what works centre for
local economic growth

‘How to’ guide
Analysing local economic data

Introduction

Data and analysis help inform good policy. Local policymakers in the UK are able to access a range of data on the performance of their local economy. This briefing provides guidance on how this data can be analysed.

This briefing should be used alongside What Works Growth’s ‘how to’ guides on understanding local economic performance. Each briefing focuses on a specific growth topic (such as skills) and provides details of the data available and a framework for understanding what it shows.

Contents

Defining the question

Start by clearly defining the question to be answered through data analysis. Good questions should be:

- Specific – clearly stating what will be investigated.
- Focused – relate to a single issue or topic.
- Researchable – it should be possible to answer it through data analysis.
- Feasible – given the resources available (including time).

It is common to have multiple questions and for initial analysis to generate additional questions.

Selecting data

Finding relevant data

Establish what datasets are available that might help answer the question. Sources of data include:

- Office for National Statistics (ONS) is the UK's national statistical agency. It collects and publishes data on a wide range of topics.
- Nomis is an interactive portal allowing custom download of data from ONS population, labour market, and Census datasets. Users can select geographies, time periods, and other variables of interest.
- ONS Local was developed to help users find, visualise, compare, and download sub-national data. It presents selected datasets in a visually accessible format.
- UK Government departments publish data on their policy area. For example, Department for Education (DfE) publishes data on education and skills, Department for Work and Pensions (DWP) publishes data on benefit claimants, and Department of Business and Trade (DBT) publishes data on businesses. Each department has a 'statistics' section on their website. Some also have separate websites that enable custom analysis (for example, DWP's Stat-Xplore).
- Devolved governments (Scottish Government, Welsh Government, and Northern Ireland Executive) publish data in relation to devolved policy areas.
- UK and devolved government agencies also often publish data relating to their remit, with examples including Intellectual Property Agency publishing data on patents and trademarks, British Business Bank publishing data on business finance, and Skills Development Scotland publishing data on apprenticeships in Scotland.
- Many other organisations publish data. Some of these provide data for free such as employers organisations or trade bodies who publish data to help further their objectives, whilst others are commercial providers offering data under license.

Most datasets include multiple variables and therefore may help you answer multiple questions. Whilst some may only include a few interconnected variables, others cover multiple topics (with examples including Census, Annual Population Survey, UK Innovation Survey, and UK Employer Skills Survey).

Tip

Copy from others. Look at what data other local government organisations are using or that is used in research published by experts on a topic to get ideas for datasets to explore.

Assessing the data

Assess whether the dataset meets your needs. Key questions include:

- **Will the data help answer the research question?** It is easy to default to using a dataset that is easily available or has been used previously but it may not be the best option. Always assess the extent to which the dataset will help answer the research question. This process will be easier if the question is specific and focused. For example, both the Business Register and Employment Survey (BRES) and the Annual Population Survey (APS) provide data on employment but the measures are very different, with BRES providing a count of employment (i.e. the number of people employed) in workplaces, whilst the APS provides employment rates (i.e. the proportion of a population in employment) for residents. If the question is worded vaguely ('How is our area performing in terms of employment?') it can be difficult to determine which dataset to use, but a more specific and focused question ('What proportion of our residents are in work?') makes it easier to assess fit.
- **What geographies are available?** Consider whether the data is available at the geography needed. Many datasets are available at multiple geographic levels but some have more limited breakdowns. If data is not available at the geography required, consider whether to use an alternative geography or an alternative dataset.
- **What time periods are available?** Consider whether data is available for the time period of interest. This is particularly an issue when considering change over time. For example, analysing change over a 10-year period will not be possible if the dataset was only introduced three years ago. If the data is to be analysed on a regular basis (for example, it is to be included in a monitoring framework or annual report), confirm it is from an ongoing dataset, not a one-off survey.
- **What is the frequency and the timeliness of the data?** Frequency means how often the data is published – monthly, quarterly, annually, biennially, etc. Timeliness is how long it takes for data to be published. Some datasets are available almost immediately, but others have a significant lag. For example, sub-national productivity data has an 18-month lag (with 2023 data published in 2025).

Analysing data

Most economic data relates to either:

- **Stocks** – which measure the quantity that exists at a specific point in time. Examples include the amount of labour, skills, machinery or infrastructure available in a local economy or the overall size of the local economy.
- **Flows** – which measure changes over time. Examples include investment or numbers gaining qualifications in a specific topic.

Data can be analysed in multiple ways.

Most analysis starts by looking at the **current position**. It is possible to look at the current position for both stocks and flows.

Comparison across areas allows benchmarking. It is important to select comparison areas carefully to ensure benchmarking is useful.

Comparison over time looks at how things are changing. It is good practice to pick a neutral time period (such as 5 or 10 years) but in some cases analysis will look at performance since a notable event (such as recession or election). It is possible to compare over time for both stocks and flows.

Analysing breakdowns can provide additional insights. For example, comparing different geographic areas or different groups within a population.

Combining data can provide additional insights. For example, combining data on productivity and income helps illustrate whether local people are benefiting from high productivity.

A clearly defined research question helps set the parameters (for example, by indicating that a comparison across areas or time is required).

> ### Tip
>
> Looking at data in multiple ways (for example, looking at both the current position and change over time) can provide a fuller picture.

