Office for National Statistics

Article

Labour demand volumes by profession and local authority, UK: January 2017 to December 2022

Experimental analysis of labour demand changes, split by profession and local authority (and other geographies), according to Textkernel data.

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Next release:
To be announced

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1 . Main points

- There were nearly 1.5 million estimated open adverts as a daily average during December 2022, according to our analysis of Textkernel data on online job advert volumes.

- Demand for other management, policy, and governance professions, such as project managers and assistant managers, declined by the most adverts between December 2021 and December 2022 (by 58,470 fewer postings); this reflects a 55.9% decline in total UK adverts in that time.

- In December 2022, adverts for healthcare jobs (termed "professions") were the most common across the UK, as well as for 88.8% of local authorities; most of the other 11.2% had higher demand for information and communication technology professions.

- In December 2022, over a third of UK online job adverts were for jobs located in London or the South East.

- Outside London, six local authorities (Manchester, Birmingham, Bristol, Leeds, Glasgow, and Liverpool) had the greatest share of online job adverts in December 2022; they also had the highest increase in their share of total adverts over the previous year.

Textkernel is the only source of online job advert data for this release. Online job adverts data can be used as a proxy measure of changing labour demand, but changes in volume over time can also reflect a change in recruitment practices. Official sources of vacancies continue to be our vacancy survey. The profession categories used in this article do not align with the Standard Occupational Classification (SOC), though they do represent all types of jobs.

2 . Textkernel Online Job Adverts in December 2022

We are looking for user feedback that will help tailor future releases at this granular level of detail. Please fill in our feedback survey. For more information, see Section 6. Data sources and quality.

Figure 1: How a local authority's demand of online job adverts compared with the UK distribution of summary profession categories in December 2022

Local authority share of total online job adverts (left) and summary profession category breakdown of online job adverts by local authority and for the UK (right), local authorities of the UK, December 2022

Notes:

1. Summary profession categories are shown; see Section 5. Glossary for definitions.

2. Local authorities within London are not represented in this chart due to them being unavailable, see the Data sources and quality section for more details.

Download the data

.xlsx

For the first time, we at the Office for National Statistics (ONS) are publishing commentary on online job adverts from Textkernel. In the three exploratory visualisations provided, and in our associated data tables, users can explore monthly volumes of online job adverts by local authority (the local authority districts (LAD) in the UK as of April 2020) up to December 2022. Demand by professions, which includes all types of jobs demanded in the labour market, is shown at three levels of detail. The highest summary level of 25 categories shown is in Figure 1. See Section 6. Data sources and quality for more detail.

Summary of UK profession demand

Figure 2: In December 2022, one in eight of all online job adverts were for healthcare jobs

Volume of online job adverts (thousands) by summary profession category, top 12 professions, UK, December 2022

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Volume of online job adverts (thousands) by summary profession category, top 12 professions, UK, December 2022
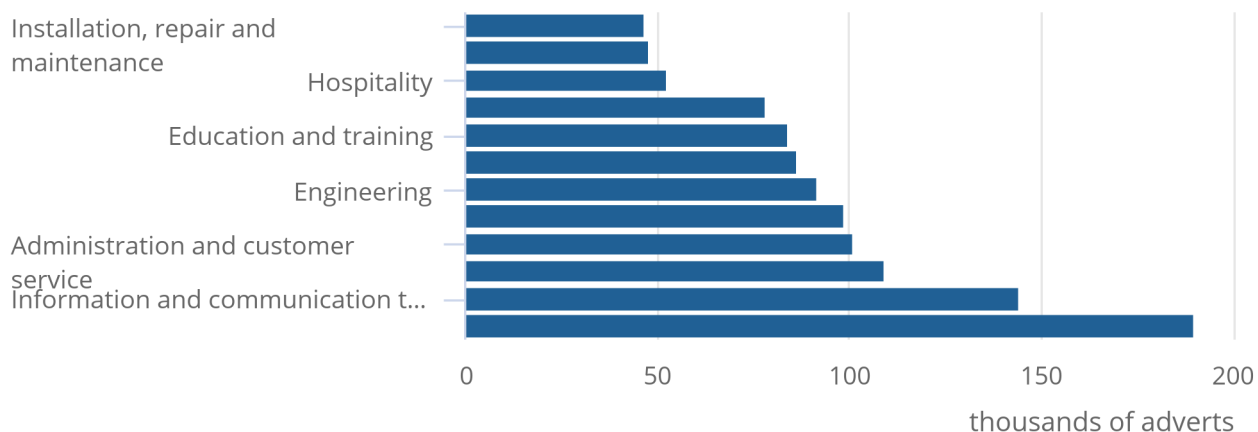
Source: Textkernel

