Health and wellbeing indicators at your…

Fingertips

An introduction to

PHE's Data Visualisation Platform

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Section 1: Overview

Fingertips is a web-based platform that provides easy access to a rich source of indicators across a range of health and wellbeing topics. Data in Fingertips are organised into thematic Profiles, all of which can be accessed via:

https://fingertips.phe.org.uk

These Profiles were designed to support Joint Strategic Needs Assessment (JSNA) and commissioning, as well as to improve the nation's health and wellbeing and reduce inequalities. The Profiles enable you to:

- Browse indicators at different geographical levels
- Benchmark against the regional or national average
- Export data, tables and images to use locally

The platform grows quickly, both in terms of functionality and content, and is served by one common database called PHOLIO. The website is refreshed monthly, usually on the first Tuesday of the month, when changes to code and data are deployed. However, each product follows its own update cycle and changes are not necessarily rolled out across all products at the same time.

Although some parts of Fingertips are product-specific, the overall development approach is to aim for an efficient, modular system. Most Profiles adopt the same template, with certain features switched on or off, depending on the data and geographies displayed. The focus of this guide is to demonstrate the key functionalities of a range of Fingertips tools.

Section 2: Fingertips main page

Below is an image of the Fingertips main page from where individual, thematic Profiles can be accessed. At the top of the page, there are several useful links.

From the **'Introduction'**, a copy of this guide can be downloaded. **'Technical guidance'** contains a series of resources which detail the methods used in Fingertips and other common Public Health methods. By selecting the **'Contact us'** option, you can submit feedback about the suite of tools. Finally, **'Your data'** section allows you to create and manage your own, bespoke area and indicator lists (for details, see **Section 5: Your data**). At the top right of each page, a '**Search**' facility can also be found. You can search for related indicators by keywords (checked against core metadata fields) or by Indicator ID, which can also be found in the metadata (see **Section 4: 4.1.8 Definitions**). On the search results page you can select any of the available area types and check to which Profile(s) the indicators belong - this can be very useful to find more contextual information.

To the right of the main page, there is also a **'Latest news'** section which highlights recent and most significant changes across all Profiles. Finally, at the bottom of the main page, you can also find more information on data sharing and re-use, as well as on the different ways in which data can be downloaded from Fingertips (for details, see **Section 4: 4.1.13 Download**).

Section 3: Accessing individual Profiles

The following section describes the layout and main features of a single Profile. Profiles most frequently used by our stakeholders can be accessed from the **'Highlighted Profiles'** menu towards the top of the Fingertips main page (see above). Alternatively, all products can be accessed through the list which appears under the **'National Public Health Profiles'** heading. The following examples are taken from a range of Profiles to emphasise the features they all share.

National Public Health Profiles

AMR local indicators	Mental Health, Dementia and Neurology
Atlas of Variation	Modelled Prevalence Estimates
Cancer Services	Mortality Profile
Cardiovascular Disease, Diabetes and Kidney Disease	Musculoskeletal Conditions
Child and Maternal Health	National General Practice Profiles
Health Protection	Obesity Profile
Inequality Tools	NHS Health Check
Inhale - INteractive Health Atlas of Lung conditions in England	Palliative and End of Life Care Profiles
Learning Disability Profiles	Physical Activity
Liver Disease Profiles	Productive Healthy Ageing Profile
Local Alcohol Profiles for England	Public Health Dashboard
Local Authority Health Profiles	Public Health Outcomes Framework
Local Health	Sexual and Reproductive Health Profiles
Local Tobacco Control Profiles	TB Strategy Monitoring Indicators
Marmot Indicators	Technical Guidance
	Wider Determinants of Health
	Wider Impacts of COVID-19 on Health

Each Profile has its own landing page, from which you can learn more about the contents of the Profile, view recent updates and access any Profile-specific supporting materials. The general layout of each individual Profile resembles that of the main Fingertips page. Some Profiles also enable you to readily search for geographies of interest. Data within a Profile can be accessed by clicking on the **'START'** button towards the top right of the page.

Towards the bottom of each Profile page, there are links to other Fingertips products. From there, you can also access **'Site policies'** and information on how to cite Fingertips. Technical faults (i.e. display errors, missing data, etc.) can be easily reported through a pop-up form entitled **'Is there anything wrong with this page?'**. We strongly encourage you to provide feedback, either via this form or through the **'Contact us'** link at the top of each Fingertips page, as this really helps us improve our products and services.