Throughout this section, example data is presented, using the question 'What proportion of North East Combined Authority (NECA) area residents are in employment?' as the starting point. This question can be answered using employment rate data from the Annual Population Survey, available from Nomis. The employment rate is the proportion of a population that is in employment. Employment rate data is available for different age bands and by gender. The examples use the employment rate for the working age population (population aged 16 to 64).

Current position

Most analysis starts by looking at the **current position** – i.e. the most recent data available. Depending on the timeliness and frequency of data, this could be anything from the last month to two years ago. It is possible to look at the current position for both stocks and flows. The current position may be a count (for example, population, number of business starts or amount of capital available to each business), a percentage (for example, proportion of working age people in employment or proportion of employers providing training to staff in last 12 months) or a per capita measure (for example, gross value added (GVA) per capita).

For our example question (What proportion of NECA area residents are in employment?), the current position is that 70.2 percent of the working age population are in employment.

This illustrates one of the challenges of looking at the current position in isolation – without context it is difficult to know whether 70.2 percent represents strong or weak performance. For this reason, the current position is normally provided with either a comparison across areas or a comparison over time.

Comparison across areas

Comparison across areas allows benchmarking. It is important to select comparison areas carefully to ensure benchmarking is useful. The main options are to benchmark against higher-level geographies or against other similar areas.

- Examples of **higher-level geographies** include countries (United Kingdom, Great Britain, England, Scotland, Wales or Northern Ireland as appropriate), regions, higher level administrative geographies (for example, comparing a local authority to the mayoral strategic authority it sits within) or custom geographies (such as England excluding London).
- **Similar geographies** can be drawn from an external source (examples given below), based on membership of a group or can be selected based on local knowledge or historic comparisons that politicians or the public might expect to see (for example, Southampton might choose to compare against Portsmouth as both are port cities on south coast).

The appropriate choice will reflect the research question. For example, for areas that are attractive to early retirees (such as Cornwall or Cumbria), comparing the employment rate to similar areas is likely to provide less useful insights than comparing to the national average.

Issues to consider when selecting comparators are the research question and how the data will be used. For example, when demonstrating fit with a national policy priority, a national comparator is likely to be most appropriate.

Sources of 'similar area' comparators

Demographically similar local authorities, ONS Local

ONS Local allows users to explore local data with interactive graphs and charts, including comparison with other areas. One comparison available is local authorities which are demographically most similar to the local authority being analysed. It also includes a function to produce a ranked list of similar local authorities.

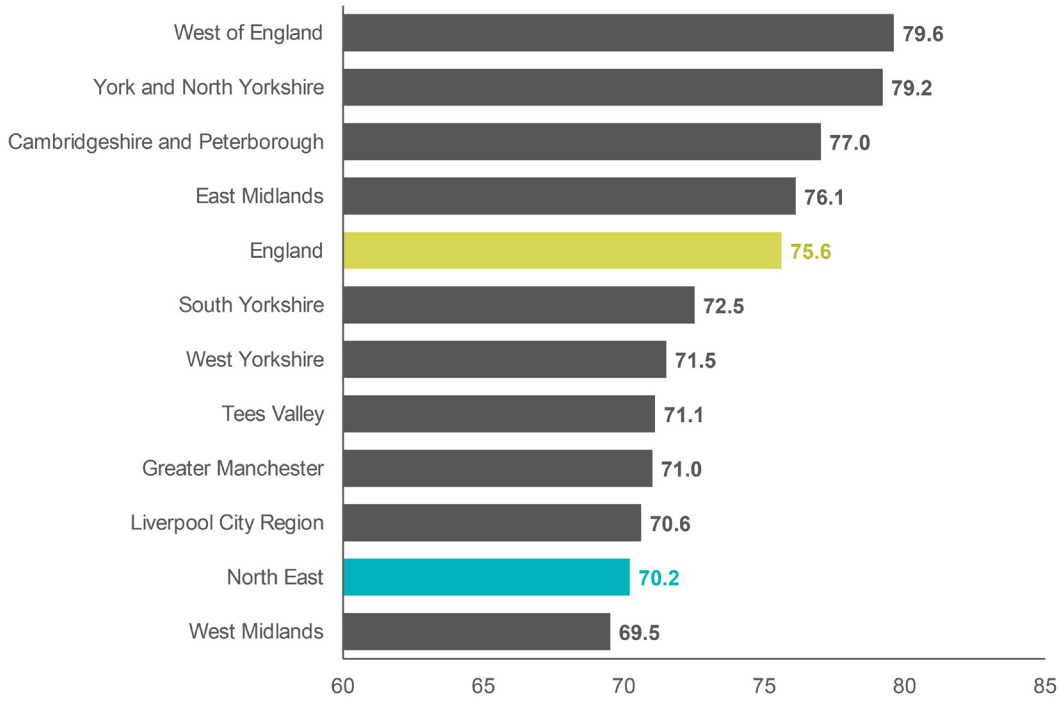
CIPFA nearest neighbours, LG Inform

Run by the Local Government Association (LGA), LG Inform provides a dashboard-style summary of key local data. One of the functionalities is to compare against other local areas.