Notes:

1. The summary profession category 'other' has been removed.

2. To see the definition of snapshot volumes, see [Section 5. Glossary](#).

3. Summary profession categories are shown; see [Section 5. Glossary](#) for definitions.

There was a total of 1,494,045 online job adverts in December 2022, according to Textkernel data. This is based on a daily average of open adverts for the month. Almost a quarter of them were either looking for healthcare or information and communication technology types of jobs (termed "professions"). The healthcare profession category had the largest share of adverts, at 12.7% of the total. At the most detailed level profession level, the two categories with the largest number of adverts also fell within healthcare. In December 2022, there were 31,870 adverts for support workers and 21,170 adverts for nurses.

There were a further 9.7% of adverts from information and communication technology professions. At the most detailed profession category within those types of jobs, software engineers had the largest share, with 15,690 adverts, as of December 2022.

Summary of regional profession demand

Figure 3: In December 2022, over a third of UK online job adverts were for jobs located in London or the South East

Volume of online job adverts (thousands) by region and country of the UK, December 2022

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Volume of online job adverts (thousands) by region and country of the UK, December 2022
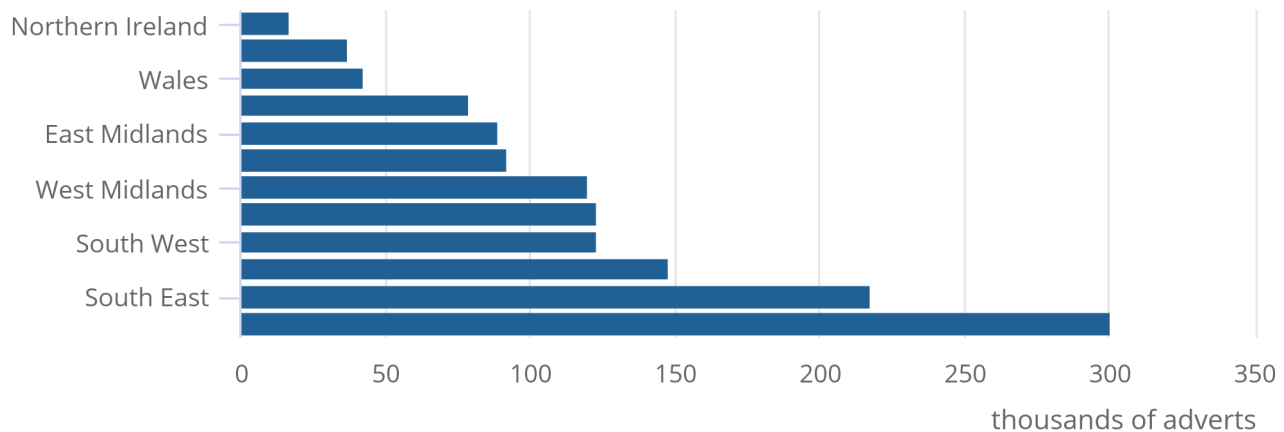
Source: Textkernel

Notes:

1. To see the definition of snapshots volumes, see Section 5. Glossary.

In December 2022, adverts for jobs in London had the highest share, with 20.1% of the UK total. London had a high proportion of job adverts relative to its working age population of approximately 4.1%. This was higher than all other regions. Adverts were between 1.5% and 3% of each region's respective working age population, while in Northern Ireland, adverts were 1.1% of its working age population. Note that differences in employers' online advertising practices, as well as data coverage, may explain some of these differences. As shown in Figure 2, healthcare professions were the most sought after, across the UK. This was also true across the regions and countries of the UK, except in London, where online job adverts in information and communication technology professions were the most prevalent.

However, London dominated the share of adverts in arts, culture and media and communication, marketing and public relations, representing 35.1% and 36.0% of all UK adverts in these summary profession categories, respectively. London had the lowest proportion of adverts in agriculture, livestock and fishing professions, as well as production professions.