Section 4: Navigating an individual Profile

The main menu of each Profile contains three sections: Data view (1), Geography (2) and Topic (3).

4.1 Data view

Depending on stakeholder needs and the availability of source data, Fingertips indicators can be displayed in a variety of ways. To change data view, click on the ellipsis ('**…**'). From the upcoming list, you can choose the view that is most useful to your needs or investigate the data in more depth by exploring the various views in turn. Please note, not all views are available across all Profiles.

Below is a brief description of all data views available in Fingertips. All views can be downloaded as images, with respective data also available in CSV files.

4.1.1 Overview

'Overview' is the default option in most Profiles. It shows all indicators within a topic in rows and geographical areas in columns. This view is also called a 'tartan rug' and allows the comparison of indicator values across all areas belonging to a group, for example Counties and UAs in a region or GP practices within a CCG (Clinical Commissioning Group). In instances where 'Overview' contains many indicators, you may have to scroll down the screen to see all measures. For indicators where statistical significance can be calculated, data in each cell are colour-coded to show if the measure for a given area is statistically significantly higher or lower or better or worse than the benchmark. The default comparator is the national average, although in most Profiles it is also possible to set sub-national areas (e.g. a region) as the benchmark. Where no statistical comparison is available, values are often shown in shades of blue or purple according to the quintile they belong to.

Typically, cells in the 'tartan rug' show indicator values, although you also have the option to display data as trends or both (i.e. values and trends). Trends are calculated at the 99.8% confidence level (for methodological details, please consult 'Technical guidance'). Trend calculations are carried out if at least five non-overlapping data points are available, and the value is a proportion or a rate. On the 'tartan rug', recent trends are shown as colour-coded arrows, with guidance on the interpretation of the trends appearing at the top of the display. Indicator values can be also sorted using the arrows at the start of each row. By clicking on the arrows in the top row (header), you can sort areas alphabetically. The table can be also sorted by ascending or descending indicator values. To do that, simply click on the arrows in an indicator row.

4.1.2 Compare areas

This view focuses on a particular indicator. Data for all areas within the same group of areas (see **Section 4.2: Geography**) are shown as a bar chart, by default in descending order, with related counts, values, confidence limits and a recent trend marker in a table. Grey arrows in the header allow you to sort the table on any of the following columns: Area, Count or Value.
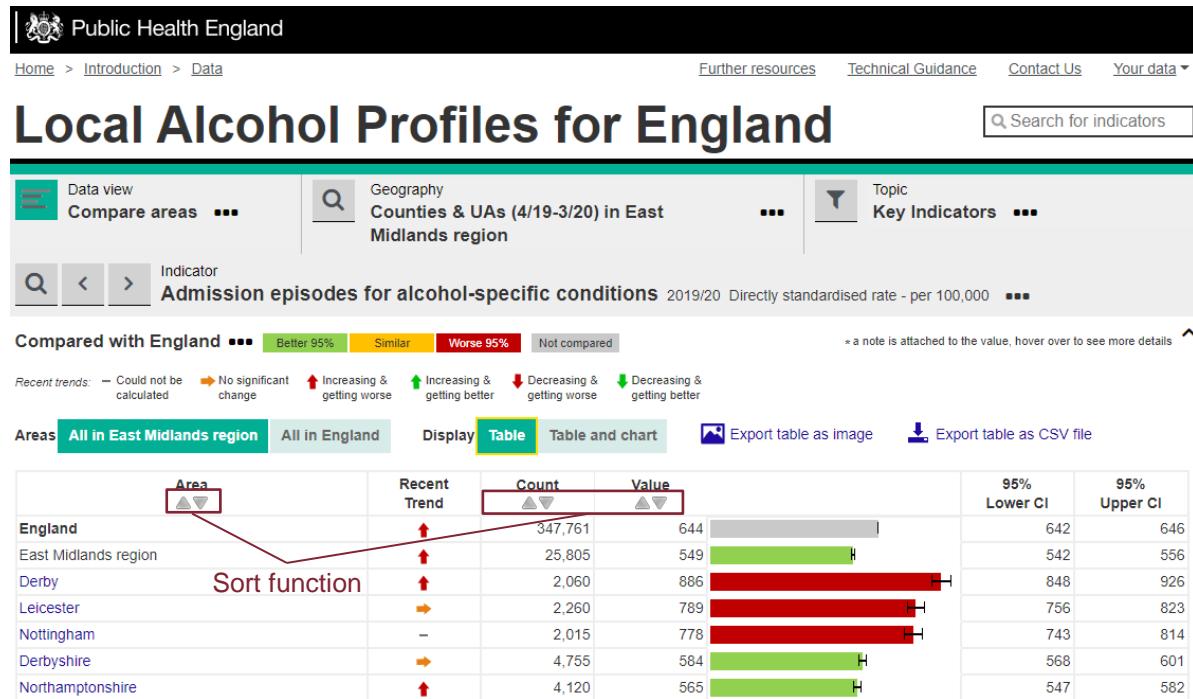
If the display option 'Table and chart' is chosen, for indicators which are proportions (percentages), crude rates or directly standardised rates (DSRs) and where the required data is provided (see below), the page can show funnel plots with points colour-coded depending on whether they are statistically significantly different from the benchmark.