There are multiple options including 'CIPFA nearest neighbours', a comparison group of 15 local authorities based on Chartered Institute of Public Finance and Accountancy (CIPFA) data. This utilises 20 variables across demographic, deprivation, employment, and population density to identify which areas are the most statistically similar.

Figure 1 answers our example question (What proportion of NECA area residents are in employment?), whilst also providing a comparison with other areas. It includes both similar areas (other mayoral strategic authorities) and a higher-level geography (England). It shows that NECA's performance (70.2 percent) is below the national average (75.6 percent) and most other mayoral strategic authorities used as comparators, which range from 69.5 percent to 79.6 percent. By providing the North East's position alongside comparators, Figure 1 can help policymakers decide if low employment rates are a concern.

Figure 1: **Employment rate (%) of working age population (16-64), selected mayoral strategic authority areas and England, 2024**



Source: Annual Population Survey (Nomis)

Comparison over time

Comparison over time can reveal whether performance is improving or worsening. When combined with comparison across areas, it can also provide insights into relative performance, such as whether an area is catching up, overtaking or falling behind.

A key decision is the time period over which changes in performance will be analysed. The main options are to choose a set interval (for example, five or 10 years) or to begin the time series from a specific point of interest, such as a policy being introduced, a change in political leadership or a recession. The former can be considered a 'neutral' approach, whilst the latter can be useful when questions relate to what has changed since the chosen event. One constraint can be if the data is not available for the full time period of interest. For example, the Business Register and Employment

Survey was introduced in 2015 so it is not possible to use it to look at changes in employment over the longer term.

It can often be useful to look at more than one time period (for example, change over five years and over 10 years), as the pace of change may vary over time. It can also sometimes be useful to look at sub-time periods – for example, as well as looking at change over last 20 years, to also look at each five-year period within the 20 years. In both cases, these can provide additional insights that can help inform policymaking.

Another consideration is whether to show:

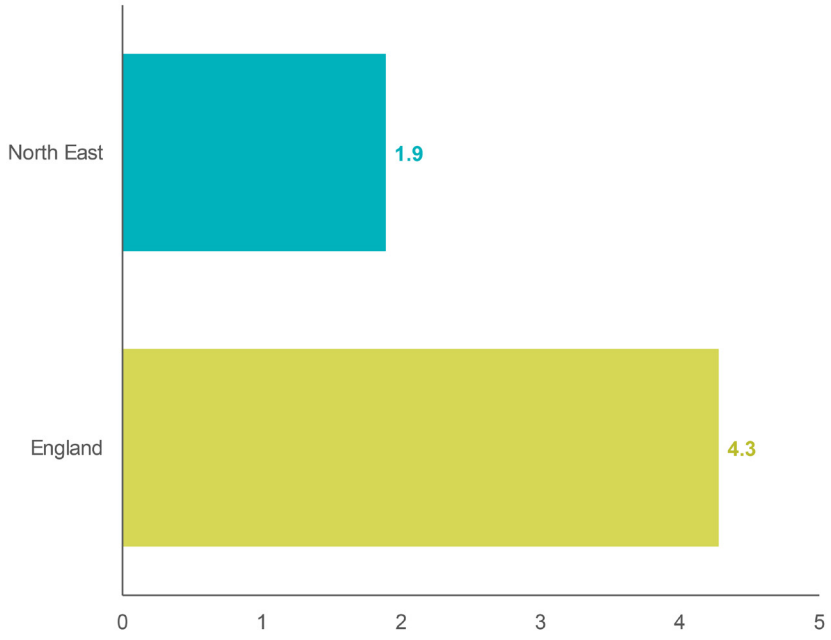
- **Change between two points in time.** This can be shown either as change (for example, number of active businesses has increased by 230) or percentage change (for example, number of active businesses has increased by 13 percent).
- **Trend over time.** This plots a data point for each time period (for example, if data is published annually and a ten-year period is being considered, each year's data is plotted on the chart). Trends can either be shown using the actual data (as in Figure 3, where the employment rate is shown) or it can be indexed (as in Figure 4). **Indexing** can help identify divergence or convergence. Rather than showing the actual data, indexing starts all geographies from the same nominal point (indexed as 100) and the graph then shows the trend in growth from that point onwards. This more clearly displays differences in performance than a regular trendline but it sensitive to performance in the starting year (for example, if the starting year was an outlier, subsequent performance may be unusually high or low).

It can be useful to look at the data in multiple ways as they will provide different insights.

Figures 2 to 4 build on the starting question (What proportion of NECA area residents are in employment?), by answering the question 'How has the proportion of NECA area residents in employment changed over time?'. A 10-year period has been chosen (2014 to 2024) and data for NECA and England are presented.

Figure 2 shows the percentage change in employment rate, with NECA's employment rate having increased by 4.3 percent over the period 2014 to 2024. The employment rate has also increased across England, but at a lower rate of 1.9 percent. This option provides the clearest insight into the overall change over the 10-year period. If policymakers are interested in how the employment rate has changed year-on-year, or the relative performance of NECA and England on employment rates, this chart does not meet their needs.