For 88.8% of local authorities in the UK, healthcare was the summary profession category which held the highest number of job adverts in December 2022. A further 8.1% of local authorities showed information and communication technology as the summary profession category with the highest number of job adverts. Meanwhile, there were a further 1.7% where demand was highest in production and warehouse management professions. These were Daventry, Harborough, North Warwickshire, North West Leicestershire, Tamworth and Thurrock. More granular detail like this can be found in Section 4. Labour demand volumes data.

3 . Trends in online job adverts

Figure 4: Select multiple detailed profession categories to see how online job advert demand has changed across time in the UK

Volume of online job adverts across time by detailed profession category, UK, January 2017 to December 2022

Notes:

1. Professions assigned to summary category "other" have not been included.

2. To see the definition of snapshot volumes, see Section 5. Glossary.

3. Detailed profession categories are shown, see Section 5. Glossary for definitions.

Download the data

.xlsx

Users can explore Figure 4 to see how demand in different detailed professions compare against each other. Other management, policy and governance professions, such as most project managers and assistant managers, were the highest set of detailed professions in demand during 2022. They had 47,290 adverts in December 2022, which is the second level of profession hierarchy. This contrasts with the largest demand at the summary category level being for healthcare jobs. They also declined the most, with 58,470 fewer open adverts since December 2021. Figure 6 shows the distribution of professions by local authority, over time.

Trends across the UK

The vacancy landscape has changed a lot in recent years. The coronavirus (COVID-19) pandemic had a significant impact on the UK labour market. This has been seen in our Labour market overview, UK: January 2023 bulletin and in our Labour demand indicators by local authority, UK: January 2017 to January 2022 article, using Adzuna data.

Users should note that some of the adverts posted between April 2020 and February 2022 had to be imputed, so some of the short-term trends may show increased volatility. See Section 6. Data sources and quality for more information.

Figure 5: Online job adverts across the UK from Textkernel data have declined by 55.9% between December 2021 and December 2022

Volume of online job adverts by snapshot and new advert metrics, UK, January 2017 to December 2022

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Volume of online job adverts by snapshot and new advert metrics, UK, January 2017 to December 2022
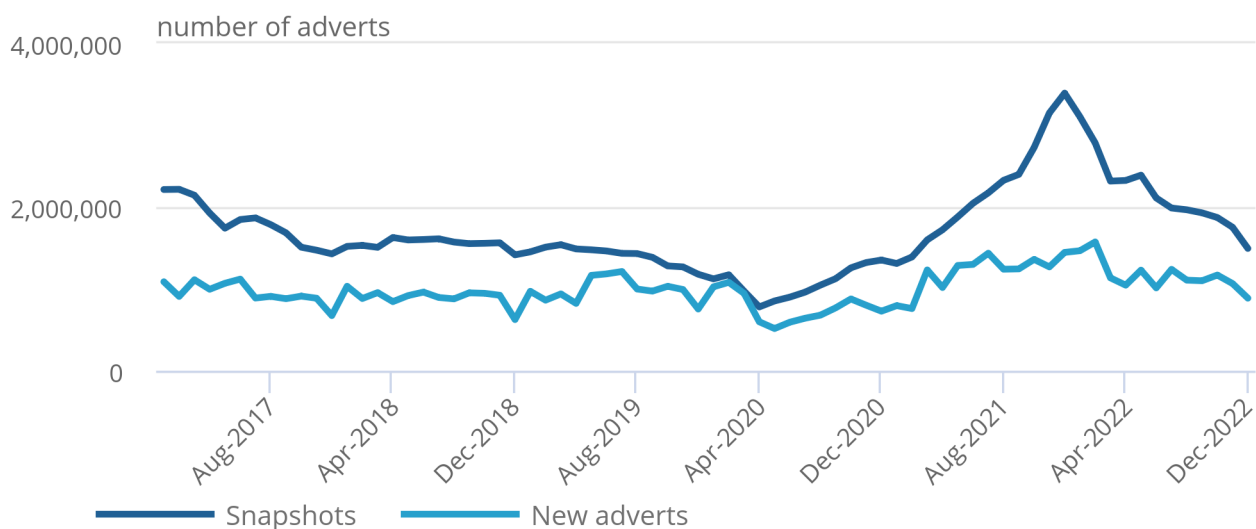
Source: Textkernel

Notes:

1. To see the definition of snapshots and new advert volumes, see Section 5. Glossary.

Total volumes of online job adverts were at their lowest in the last five years in April 2020. Following this, there was a 335.3% increase in the number of online job adverts, peaking in December 2021. Our Vacancies and jobs in the UK: January 2022 bulletin shows there were record levels of vacancies seen over this period, with workforce jobs and employment rates recovering.

