Explore local statistics service QMI

Quality and methodology information for Explore local statistics, our digital service to find out more about local areas across the UK. Includes strengths and limitations, methods, and data uses and users.

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To be announced

Table of contents

1 . Output information

- Data collection: various statistical releases, based on survey and administrative data
- Frequency: regularly, as original statistical releases are updated
- Geographic coverage: various; UK, Great Britain and constituent countries
- Related publications: Explore local statistics service

2 . About this QMI report

This quality and methodology information report contains information on the quality characteristics of the data (including the European Statistical System's five dimensions of quality) as well as the methods used to present it.

The information in this report will help you to:

- understand the strengths and limitations of the data
- learn about existing uses and users of the data
- understand the methods used to present the data
- help you to decide suitable uses for the data
- reduce the risk of misusing data

3 . Important points

- Our digital dissemination service, Explore local statistics, presents trends and comparisons across a range of indicators for local areas in the UK through advanced, interactive visualisations.
- Users can explore over 70 indicators across different topics, including economy, housing, education and skills, health and wellbeing, connectivity, and crime; this allows users to gain a thorough understanding of an area.
- The statistics are sourced from publicly available Official Statistics published by the Office for National Statistics and other public bodies; we regularly update the indicators to reflect updates to the original statistical releases.
- The geographic coverage of the indicators varies depending on the original statistical release; most indicators are available for the UK, others are for Great Britain and for individual countries.
- Users can explore local statistics at different levels of geography, depending on the indicator chosen; this includes Lower tier local authorities, Upper tier local authorities, Combined Authorities, English regions, and countries.
- The service also links to other interactive products where statistics are available at lower levels of geography, like Lower layer Super Output Areas; these include our Build a custom area profile and our Census maps.

4 . About our Explore local statistics service

This methodology provides information on the quality of the local indicators presented in our Explore local statistics service, and on the methods used to find, visualise, compare, and download them within the service. This information can help users effectively use the service and understand its strengths and limitations. This will help to reduce the risk of misusing the presented statistics.

Users can choose to follow an area-driven journey (using "Find an area") or an indicator-driven journey (using "Local indicators") from the Explore local statistics home page.

Following the area-driven journey, users can:

- see a range of statistical indicators for their chosen geographical area at a glance
- understand how these have changed over time
- compare their area to other areas or the rest of the country
- compare their area to other statistically similar areas

The service incorporates local authority clusters and nearest neighbours, as described in our Clustering similar local authorities and statistical nearest neighbours in the UK methodology. This feature has recently been updated to provide an ordered list of the 20 most similar areas to the area chosen.

Following the indicator-driven journey, users can delve into one topic across multiple areas, rather than focusing only on one area.

The vision for this service was set out in Section 6 of the Government Statistical Service's subnational data strategy to improve the dissemination of subnational statistics. The service was developed partly through a collaboration agreement between us at the Office for National Statistics and the Ministry of Housing, Communities and Local Government (formerly known as the Department for Levelling Up, Housing and Communities). This partnership, now referred to as the Local Data and Insights project, aims to provide local and national policymakers with the best evidence available for making well-informed, locally-targeted decisions.

5 . Quality summary

Uses and users

Explore local statistics service's target users are:

- expert analysts in local and central government who use the service to filter, visualise, and export indicators efficiently, saving time they can better use to perform analyses and produce high-quality reports
- policy influencers in local and central government who use the service to easily access local statistics so that they can help policymakers make evidence-based decisions
- inquiring citizens who are interested in finding out more about their local areas

We regularly conduct user research on the service. This allows us to continuously improve the service and ensure it remains fit for purpose. User feedback indicates that Explore local statistics is also serving the needs of other groups, including users in local media, academia, and the third sector, as shown by the following quote.

> Thank you to you and the team for the portal; it's brilliant data to see and hugely grateful that this is freely available and can be explored in lots of different ways.

