including nine towns with twice as much as the average growth rate). In contrast, just 6 of the 25 medium-sized working/mixed towns with industry structure most similar to Great Britain had above average growth.

Table 2: Employment growth is more likely in medium working/mixed towns with an industry structure dissimilar to the Great Britain structure

Krugman index in medium working and mixed towns by employment growth, Great Britain, 2009 to 2019

Medium working/mixed towns	Highest Krugman values (most dissimilar)	Lowest Krugman values (most similar)
Twice above average growth	9	1
Above average growth	5	5
Below average growth	9	10
Decline	2	9
Grand Total	25	25

Source: Office for National Statistics – Business Register and Employment Survey

Large working/mixed towns

For most large working and mixed towns, the Krugman values are low and vary little (between 0.3 and 0.6), showing that most large towns share a relatively similar industry distribution to the reference Great Britain structure and, consequently, between each other.

There are, however, six large towns with Krugman values that stand out from the others, namely: Hemel Hempstead and Cambridge in the East of England, Oxford, Bracknell and Crawley in the South East, and Scunthorpe in Yorkshire and The Humber.

Hemel Hempstead, in Luton TTWA, had 44% of employment in knowledge-intensive market services, most of which were in employment activities (35%). Also showing relatively high shares in knowledge-intensive market services are Bracknell, in Reading TTWA (mostly head offices and management consultancy activities) and Crawley (mostly air transport and warehousing, unsurprising given that is where Gatwick Airport is).

However, Bracknell and Crawley also had relatively high shares in other service industries too. Bracknell had higher-than-average shares in high-tech services (19%, mostly in computer programming, consultancy, and related activities) and Crawley in high-tech manufacturing (mostly manufacture of computer, electronic and optical products).

Unsurprisingly, Cambridge and Oxford have higher-than-average employment shares in education. However, while in Oxford employment shares in other industries were relatively similar to the Great Britain average, Cambridge had around 15% of employment in high-tech services (computer programming, consultancy and related activities, and scientific research and development).

Scunthorpe, in contrast, was the only large working/mixed town that stands out because of its relatively high shares in low-tech manufacturing (10%, mostly in manufacture of food products) and medium-tech manufacturing (14%, mostly in manufacture of basic metals).

Of these six towns, only Bracknell and Scunthorpe had employment growth below the England and Wales average for the period between 2009 and 2019.

Table 3 shows the employment outcome for these six towns/cities over the decade to 2019 and compares it with the 25 large towns/cities with the lowest Krugman values. Most of the large working/mixed towns with the lowest Krugman values had employment growth below the England and Wales average.

Table 3: Most large working/mixed towns with similar industry structure to Great Britain had employment growth below average

Krugman index in high working and mixed towns by employment growth, Great Britain, 2009 to 2019

Large working/mixed towns	Highest Krugman values (most dissimilar)	Lowest Krugman values (most similar)
Above average growth	3	2
Below average growth	2	17
Decline	1	6
Grand Total	6	25

Source: Office for National Statistics – Business Register and Employment Survey

All town's findings

A notable result in the above discussion of small, medium and large towns has been the different employment growth amongst those towns with high and low Krugman values.

Table 4 brings together these data and shows that the majority of towns within the most dissimilar towns group (59%) had employment growth above the England and Wales average, while the majority of towns within the most similar towns group (82%) had employment growth below the the England and Wales average.

Furthermore, employment declined in more than one-third of towns (35%) with a relatively similar structure to the reference Great Britain structure, compared with only 7% of the most dissimilar towns. This pattern is the same across small, medium and large towns, as shown in Table 1, Table 2 and Table 3.

Table 4: Most working/mixed towns with an industry structure similar to the Great Britain structure had declining or below average employment growth
Krugman index in high working and mixed towns by employment growth, Great Britain, 2009 to 2019

All towns	Highest Krugman values (56 most dissimilar)	Lowest Krugman values (75 most similar)
Twice above average growth	36%	5%
Above average growth	23%	13%
Below average growth	34%	47%
Decline	7%	35%
Grand Total	100%	100%

Source: Office for National Statistics – Business Register and Employment Survey

Having some local specialisms can be good for a town if that industry is performing well but it can also risk being problematic for a town if that industry performs badly. However, the data for the decade to 2019 seem to show clearly that towns with a more distinctive employment structure had higher employment growth.