Over the last year, however, there have been large declines in the volume of online job adverts, falling by 55.9% between December 2021 and December 2022. New adverts metrics have followed a similar trend. Following a year of a relatively high number of new adverts, they were returning to the levels seen before the coronavirus pandemic by December 2022.

Trends by profession and geography

Figure 6: See how the share of demand for a summary profession category has changed across time in a local authority, and the relative hotspots for demand across the UK

Share of online job adverts of a given profession, within a given local authority, local authorities of the UK, January 2017 to December 2022

Notes:

1. Professions assigned to summary category "other" have not been included.

2. Detailed profession categories are shown, see Section 5. Glossary for definitions.

Download the data

Volumes of online job adverts declined across all 25 summary profession categories between December 2021 and December 2022, with some decreasing more than others.

Figure 7: Between December 2021 and December 2022, the share of online job adverts across the UK increased the most in healthcare professions

Change in proportional share of selected professions in the summary profession category in percentage points UK, December 2021 to December 2022

Figure 7: Between December 2021 and December 2022, the share of online job adverts across the UK increased the most in healthcare professions

Change in proportional share of selected professions in the summary profession category in percentage points UK, December 2021 to December 2022
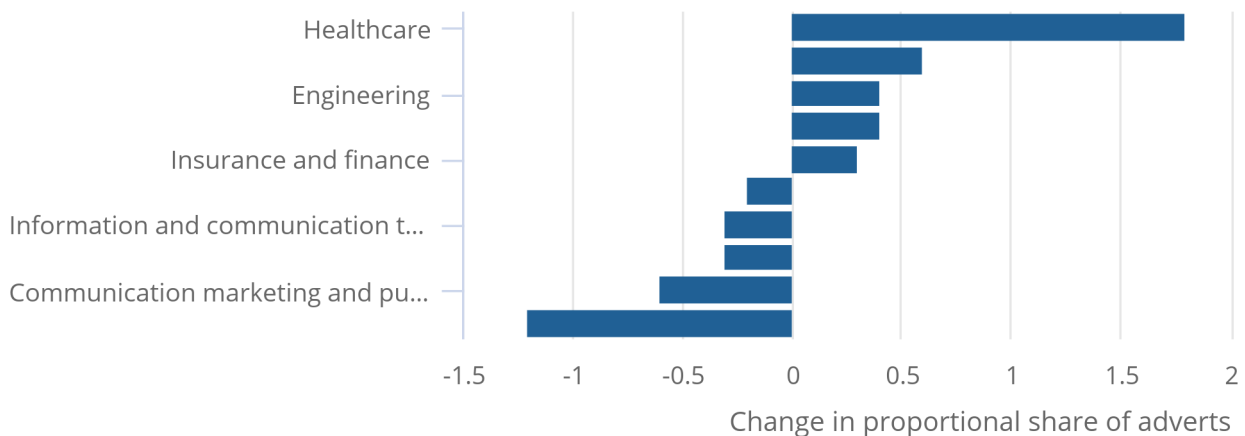
Source: Textkernel

Notes:

1. The top five and bottom five summary profession categories are shown, in terms of change in share across the last 12 months.

2. Professions assigned to the summary category 'other' have not been shown.

3. To see the definition of snapshot volumes, see Section 5. Glossary.

4. Summary profession categories are shown; see Section 5. Glossary for definitions.

5. Shares of adverts reported in the text are rounded, while changes in shares shown in the chart are calculated from unrounded shares, so the numbers may not fully match.

Sales and trading professions

Online job adverts in sales and trading professions declined the most across 2022, with their share of total adverts declining by 1.2 percentage points from 8.6% to 7.3%. This is part of a longer-term trend, with the share of total adverts in these types of professions declining by 3.5 percentage points between January 2017 (the start of series) and December 2022.