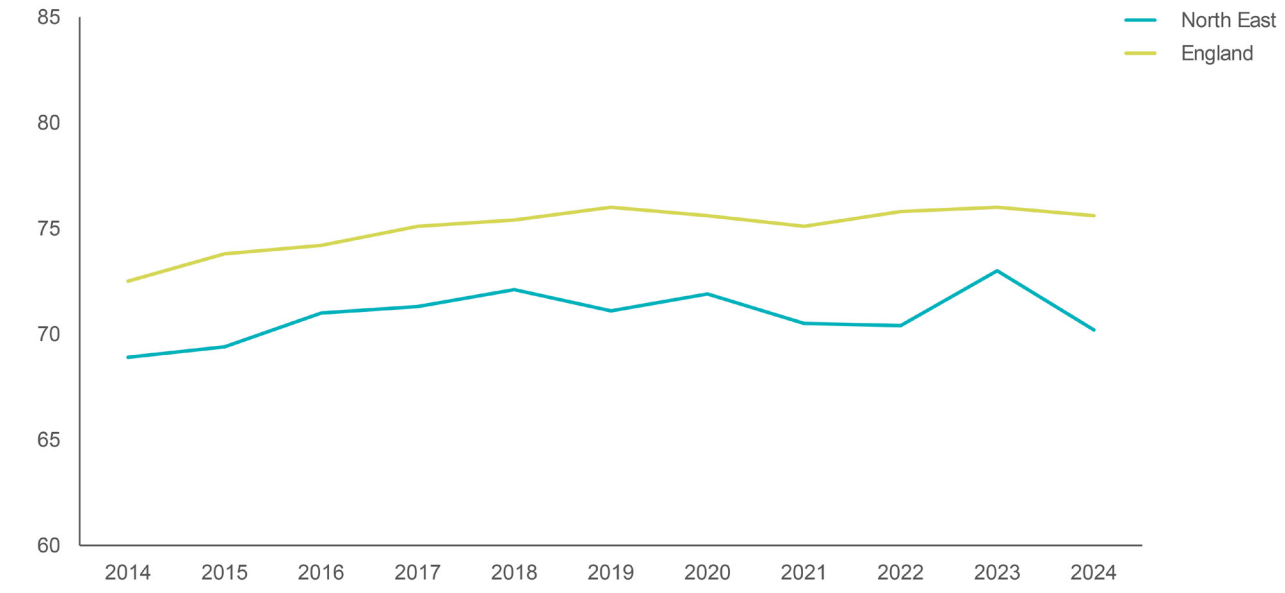
Figure 2: **% change in employment rate of working age population (16-64), NECA area and England, 2014 to 2024**



Source: Annual Population Survey (Nomis)

Figure 3 shows the trend over time. This includes the employment rate for both NECA and England for each year between 2014 and 2024. As with Figure 2, it shows that the employment rate has increased in both NECA area and England. Unlike Figure 2, it provides insights into how it has changed year-on-year, with NECA's employment rate increasing in some years and declining in others. It also clearly illustrates that NECA has had a lower employment rate than England over the entire period (which cannot be observed from either Figures 2 or 4). One downside of this chart is that the overall scale of the change (4.3 percent increase) is much harder to interpret than in Figure 2.

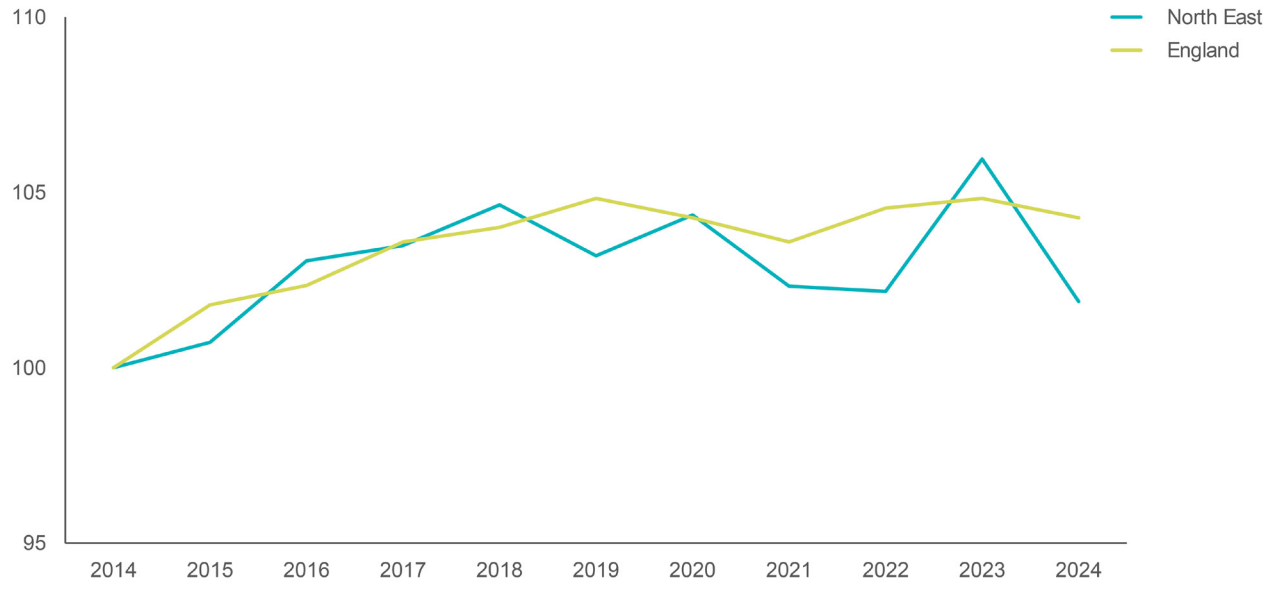
Figure 3: **Employment rate (%) of working age population (16-64), NECA area and England, 2014 to 2024**