Funnel plots are an example of statistical process control (SPC) methodology. The central horizontal line shows the benchmark, with confidence limits also highlighted on the graph. Where available, the funnel plot is a good way of seeing what is happening with regard to an indicator in the wider area (e.g. a CCG or a region). The example below shows cancer prevalence among all ages, based on QOF returns (Quality and Outcomes Framework). It is fairly easy to see that cancer prevalence in the majority of GP practices in NHS East Lancashire CCG is similar to the CCG benchmark, but still there are some practices where it is significantly higher or lower than the benchmark and, therefore, it may be to focus any investigations on these data points. By hovering over a data point, you can see further details, such as the area name (in this case GP practice), indicator value and the population (in this case GP practice list size).

Further details on funnel plots are available in the [Technical Briefing 2: Statistical Process Control Methods in Public Health Intelligence](). A training video is also available at [https://www.youtube.com/watch?v=0x_RIoL2EB8]()

4.1.3 Trends

This view presents time series data. You can select your area of interest from the 'Geography' menu towards the top of the page (for details, see **Section 4: 4.2 Geography**). The default view is to present trend data for a single indicator, in a single area. By changing the trends option, you can view charts for all geographies in an 'Area grouped by' for one indicator only, or you can visualise all indicators within a Topic (for details, see **Section 4: 4.3 Topic**) for one area at a time by changing the Display options.

Trend charts are accompanied by a data table, which is displayed on the right of the screen. Confidence interval limits are also shown in the tables and error bars indicating confidence intervals can be added to the chart. By hovering over a data point on the chart, you can see the exact indicator value for a given year. For some indicators and/or areas, time series data

are not available, but for many indicators a useful dataset with many time points does exist (e.g. quarterly figures on NHS health checks).
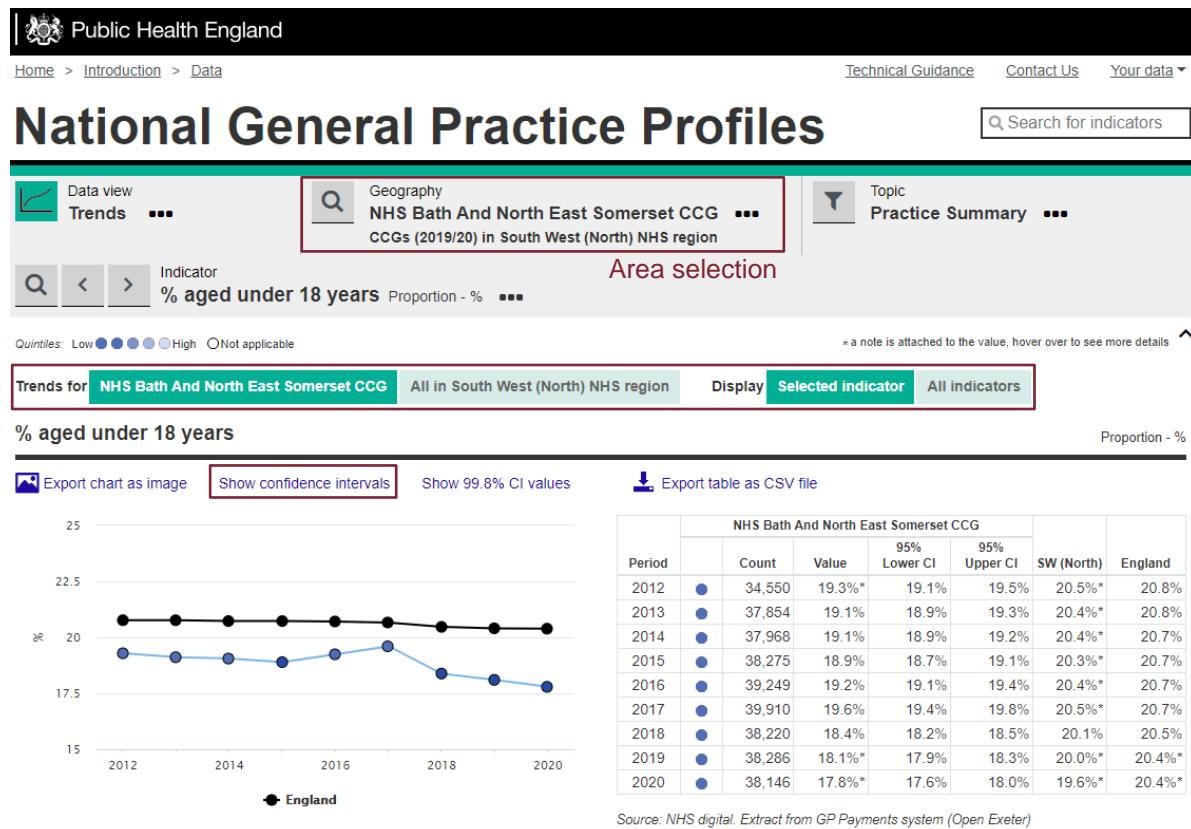
4.1.4 Reports