Sales and trading job adverts declined across most regions, with adverts in the North East being the most affected. The share of these adverts in that region declined by 2.3 percentage points over the last year. Within the North East, sales and trading adverts' rate of decline was largest in Stockton-on-Tees, decreasing by 75.6% in the year to December 2022.
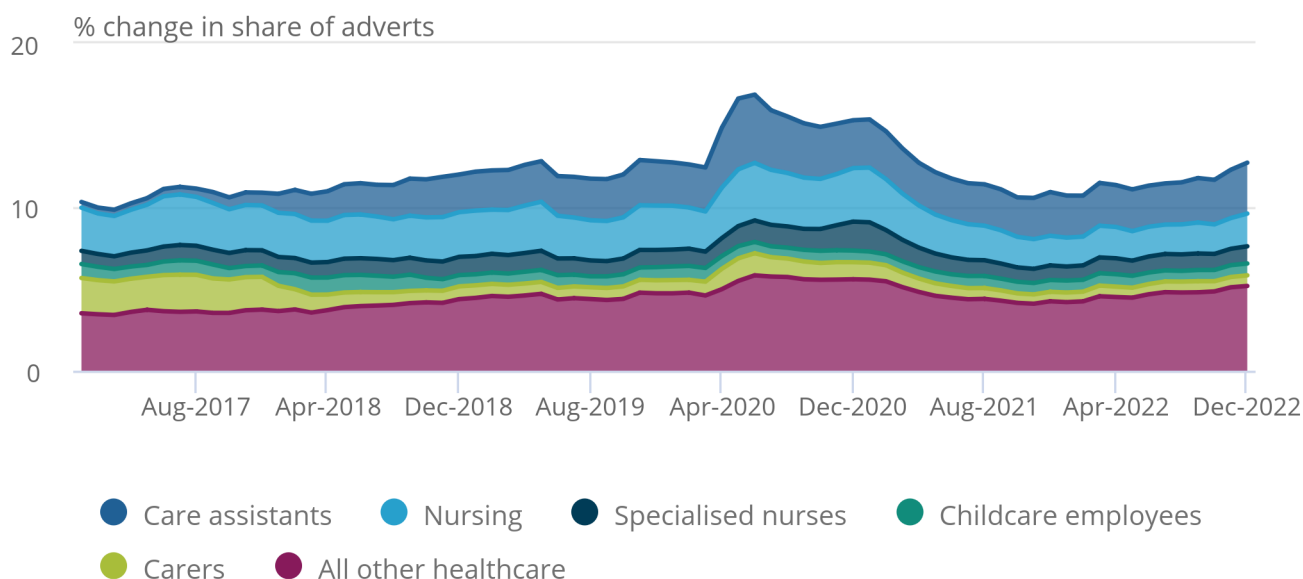
Healthcare professions

Healthcare professions account for the largest share of online job adverts. Their demand also declined across 2022, but they declined at a slower rate. As a result, their share increased the most, rising from 10.9% to 12.7%.

Figure 8: Between December 2021 and 2022, increases in the share of adverts for care assistants, nursing, and specialised nurses professions drove the increase in the share of healthcare adverts

Change in proportional shares of detailed professions in the healthcare summary profession category, UK, January 2017 to December 2022

Figure 8: Between December 2021 and 2022, increases in the share of adverts for care assistants, nursing, and specialised nurses professions drove the increase in the share of healthcare adverts

Change in proportional shares of detailed professions in the healthcare summary profession category, UK, January 2017 to December 2022

Source: Textkernel

Notes:

1. To see the definition of snapshot volumes, see Section 5. Glossary.

2. Detailed profession categories are shown, see Section 5. Glossary for definitions.

3. All other healthcare detailed profession categories include all other smaller categories within the healthcare summary category; there are over 15, which can be found in the associated data tables.

The increased share of healthcare professions' adverts is part of a longer-term increase in demand. Despite raised relative demand during the height of the coronavirus pandemic, since 2017 their share of online job adverts has been increasing consistently.

The increased share of healthcare profession job adverts, over the last year, was through an increase in the share of adverts for care assistants, nursing, and specialised nurse. Their share increased at 0.4, 0.2, and 0.2 percentage points, respectively. The share of online job adverts in healthcare increased evenly across all regions, with the exception of Northern Ireland, where they decreased by 0.2 percentage points to 11.8% of all Northern Irish adverts.