Source: Annual Population Survey (Nomis)

Figure 4 shows the trend in NECA area and England's employment rate between 2014 and 2024, with 2014 indexed to 100. It combines some of the advantages of Figure 2 (being able to clearly see the scale of change) and Figure 3 (being able to see changes year-on-year). Its main disadvantage is that the level of employment rate is not observable. However, if it was presented alongside Figure 1 that would not be an issue.

Figure 4: **Index of employment rate of working age population (16-64) (2014=100), NECA area and England, 2014 to 2024**



Source: Annual Population Survey (Nomis)

One final consideration for comparisons over time is that if data is volatile, with large fluctuations year-on-year, it may be better to smooth the data. Some datasets (such as sub-national productivity data) offer a smoothed or unsmoothed option but is also possible to do this yourself (for example, by calculating a three-year rolling average).

Tip

Many measures have a numerator and denominator. For employment rate, the numerator is the number of individuals aged 16 to 64 that are in employment, and the denominator is the total population aged 16 to 64. Where there is change over time, it can be useful to understand if the change is in the numerator, denominator or both.

Analysing breakdowns

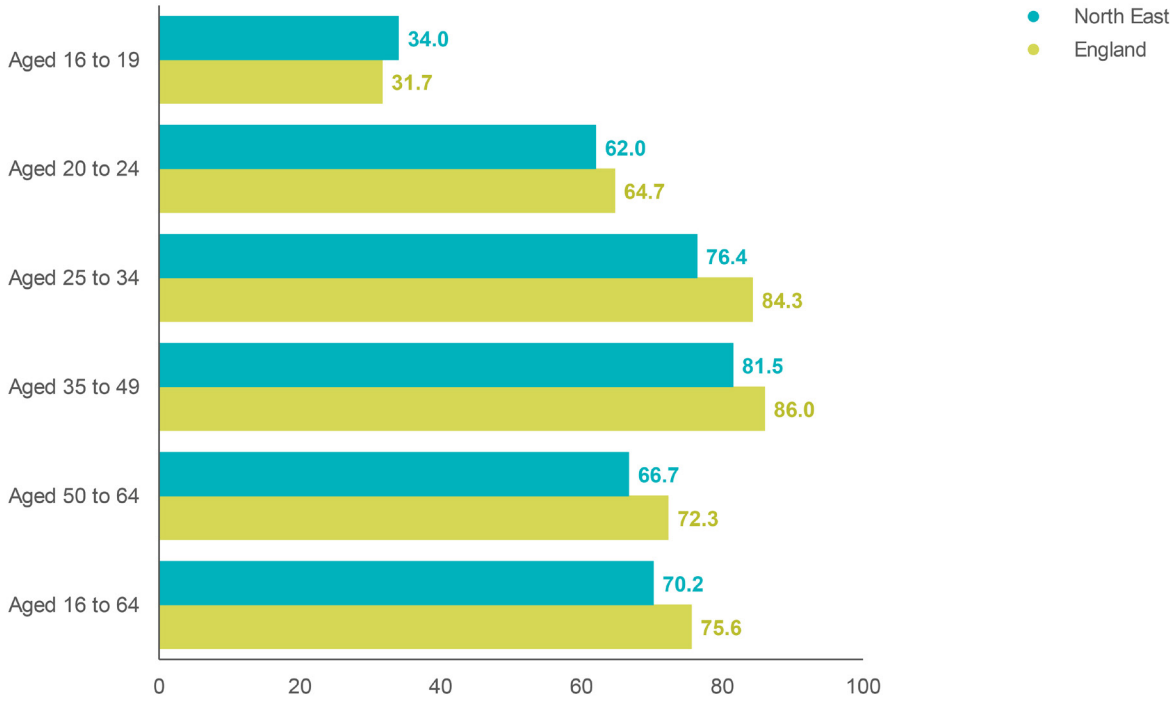
Analysing across sub-groups can provide a more granular understanding of performance – for example, identifying a group that has worse performance than others and needs greater support. Some datasets include lots of categories, allowing many different breakdowns to be analysed, whilst others have much more limited options.

The breakdowns available will depend on the unit of observation used in the dataset. For example, if the unit of observation is 'individuals', breakdowns by age, gender, ethnicity, qualifications levels or income levels may be available, whilst if it is 'businesses', breakdowns might include sector or

business size (measured either by employment or turnover). Breakdowns by geography may also be possible (for example, it may be possible to look at lower-layer super output areas (LSOAs) within a local authority area).

Figures 5 builds on the starting question (What proportion of NECA area residents are in employment?), by answering the question 'How does the proportion of NECA area residents in employment vary across age bands, and how does this compare to England?'. It shows that those in the 16 to 19 age band are least likely to be in employment (as most are still in education), whilst employment is highest in the 35 to 49 age band. The similarities and differences enable policymakers to assess if employment rates for a specific age group are a concern.