In contrast, more towns with a similar employment structure to Great Britain overall exhibited below average employment growth or a decline in employment over the period.

6 . Analysis at town level

Figure 6 provides data by town and city in England and Wales. By zooming into the map, it is possible to confirm some of the narratives discussed in previous sections of this article. For example, the data in the map shows the location quotients (LQ) by the industry group selected in the top dropdown bar, while the data in the bar chart shows the shares of employment by industry groupings in a selected town or city (using the bottom dropdown bar or by hovering over the map).

Figure 6: Explore the spatial distribution of industries across towns and cities in Great Britain

Location quotients by HTEC industry groups, towns and cities in England and Wales and Scottish localities, 2019

Notes:

1. See [glossary](#) for towns, cities and location quotients definitions.
2. Disclosive data have been suppressed. Areas with suppressed data show as grey in the map and have "data unavailable" text displayed in the bar chart.

Download this chart

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The map allows comparison of a town or city of interest with other neighbouring towns and cities. Using this in combination with the travel to work area (TTWA) data shown in Figure 2, and the Krugman specialisation data in Figure 5, can help provide a picture of industry structure in different areas of the country, exploring the similarities and differences between nearby towns.

As a case study, we have examined the data for the Oxford TTWA and the towns within it. From Figure 2, the Oxford TTWA can be seen to have a relatively high proportion of employment in high-tech services, high-tech manufacturing, knowledge-intensive market services and other knowledge-intensive services. As such, it has quite a positive mix of high-productivity sectors encompassing both services and manufacturing.

A closer examination of the LQ data by 2-digit industry highlights that the specialisations in the TTWA include scientific research and development, education, advertising and market research, as well as manufacture of computer, electronic and optical products. There are 12 towns within the TTWA in addition to the City of Oxford and the data enables examination of each of their industry structures.

In Didcot, a medium-sized town south of Oxford, there are very high LQs for scientific activities, research and development, computer programming consultancy and related activities and for information service activities. This may be because Milton Park, a large business, science and technology park, is located there. The towns of Abingdon and Wallington also have concentrations of computer programming, consultancy and related activities within the TTWA.

Oxford itself has relatively high employment in education, scientific research and development, and publishing activities, as one might expect given the university. High LQs in publishing are also found in two other towns in the TTWA, Didcot and Kidlington. Meanwhile, Thame, Wallingford and Kidlington all have relatively high employment in the advertising and market-research sector.

The existence of manufacturing in the area is highlighted by Witney, Thame and Didcot, all of which have higher-than-average employment shares in manufacturing of computer, electronic and optical products. More generally, the proliferation of technological companies in the area also extends to some of the smaller towns, including Wantage and Chipping Norton.

Overall, this TTWA appears to demonstrate how towns and cities within a TTWA can benefit from similar specialisations existing across the region with science, technology, computing, publishing and advertising, and market-research sectors found across multiple towns in this particular TTWA. However, even within an area that benefits from such linked industries, there are other towns in this area that diverge from this. For example, Bicester has a particularly strong employment share in the wholesale and retail sectors, while the relatively rural location of the TTWA is evident from a relatively high share of employment in veterinary activities within the town of Farringdon.

Further related information on the towns can be found in previous Office for National Statistics towns outputs. In particular, Figure 4 of [Understanding towns in England and Wales: spatial analysis](#) shows population and employment growth for towns within each TTWA over the decade to 2019. In the case of the Oxford TTWA, all 13 towns experienced population growth over the period with employment growth occurring in 10 of the towns. Didcot, with population growth of 11% and employment growth of 32%, was particularly fast growing.

7 . Understanding towns data

[Understanding towns: industry analysis](#)

Dataset | Released 13 December 2021

Location quotients by industry for towns and cities in England and Wales, Scottish localities, and travel to work areas in Great Britain. Krugman index values for towns and cities in England and Wales and for Scottish localities.

8 . Glossary

Conurbation

An extended urban area, typically consisting of several towns merging with the suburbs of a central city.

Towns and cities

This article is part of a series in which the Office for National Statistics (ONS) provides new data and analysis on towns in England and Wales. Therefore, the definition of a "town" in this output, follows on from previous ONS publications. More information about the definition of a town and how this was defined is available in one of our [previous publications](#).