Regional trends

Even though adverts in all regions followed the national trend of declining numbers across the last year, there were noticeable geographical changes in the online job advert market. Adverts in Wales and Northern Ireland declined faster than the UK average, causing their shares to decline the most. Yorkshire and The Humber also declined slightly more quickly than the UK average.

The summary profession categories with the largest decline of advert share for both Northern Ireland and Wales were sales and trading and procurement and warehouse management. Within procurement and warehouse management adverts, warehouse staff and box fillers saw the largest declines in both Wales and Northern Ireland in that period.

Excluding local authorities in London, the six local authorities with the largest share of online job adverts in December 2022 were all large cities:

- Manchester

- Birmingham

- City of Bristol

- Leeds

- Glasgow City

- Liverpool

These local authorities also had the largest increase in their share of UK adverts between December 2021 and December 2022. Apart from Liverpool, the other five had information and communication technology jobs as their highest demanded category.

Because of its relatively smaller decline, the share of UK adverts in London increased the most, by 1.3 percentage points over the same period. Adverts in healthcare professions and insurance and finance professions increased their share of London adverts between December 2021 and December 2022, by 1.2 and 0.7 percentage point increases in shares, respectively.

In December 2022 there were a total of 25,335 insurance and finance job adverts within London, more than a quarter of all such jobs across the UK. In the detailed profession category for London, insurance and finance managers and accountants represented the majority of adverts.

4 . Labour demand volumes data

Labour demand volumes by profession and local authority, UK: January 2017 to December 2022
Dataset | Released 13 February 2023
The dataset shows volumes of online job adverts, according to Textkernel, by different geographies and different profession classifications.

5 . Glossary

Profession

The profession of an online job advert represents the type of position that is being advertised, which has a bespoke classification similar, but distinct to, other occupational classifications.

There are three levels of detail provided:

- summary profession category

- detailed profession category

- most detailed profession category

Deduplicated adverts

There are sometimes multiple postings for the same advert. Textkernel identifies this to create unique adverts. In this release, we publish only unique online adverts as identified by Textkernel.

Metrics

Advert counts have been rounded to the nearest five. Totals may not add, because of this rounding. This is particularly relevant where there are many small categories of job adverts at one level of geography and profession detail that would have been rounded to zero. But at a more aggregated level, they make up a larger share of total adverts.

Snapshots

The snapshot counts represent the daily average number of open adverts during the month. This metric is calculated by counting the number of adverts that were live on the same day, each week. These four or five same days for each month were picked to provide a stable comparison, rather than taking a snapshot every individual day within the month. For each of those days, if it falls between a job advert's posting date and expiration date, it is counted as a live advert for that day. Observed numbers are then averaged across a calendar month.

New adverts

New adverts represent the total number of adverts that have gone online in the month. This metric is calculated by counting the number of adverts that appear for the first time across the calendar month.

6 . Data sources and quality

Data Sources

These figures are experimental estimates (as shown in our [Guide to experimental statistics](#)) of online job adverts data provided by [Textkernel](#), an online job search engine. The number of online job adverts over time can be an indicator for the demand for labour.

As adverts are not the same as vacancies, users should continue to use the Office for National Statistics (ONS) vacancy survey for official estimates. In addition, there are multiple available sources of online job adverts for the UK. Each has differences in coverage of the online market. Examples include single job boards, aggregating up various boards, web scraping individual companies' websites, or a mixture.

Across sources, metrics may differ in the insights they provide because of differences in how data are captured, and principles for removing adverts no longer considered live. When looking at more granular detail, there are also source differences that may make comparability more challenging. For example, methods for assigning adverts to professions, geographies, and other insights may be updated. But these updates, if not applied for the whole time series, may show changes in volumes that are also driven by changes in methods.

Therefore, differences in volumes may not be fully comparable. In the future, we, at the ONS, will investigate the possibility of adjusting adverts to be more representative and comparable to more official sources.