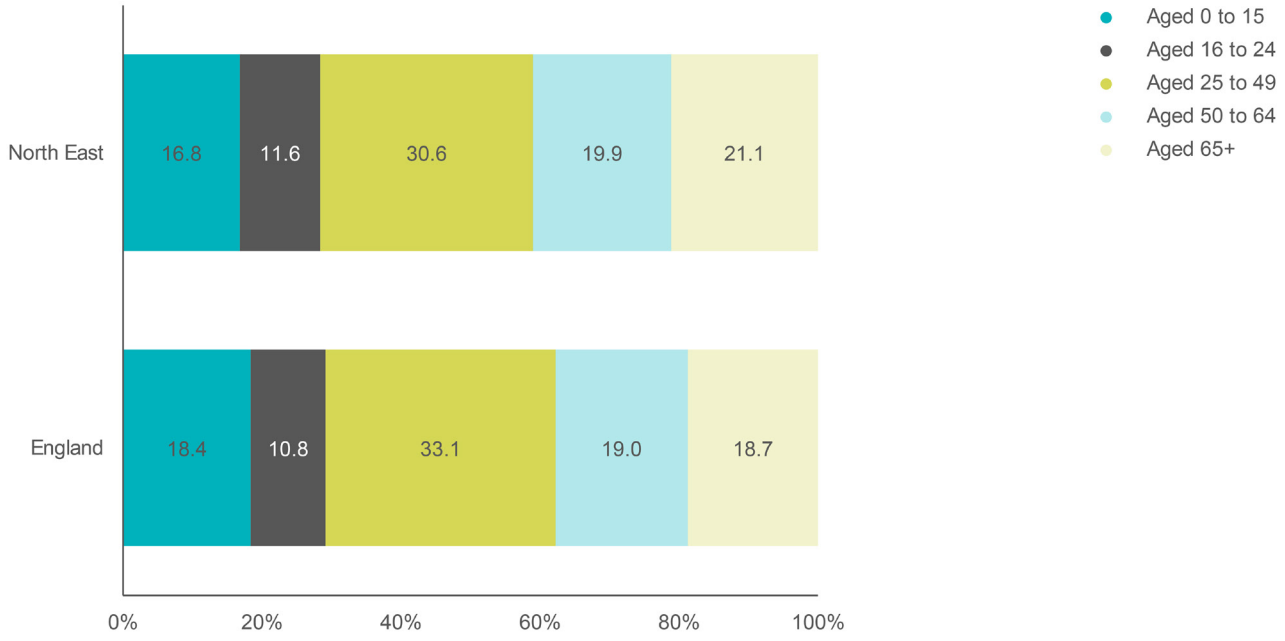
Figure 5: **Employment rate (%) of different age bands, NECA area and England, 2024**



Source: Annual Population Survey (Nomis)

It can also sometimes be useful to understand what proportion of a population are in each sub-group. This can be compared across areas or over time. For example, Figure 6 shows the breakdown of population by age band for the NECA area and England. Amongst other insights, this highlights that a larger proportion of the population is aged 50 to 64 in the NECA area than across England. This makes the finding in Figure 5 that this age band is considerably less likely to be in employment than across England more concerning.

Figure 6: **Population structure (% of total population), NECA area and England, 2024**



Source: Population estimates (Nomis)

Combining data

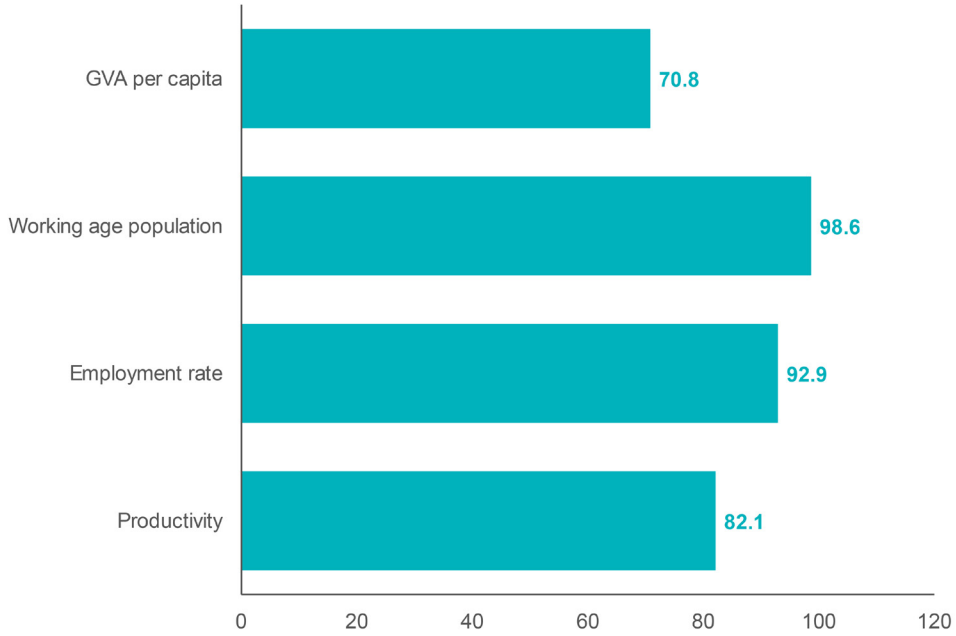
Combining datasets can provide additional insights. Examples include:

- Combining a count (for example, number of business starts or numbers employed) with population data allows per capita data to be calculated.
- Plotting two variables against each other can help illustrate the extent to which they are related. These variables can be from the same or different datasets. A possible extension of this is to add a line showing the correlation between the two variables.
- Benchmarking performance against a higher-level comparison area for multiple variables. This allows the area with greatest underperformance to be identified.