A manager at Macmillan Cancer Support

Strengths and limitations

The main strengths of the service are:

- allowing users to access and visualise publicly available local data all in one place; this saves users time, as they do not have to look through many different datasets to find and link data for their area
- offering various functionalities, resulting in a user-led journey; it allows users to compare different user-selected areas, view confidence intervals where applicable, view a specific time period, and download chart images and data
- providing a range of indicators on different topics so users can gain a comprehensive understanding of an area
- viewing the chosen area in the context of all other areas at that geographic level, showing the extent of the variation across areas

The main limitations of the service are:

- a time lag between when the original statistical release source is published and when the indicators are added or updated on the service; we aim to update existing indicators within three weeks from when we have access to the updated statistics
- that we do not own or publish the datasets used in the service, so their data quality and publication schedule are not in our direct control, which can lead to missing confidence intervals or geographic areas; we mitigate possible quality concerns by including datasets which are published as official statistics under the Code of Practice for Statistics

6 . Quality characteristics of the data presented in the service

Accuracy and reliability

We source all statistics disseminated through the service from publicly available statistical releases, based on survey and administrative data that are published on official government websites. Data owners agree for their statistics to be used in the service and are kept regularly informed to ensure consistency with the original statistical release. Any revisions made to previously published statistics are processed in line with the data owner's approach.

We provide confidence intervals, which give an indication of the uncertainty, when they are available in the original statistical release. We provide the full distribution and trends for each indicator to give a sense of the variation across geography and time.

Users can find out more information about each indicator by clicking on the information drop-down box for each indicator. This gives a description of the indicator definition, a link to the original statistical release and publication date, and whether the indicator is classed as official statistics in development. Any methodological notes about the data are captured in the “Interpretation” section of the service, which can be found by clicking on the link next to "For more data and charts" that takes you to the indicator page. These features ensure transparency.

Coherence and comparability

The service strives to provide a UK-wide picture, allowing valid comparisons between local areas. However, some available statistical releases produced by the countries within the UK have been added as their own separate indicators. This is to mitigate the risk of incorrect comparisons across statistical releases that are not methodologically coherent, or where data are provided for different time periods. For example, education is a devolved policy area and each UK country measures this differently. The service presents these data as separate indicators to try to avoid inappropriate comparisons.

We always check the coherence and comparability between indicators and agree this with data owners. Indicators from different sources can be used together in some instances. For example, gross median weekly pay combines Great Britain data from the Office for National Statistics (ONS) and Northern Ireland data from Northern Ireland Statistics and Research Agency (NISRA). This is because both suppliers use the same methodology. We are continually working with the devolved governments on how to best include and present their data in the service.

Accessibility and clarity

The Digital Accessibility Centre (DAC) conducted an accessibility assessment of the service in November 2024. Since then, we have been implementing changes to ensure the service meets accessibility standards. Examples of improvements include:

- updating colours to ensure contrasts meet Web Content Accessibility Guidelines (WCAG)
- ensuring all elements of the tool are correctly labelled to make things easier for screen readers to target
- working towards integration of an accessible auto complete on our search boxes

Data included in the Explore local statistics service are available online and can be downloaded free of charge in OpenDocument Spreadsheet (ODS) file type. Data and metadata are available in machine-readable format on the ONS Digital GitHub repository. Graphs and visualisations can be downloaded in PNG file type. We also provide embed codes to allow these to be reused appropriately in other publications.

Timeliness and punctuality

We update existing indicators once the required statistical release has been published. We aim to update within three weeks of the updated statistics becoming available. New indicators or updates involving more complex methodological changes will take longer to add to the Explore local statistics service.

Geography

When selecting Lower tier local authorities in the "Local indicators" journey, the service's map visualisations operate on 2023 boundaries. However, obsolete geographies can be still be viewed in the charts and data.

As part of the service, we aim to publish metrics at as many of the following geographies as possible:

- Lower tier local authorities
- Upper tier local authorities
- Combined Authorities
- English regions
- countries

For some metrics, the source data does not include all of these geographies. In this case, we apply our aggregation method, where appropriate, to fill gaps in the larger geographies.