Where Profiles are accompanied by reports, these are accessible via the Report view. Formats and geographical level of the reports vary, some are web-based summary reports ('at a glance' views) in html format for all indicators contained within the selected Profile, others are in PDF or a Word format.
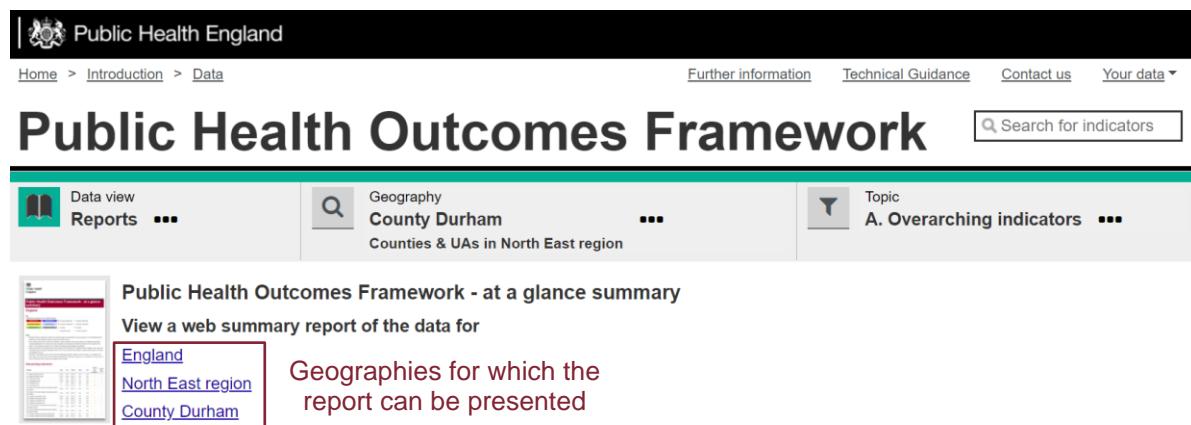
4.1.5 Area Profiles

This view focuses on a single area, for which it produces a table of indicators within a given topic and a display called 'spine chart' that allows you to assess all indicators for the area in comparison to the benchmark and the other areas in an overview.