Figure 7 benchmarks employment rates for the NECA area against England. It also benchmarks the NECA area against England for GVA per capita, the proportion of the population that is working age (aged 16 to 64) and productivity. Combined, these represent GVA and the components that underpin it.[1] Benchmarking in this way illustrates that the NECA area underperforms England on all four measures, and that improving GVA per capita will require improvements in both the employment rate and productivity, with productivity the larger issue. This insight would be more difficult to identify if the data was not combined into a single chart.

1 For more information, see our blog on Understanding GVA.

Figure 7: **NECA area as % of England, various measures, 2023**



Sources: Regional gross domestic product (ONS), Population estimates (Nomis), Annual Population Survey (Nomis), and Subregional productivity (ONS)

Notes: 2023 is most recent data available for GVA per capita and productivity so data for all measures is presented for this year.

Presenting data

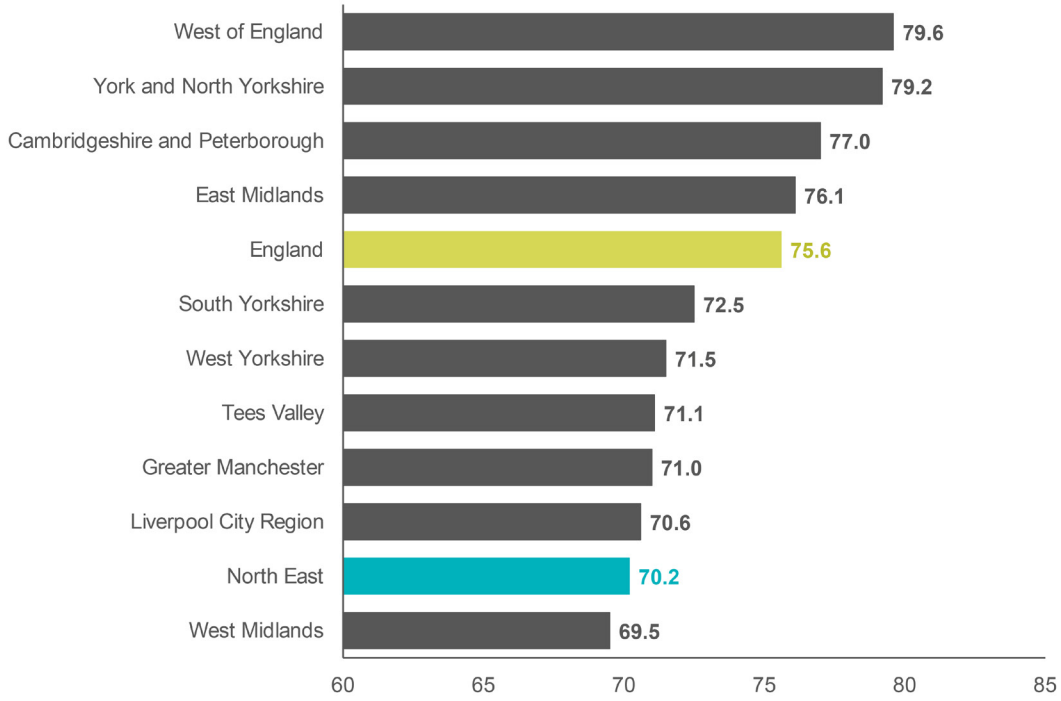
Choice of chart

Different types of charts provide different insights.

- **Bar charts** can be used to show levels, change over time (specifically between two points in times), or benchmarking. They can use either horizontal bars or columns. When showing levels or change over time, it can often be useful to organise from highest to lowest (or vice-versa).
- **Stacked bar charts** can be used to compare breakdowns across categories.
- **Line charts** can be used to show change over time, including indexing. To ensure it is easy to interpret, limit the number of lines (generally no more than five).