Lower tier local authorities nest directly within the other larger geographies listed, so we can aggregate Lower tier local authority data to estimate results for these areas. This involves identifying the count data that go into calculating each metric, adding this count data together to build a larger area, and then recalculating the metric. For example, if we wanted to aggregate the employment rate for Hampshire, we would first find the number of people employed and the total number of working age people for each Lower tier local authority within Hampshire. We would then sum these figures to get estimates of total employment and working age population for Hampshire, and then use these totals to recalculate the employment rate.

To improve the accuracy of our estimates, we do not apply aggregation if there are missing figures at the lower geography level, or if the data are rounded to a high degree. Despite this, there still may be some differences between our aggregated figures and other published data. There is a marker on any aggregated data within the "Interpretation" section for this reason.

This aggregation process is also used to fill gaps in the 2023 Lower tier local authority data. It uses data from obsolete Lower tier local authorities to estimate results for new local authorities when this is not included in source data.

Why you can trust our data

The Explore local statistics service aims to be fully compliant with the best practices set out in the UK Statistics Authority's Code of Practice for Statistics and in our Data Policies.

7 . Methods used to quality assure and present the data

Data processing and quality assurance procedures

The data are downloaded from the original publicly available source and processed through a reproducible, semi-automated pipeline in Python. This pipeline prepares and cleans the data, applies any aggregation to higher levels of geography where applicable (as described in the Geography subsection of Section 4). It then transforms the data into a specific long CSV format, following W3C web standards.

Quality assurance checks of the CSV file include, but are not limited to:

- cross-checking data points against the original source to ensure accuracy
- ensuring any missing data are correctly presented
- verifying that all correct geographies are included

If the CSV file passes our initial quality assurance, we upload to the public Explore local statistics GitHub repository, along with a JSON file. The JSON file contains all metadata that is presented alongside the data on the Explore local statistics service. The metadata includes:

- title
- description
- link to the original statistical release
- last updated date
- department name of the data owner
- any caveats
- interpretation notes
- whether the indicator is standardised (transformed to a common scale or unit for easier comparison and analysis)
- whether the indicator is marked as official statistics in development
- unit of measure
- appropriate decimal place for the data

The CSV and JSON files are used to create a preview link of the service. This allows the indicator to be checked before going live. Quality assurance checks on the preview site include, but are not limited to:

- ensuring metadata are free of typos, readable, and match documentation
- verifying that links to the original statistical release are correct
- spot-checking at least five data points from different levels of geography and periods, if applicable
- ensuring that image and data downloads work correctly and display the correct data
- confirming that data and metadata have been updated in the accompanying OpenDocument Spreadsheet (ODS) file
- checking that confidence intervals are available and presented correctly, if applicable
- searching at least one geography through the area-driven journey to ensure everything works and is presented accurately, including a curiosity check

If all checks pass, the preview is published to our website.

How we disseminate the data

All data currently available on the service can be downloaded by selecting the "Get the data" section and opening the accompanying ODS dataset link. This file includes data for all indicators, geographic areas, and time periods. Additionally, data can be downloaded in CSV format by selecting an indicator chart and clicking the "download data" link. This will download the chart data, along with any year or geography filters that have been applied.

Comparison text

Below each beeswarm chart there is text describing the area's position, for example, "Similar to average in 2023". This is available for indicators at Upper tier and Lower tier local authority level. This text helps distinguish between small differences that might be because of uncertainty in the statistics and larger observed differences that are likely to reflect real differences.

The comparison text is determined using the median absolute deviation. This is based on all areas with data in that year that are of the same geographic level as the selected area. We chose the median absolute deviation instead of the mean absolute deviation because outliers have a smaller impact on the median than on the mean.

The text says "higher" if the selected area is 1 or more median absolute deviations above the comparison value. The text says "lower" if the selected area is 1 or more median absolute deviations below the comparison value. The text says "similar" if the values are within 1 median absolute deviations of each other.