Typically, the table contains:
- the period the data refers to
- a trend marker
- count for the area (e.g. the number of children in Reception who are obese)
- indicator value for the area (usually a percentage or a rate)
- indicator value at regional and national level
- best/worst or lowest/highest values within the benchmark (i.e. region or England)

To the right of the table, the spine chart with colour-coded points indicates whether the area of interest is significantly different from the benchmark. Hovering over elements of the spine chart will give you more information about the underlying data. When England is selected as the benchmark, a spine chart display is generated for the indicator if at least 70% of the values in England have valid data. This is to prevent the display of spine charts which are misrepresentative due to missing or suppressed data points. On the spine chart, the red vertical line represents the benchmark. The light grey bar shows the range between the worst or lowest and best or highest areas in England or the region (depending on the benchmark selected), with the interquartile range shown in dark grey.
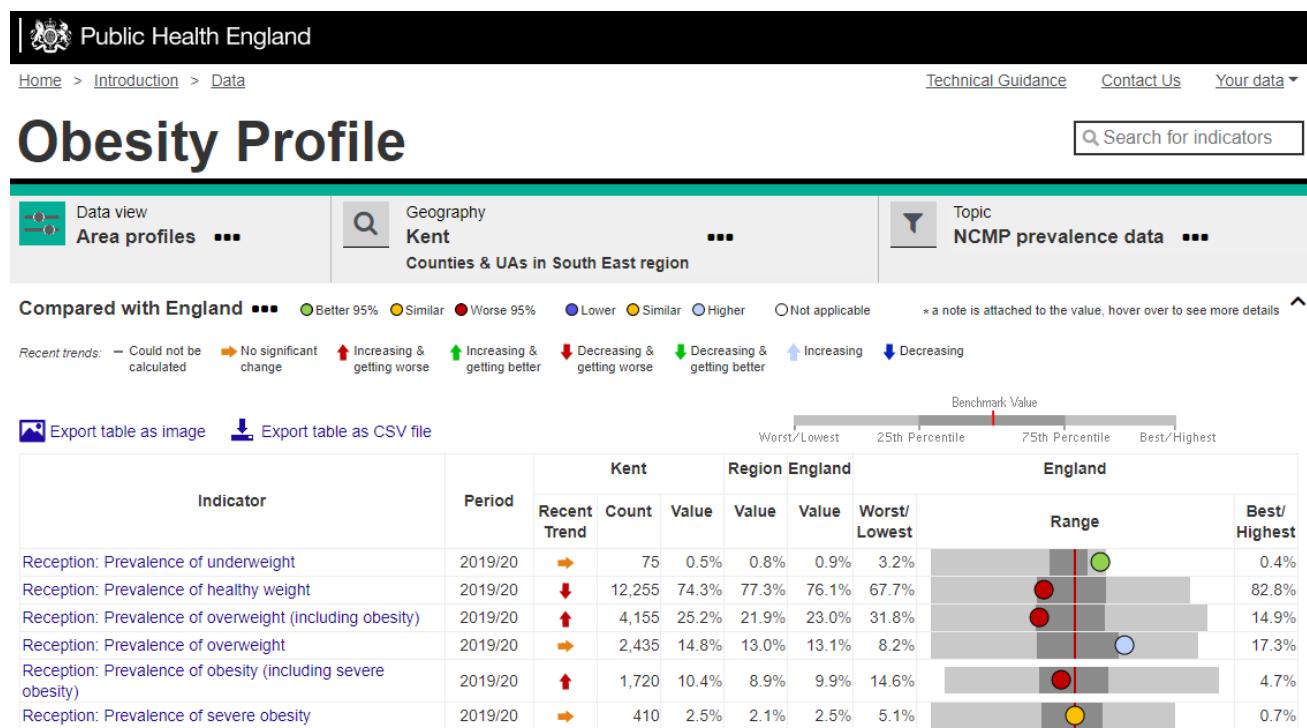
The interquartile range (dark grey bar) is the difference between the 25th and 75th percentile i.e. if all areas' values for an indicator are ranked from lowest to highest the 25th percentile is 25% of the way through the ranking and the 75th is 75% of the way through.

The light grey bar represents the range and skew of the data. If the worst and best values are equidistant from the mean, the light grey bar will extend evenly across the chart. If data are skewed towards the worst or lowest values, the light grey bar will extend to the left. If, on the other hand, the data are skewed towards the best or highest values, the light grey bar will extend to the right-hand side. Where possible, dots are colour-coded to show if the local value is statistically significantly different from the benchmark.