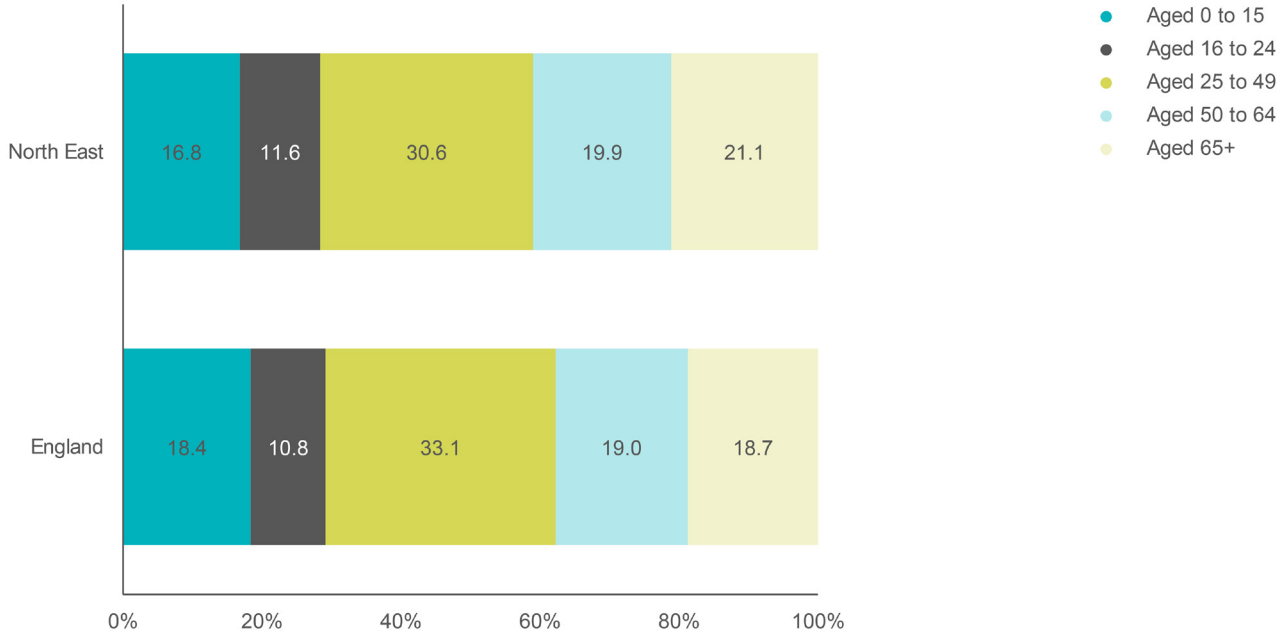
Some example charts are shown below. These are all repeats of charts shown earlier in this guide.

Example bar chart: **Employment rate (%) of working age population (16-64), selected mayoral strategic authority areas and England, 2024**



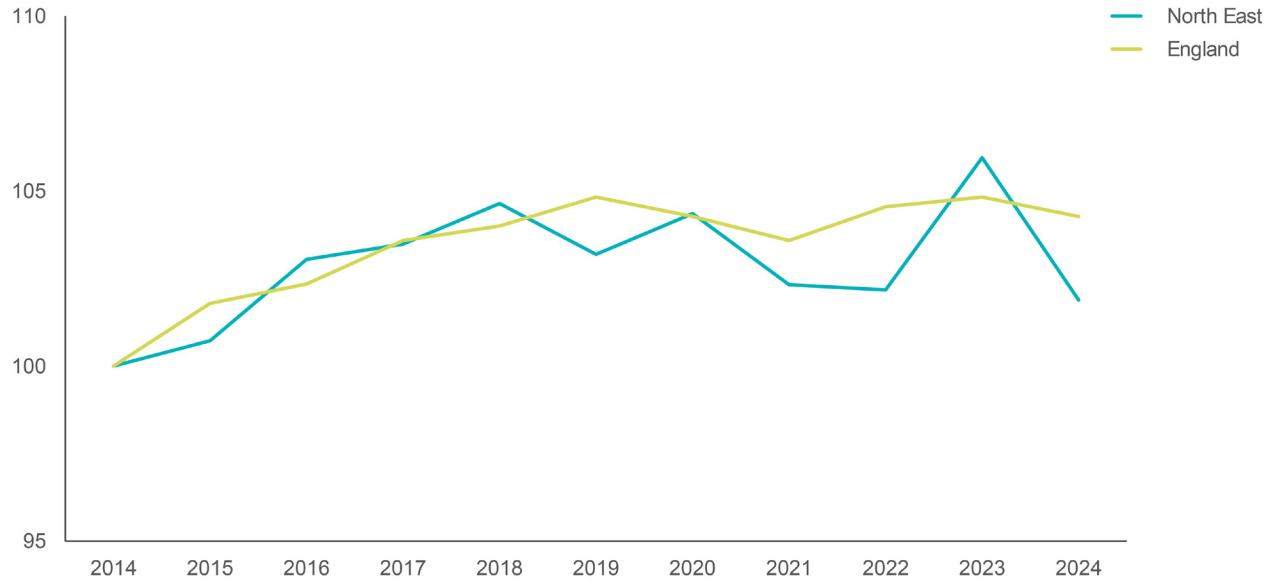
Source: Annual Population Survey (Nomis)

Example stacked bar chart: **Population structure (% of total population), NECA area and England, 2024**



Source: Population estimates (Nomis)

Example line chart: **Index of employment rate of working age population (16-64) (2014=100), NECA area and England, 2014 to 2024**



Source: Annual Population Survey (Nomis)

All charts should have a title and source. Chart titles should include the measure being shown, units (if appropriate), geography, and date. If there is additional information that the reader should be aware of when reviewing the chart, this should be given in a note.

Other design choices

- Use colours to differentiate between data series. For example, you may wish to present the area of interest in a different colour to the comparator areas.
- Consider whether axes should start at zero or another level. This will depend on what you are trying to illustrate and how much variation there is between different groups. For example, employment rates for most geographies are between 65 and 85 percent so having an axis that starts at zero would make it more difficult to see variations between areas.

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