For comparison purposes, any built-up areas and built-up area subdivisions (outside the Greater London area) with a 2011 Census population over 225,000 usual residents were classified as "city". This definition does not include towns and cities within the Greater London area because the built-up areas geography does not provide subdivisions within the London area.

Any built-up area boundaries with under 5,000 residents on 2011 Census Day and non-built-up areas were classified in the main text as "other smaller localities and rural areas". Built-up areas that covered schools, hospitals, unpopulated or sparsely populated airfields, universities and airports have been removed from the dataset.

Please note that the built-up areas geography is not defined for Scotland. Instead, Scotland has its own definitions of urban areas, known as settlements and localities. These could be used for a similar type of towns analysis for Scotland but, because the underlying definitions differ to those in England and Wales, it is not possible to make direct comparisons. Therefore, our towns analysis is focused on England and Wales only. However, data is provided for Scotland localities, with a 2016 population of over 5,000 residents, in the accompanying dataset.

Seaside towns and other coastal towns

In this article, we used the same definition and classification of coastal towns used in the ONS publication [Coastal Towns in England and Wales](#). However, after that publication, coastal towns were split by size and by whether they were a seaside or other coastal (non-seaside) town. This depends on whether the town has a tourist beach and associated visitor attractions or whether the town is focused on other activities such as being a port town or a town with an industrial heritage.

Working, mixed and residential towns

Using a framework proposed in [the previous ONS towns article](#), the towns in England and Wales have been grouped according to their workplace characteristics.

Towns have been grouped into three categories depending on their level of employment to residents ratio: working towns (with high employment to residents ratio), residential towns (with low employment to residents ratio) or mixed (with medium-level employment to residents ratio). For the purpose of the analysis in this article, working and mixed towns have been grouped in a single category.

Travel to work areas

Travel to Work Areas (TTWAs) are a geography created to approximate labour market areas. In other words, they are derived to reflect self-contained areas in which most people both live and work. In this article, we used a classification that provides a description of a TTWA based on whether it exists in a conurbation, a rural area, a mostly urban area that includes a large town or city, or a mostly urban area that only includes smaller towns and villages. More information about how this classification was produced is available in [Understanding towns in England and Wales: spatial analysis](#).

High-tech industry and knowledge-intensive services (HTEC) industry groups

Analysis in this article is based on an aggregated industry structure classification that combines the two-digit level industries breakdown of the [2007 Standard Industrial Classification \(SIC\)](#) into 10 groups according to their technological or knowledge intensity (HTEC industry groups).

Manufacturing sectors were aggregated according to technological intensity (research and development expenditure or value added) and based on the [statistical classification of economic activities in the European Community \(NACE\)](#) at two-digit level. The level of research and development (R&D) intensity served as a criterion of classification of economic sectors into high, medium and low-tech industries.

Services were mainly aggregated into knowledge-intensive services and less knowledge-intensive services based on the share of tertiary-educated persons at NACE two-digit level. Each of these groups can also be sub-divided in further sub-sectors.

For more information visit the [Eurostat website](#).

Table 5: High-tech and knowledge-intensive services (HTEC) industry groupings of two-digit level industries breakdown of the 2007 Standard Industrial Classification (SIC)

HTEC industry groupings	Description	Two-digit industry codes
Less Knowledge Intensive Market Services	Mostly services including wholesale and retail, land transport, accommodation and administrative activities	45, 46, 47, 49, 52, 53, 55, 56, 77, 79, 81, 82, 94, 95, 96
Other Knowledge Intensive Services	Mostly services including arts, entertainment, human health, social work, education and public administration	58, 75, 84, 85, 86, 87, 88, 90, 91, 92, 93
Knowledge Intensive Market Services	Mostly services including other forms of transport, professional, scientific, technical and administrative activities	50, 51, 69, 70, 71, 73, 74, 78, 80
Knowledge Intensive Financial Services	Financial and insurance activities	64, 65, 66
High Technology Services	Mostly services including information and communication and scientific research and development	59, 60, 61, 62, 63, 72
High Technology Manufacturing	Manufacture of pharmaceutical, computer, electronic and optical products	21, 26
Medium Technology Manufacturing	Mostly manufacture of machinery, equipment, motor vehicles, metals, mineral, rubber and plastic products	19, 20, 22, 23, 24, 25, 27, 28, 29, 30, 33
Low Technology Manufacturing	Mostly manufacture of food, beverages, textiles, apparel, paper and wood products	10, 11, 12, 13, 14, 15, 16, 17, 18, 31, 32
Non-manufacturing Production	Mostly agriculture, forestry, fishing, mining and quarrying, energy and water supply	1, 2, 3, 5, 6, 8, 9, 35, 36, 37, 38, 39
Other	Construction and real estate activities	41, 42, 43, 68

Source: Office for National Statistics, Eurostat

Location quotient

Location quotients (LQ) can be considered as measures of either concentration or specialisation. The results produced are equivalent whichever method is used.