Indicator	Period	Kent			Region	England		England		Best/Highest
		Recent Trend	Count	Value	Value	Value	Worst/Lowest		Range	
Reception: Prevalence of underweight	2019/20	➡	75	0.5%	0.8%	0.9%	3.2%			0.4%
Reception: Prevalence of healthy weight	2019/20	⬇	12,255	74.3%	77.3%	76.1%	67.7%			82.8%
Reception: Prevalence of overweight (including obesity)	2019/20	⬆	4,155	25.2%	21.9%	23.0%	31.8%			14.9%
Reception: Prevalence of overweight	2019/20	➡	2,435	14.8%	13.0%	13.1%	8.2%			17.3%
Reception: Prevalence of obesity (including severe obesity)	2019/20	⬆	1,720	10.4%	8.9%	9.9%	14.6%			4.7%
Reception: Prevalence of severe obesity	2019/20	➡	410	2.5%	2.1%	2.5%	5.1%			0.7%
Reception: Inequality in the prevalence of obesity (including severe obesity)	2019/20	–	-	-	7.5%	7.9%	-		Insufficient number of values for a spine chart	-

Benchmark

Interquartile range (i.e. middle 50% of values)

Range of the data. In this example, Kent is 'doing well' in relation to the first indicator when compared to the benchmark (i.e. England). However, the light grey bar is skewed towards the left, indicating a large spread of values across areas in the first quarter of the ranking.

For a training video on spine charts see: https://www.youtube.com/watch?v=480Mswgcg8M

4.1.6 Compare indicators

This view allows you to create a scatterplot and examine if there is a correlation between two indicators. You can choose indicators through a keyword search (click on the magnifying class icon), a selection from the menu (click on the **<** and **>** arrow), or by picking them from a list (click on the ellipsis ('**…**')).
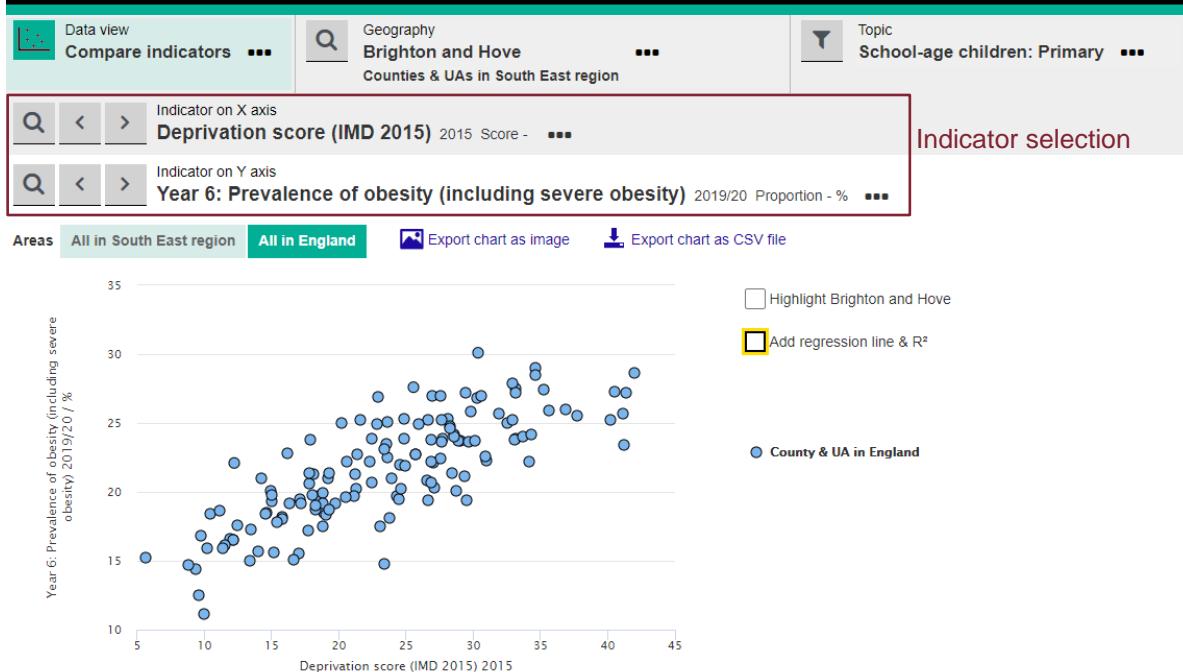
For some area types (e.g. Counties), you can choose if you want to display all areas in England or only show the 'Area grouped by', for example a single region. By ticking the top box next to the scatterplot, you can highlight your area of interest. You can also add a regression line to the graph and see the R^2 value, which shows how strong the correlation is. If the correlation is weak ($R^2 < 0.15$), neither the trend line nor the equation will be shown and instead, an explanation will appear on screen. Hovering over any data point on the scatterplot gives you the name of a given area as well as indicator values on X and Y axis, respectively.
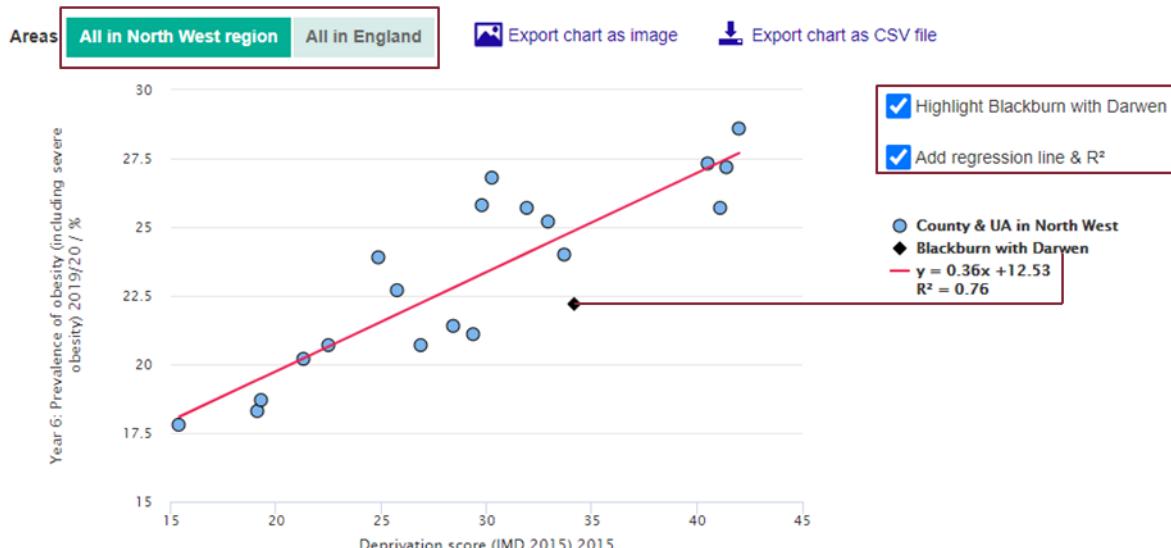
4.1.7 Population