Allocating job adverts to profession

Textkernel has developed an in-house method of assigning job adverts to one of approximately 4,400 profession categories. The profession is derived from the job title, which is scraped directly from a job advertisement board. First, the title is cleaned to remove any unnecessary information, such as locations or salaries. Then, the cleaned title is fed into a synonym engine which is intended to reduce the number of unique words, while maintaining the meaning of the title. Those titles are then clustered into three hierarchical levels, which gives the profession to three levels of specificity.

Assigning locations to job adverts

To identify the local authority of the online job adverts, we used the local authority classification supplied by Textkernel (LAD2020). To derive the international territorial levels, level 1 (ITL1) regions, we mapped the local authorities to ITL1.

A substantial proportion of online job adverts have a limited level of granularity regarding location. Textkernel's default method when assigning adverts to local authority with limited location information was to assign to the centroid of the region. This was an issue in London, where Westminster reported much higher counts than the surrounding local authorities, as it was used as the centroid of the region of London. The local authorities within London have been grouped together in this release.

Imputation method

We derived a method for imputing new expiration dates for the time periods in which expiration dates were known to be erroneous. The imputation was carried out on job advert durations. The duration of a job advert is defined as the number of days between the posting date and the expiration date. The posting and expiration dates are used in categorising adverts into each of the three metrics used in this release and the associated dataset.

To do this, we split the dataset by the most detailed profession category, and we obtained distributions of durations for job adverts in each profession during the non-affected periods of expiration date collection. The durations from these distributions were then resampled to impute into the erroneous periods, and the expiration date was recalculated as the posting date incremented by the imputed duration.

Limitations of online job adverts data

The number of job adverts being posted is not a direct measure of labour demand. The number could respond to other changes, such as how positions are recruited for:

- decreased activity from recruitment agencies could lead to decreased duplication of multiple adverts for one post, though Textkernel's deduplication logic should mitigate the effect

- increased levels of duplication also occur, such as when multiple job boards and individual company websites are advertising the same advert, which Textkernel's logic should also mitigate

- adverts may represent multiple posts if the recruitment for identical, or very similar positions, is occurring simultaneously; however, this would be counted as one advert

- adverts may be posted prospectively or as talent scouting, rather than with a direct intention to fill a vacancy, and so this would not align to official sources of vacancies

- job adverts may not be removed from online job vacancy boards immediately when the position is filled, so the indices may not fully reflect companies who have halted active recruitment

In addition, the scope of online job adverts does not fully capture the scope of UK economic activity, because of differing advertising methods. For example, casual work may be advertised by word-of-mouth or in shop windows, as opposed to online. In future work, we would look to better assess the representability of online sources of adverts of the UK labour market.

Gathering your feedback

This is the first time the ONS is publishing such detailed experimental data. As such, we are looking for user feedback on the release. This will help us tailor future releases.

Please fill in the feedback survey, which should not take more than five minutes. All responses will remain confidential, and users will only be contacted if they indicate they are happy to be contacted in their response.

7 . Future developments

We, at the Office for National Statistics (ONS), will continue to take on user feedback to develop and expand our labour demand estimates. In the coming months, we aim to produce an experimental online job advert series by Standard Occupational Classification (SOC) codes at a sub-national level, to inform on local occupation demand. We will also aim to deliver estimates that are representative of more official sources of vacancies.

After this, we intend to investigate and publish estimates of skills demand sub-nationally too, to inform users on skills shortages across the UK.

8 . Related links

Vacancies and jobs in the UK: January 2023
Bulletin | Released 17 January 2023
Estimates of the number of vacancies and jobs for the UK.

Half a million more people are out of the labour force because of long-term sickness
Article | Released 10 November 2022
Between June and August 2022, around 2.5 million people reported long-term sickness as the main reason for economic inactivity, up from around 2 million in 2019.

Business insights and impact on the UK economy: 9 February 2023
Bulletin | Released 9 February 2023
The impact of challenges facing the economy and other events on UK businesses. Based on responses from the voluntary fortnightly business survey (BICS) to deliver real-time information to help assess issues affecting UK businesses and economy, including financial performance, workforce, trade, and business resilience.

Graduates' labour market outcomes during the coronavirus (COVID-19) pandemic: occupational switches and skill mismatch
Article | Released 8 March 2021
The impact of the coronavirus (COVID-19) on the labour market outcomes of graduate workers in the UK, focusing on unemployment, occupational shifts and the skills mismatch.

9 . Cite this article

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