In this case we are using it as a measure of industrial specialisation for local areas. In the context of specialisation, they compare for each industry the industry's share of local area employment with its share of total employment. The formula is:

$$LQ = \frac{\left(\frac{E_{i,r}}{E_r}\right)}{\left(\frac{E_i}{E}\right)}$$

where $E_{i,r}$ is the employment in industry i region r , E_r is the employment in region r , E_i is the employment in industry i and E is the employment in Great Britain.

A value of 1.0 means that an industry share of employment in region r is the same as its share of national employment in Great Britain. For example, industry i makes up 5% of employment in region r and also 5% of employment in Great Britain. A value greater than 1.0 means that industry i makes up a larger share of employment in the local area than at the national level.

Krugman index

The Krugman index is a relative specialisation measure that compares the industrial structures of two geographical areas. It runs from zero, if an area has the same employment split across industries as the reference area, to two if they have employment in entirely different industries to each other.

The Krugman index measures the extent to which one geographical area's industry structure deviates from that of a reference area (usually another comparable geographic area, for example, town to town), its composite area (for example, town to England and Wales) or an average (for example, town to towns average). More intuitively, the index can be considered an index of industry dissimilarity. This is because it spans a maximum of 2, reflecting an area with employment in industries completely different to the reference area, from a minimum of zero, reflecting identical industry structures.

The equation for calculating the Krugman index is:

$$Kr = \sum_{i=1}^k \left| \frac{E_{i,r}}{E_r} - \frac{E_i}{E} \right|$$

where $E_{i,r}$ is employment in industry i in region r , E_r is the total employment in region r , E_i is total employment in industry i and E is the national total of employment.

9 . Data sources and quality

Data provided with this article include relative industry employment shares (the location quotients) for towns and cities in England and Wales and Scottish localities by industry sector and two-digit level industries breakdown of the [2007 Standard Industrial Classification \(SIC\)](#). Data are also provided by an alternative aggregation of the two-digit level industries based on their technological or knowledge intensity. Location quotients data are also provided for travel to work areas (TTWAs) in Great Britain.

Employment data have been aggregated to TTWAs, towns and cities using the 2019 Business Register and Employment Survey. Employment includes employees plus the number of working owners who receive drawings or a share of the profits.

Estimates at a greater level of disaggregation, for example, smaller towns, need to be treated with particular caution. Higher volatility can be expected within the data for these smaller settlements.

The employment and population growth data from 2009 to 2019 referenced in this publication is taken from [Understanding towns in England and Wales: spatial analysis](#). The growth rate for England and Wales over this period was 12% for employment and 8% for population. All towns were then categorised depending on whether their growth was twice, above, or below the England and Wales average or decline.

10 . Future developments

This article is the sixth of a series of towns articles being produced by the [Centre for Subnational Analysis](#) at the Office for National Statistics (ONS). Further articles in this series will follow in 2022.

11 . Related links

[Understanding towns in England and Wales: house price analysis](#)

Article | Released 18 October 2021

Data and analysis on house prices in towns in England and Wales. Looks at house price trends in towns up to 2020, and changes over the pandemic period from Jan 2020 to April 2021.

[Understanding towns in England and Wales: population and demographic analysis](#)

Article | Released 24 February 2021

Data and analysis on towns in England and Wales, with a focus on population and demography.

[Understanding towns in England and Wales: spatial analysis](#)

Article | Released 7 December 2020

Data and analysis on towns in England and Wales, with a focus on population and employment growth.

[Coastal towns in England and Wales: October 2020](#)

Article | Released 6 October 2020

Data and analysis on seaside and other coastal towns in England and Wales.

[Understanding towns in England and Wales: an introduction](#)

Article | Released 9 July 2019

The first in a series of articles that provide new data and analysis on towns in England and Wales, to help inform policy.