A population pyramid shows the area's population in five-year age bands for males and females. Comparison lines for higher-level geographies (i.e. the 'Areas grouped by' option) and England are also shown. A population age profile for the area selected is also available in a tabulated form below the population pyramid. Depending on the Profile, this view shows either the GP registered population or the resident population for the area selected.
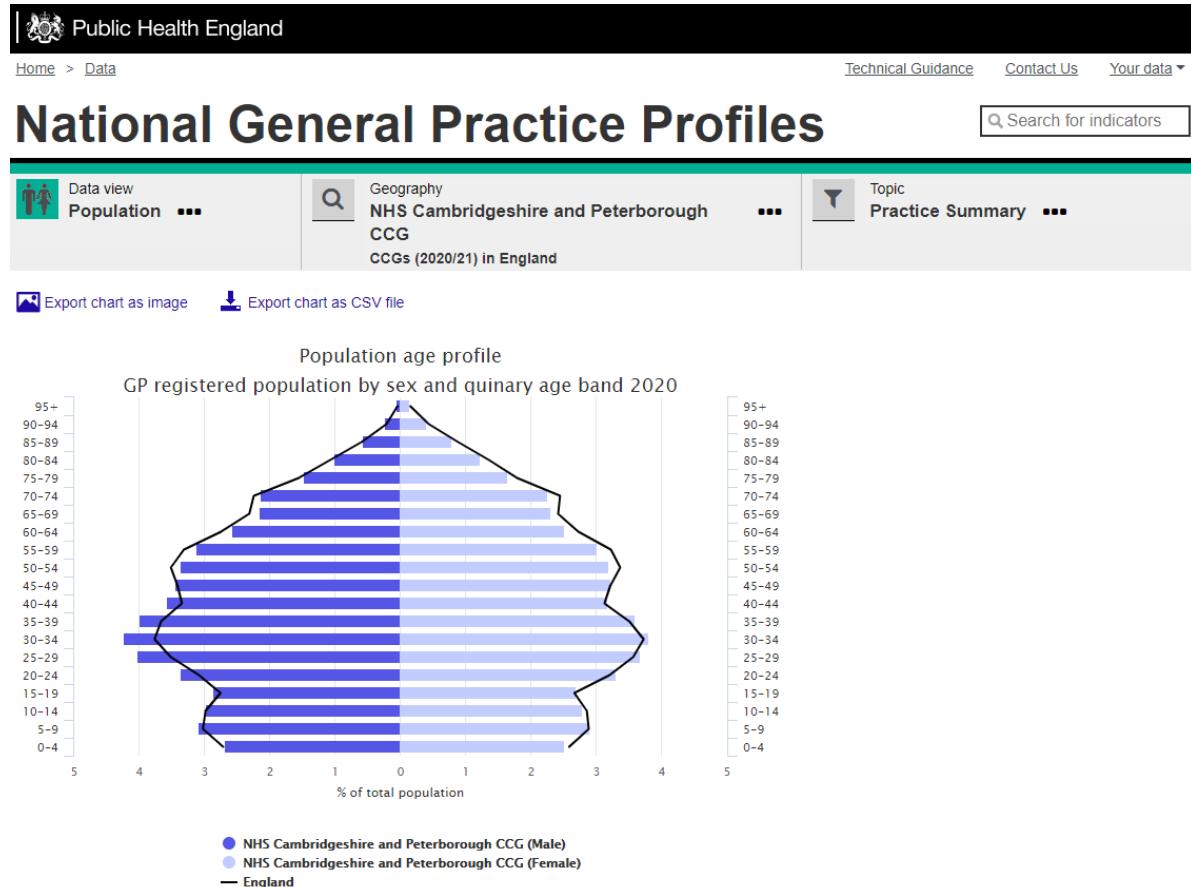