Where the score of a local authority is more than 7.5 median absolute deviations above or below the score of the median local authority, the local authority is shown at the end of the scale and its position is not fully representative of its score. This is to try to prevent outliers leading to most of the observations being concentrated in a small section of the axis.

Comparison text is hidden in the following examples:

- when no comparison is chosen
- when the selected area or comparison does not have data for the chosen period
- when the selected area is not an Upper tier local authority or Lower tier local authority; for example, Combined Authorities do not get comparison text
- when there are fewer than 10 areas with data for the same geographic level and period as the selected area

How we visually present the data

When users search for an area through the "Find an area" journey and enter the "Explore local indicators" page, they see two charts per indicator. The first chart is an interactive beeswarm chart, which shows individual data points spread out to avoid overlapping. This is useful for seeing how data are distributed and where there are more or fewer points. The second chart is a time series chart (if applicable), which shows data points in chronological order, which makes it easy to see trends and patterns over time.

When users click the "Explore indicators" button in the "Local indicators" journey, they are shown all indicators in the service. Once an indicator has been selected, they can view the data in multiple interactive formats: map (if applicable, see the Choosing appropriate indicators for maps subsection), line chart, bar chart, or table.

Median values for the time series

In the time series charts, users can compare their selected area to the median value of all areas over time (if this is available) within the rows of different indicators in the "Find an area" journey. The median line shows the median across all areas for each year. It does not show, for example, the trajectory for the specific area's median in the latest year.

Chart customisation

Charts in the "Find an area" journey can be customised using the "Change areas" and "Options" buttons.

Change the primary comparison area

Select a different average (median) of local authorities in a region, including those that are demographically similar, a specific area, or no comparison. This is represented by the purple diamond shape on the charts.

Change the related area group

Choose all other local authorities in a region, including those that are demographically similar, or no related areas. This is represented by the grey dots on the charts.

Add additional areas

Highlight more areas in the charts for more specific comparisons.

Display confidence intervals

Display confidence intervals on charts using the "Options" button, where applicable. This emphasises our commitment to transparently presenting uncertainty.

Changing the time series periods

Adjust the periods for the line chart, where applicable.

Charts in the "Local indicators" journey can also be customised by selecting different geography types and time periods, changing the areas included, and adding confidence intervals where applicable.

Choosing appropriate indicators for maps

The ability to view data on a map has been disabled for indicators that are expressed in absolute values, rather than rates or percentages in both "Find an area" and "Local indicators" journeys. This is because mapping absolute values typically only shows you the population or businesses distribution, rather than showing meaningful insights about the indicator itself.

Similar areas

The "Similar areas" section of the service within the "Find an area" journey provides users with a cluster of statistically similar areas to their area of interest. These groups of similar areas can be used to identify comparators for policy impact analysis, by local government users to identify areas that may be facing similar challenges to their area, and by enquiring citizens to explore which areas are similar to their own.

These groups are created by using K-means clustering on a range of publicly available data sources. A global model that accounts for overall similarity is presented alongside economic- and demographic-themed models. We have recently developed this feature by adding a nearest neighbours section. This uses the same data as the clustering models to create an ordered list of the 20 most similar areas to the area of interest, ordered by Euclidean distance. For more information on our similar areas approach, see our Clustering similar local authorities and statistical nearest neighbours in the UK methodology.

8 . Provide feedback

We conduct regular user research, which helps us understand and meet the evolving needs of our users, and ensure the service remains relevant and useful. This process enhances the user experience by identifying and addressing pain points, leading to improved user engagement.

We run a feedback survey in the service, which allows us to understand user satisfaction, identify issues, enhance features, and improve the user experience. The results from this survey also feed into our ongoing monitoring and evaluation for the wider ONS Local Data and Insights project. We value your input and encourage you to provide feedback on the service. For any specific queries or detailed feedback, you can also reach out to us at subnational@ons.gov.uk.

9 . Cite this guide

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