4.1.8 Definitions

For each indicator, there is a set of metadata showing e.g. the data source, methods applied, caveats, etc. If more detailed information about the indicator is required, you can consult Profile-specific documentation (if available) or contact ProfileFeedback@phe.gov.uk.

4.1.9 Inequalities

For many indicators, stratified data are available. The categories on offer vary greatly between indicators and range from various ethnic breakdowns, deprivation, to sexual behaviours, etc. Age band and gender splits are often available, too. In this tab, all available options are offered and related categories are shown together on a bar chart. In most cases, the categories are only available for England. The timeline across the top shows all periods covered by the data for which the selected inequality option is available (here: from 2016 to
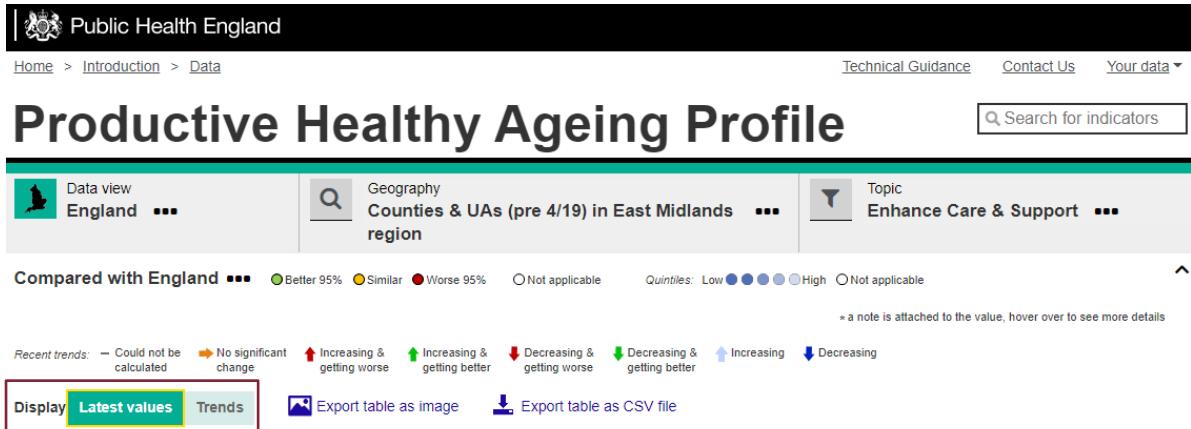
2019 incl., within a time series reaching from 2011 to 2019). By default, data are displayed for a single time period. Depending on the source data, it may be that other inequality options are available for more/less years within the time series. The overall area average is shown as a comparator line as well, where applicable.
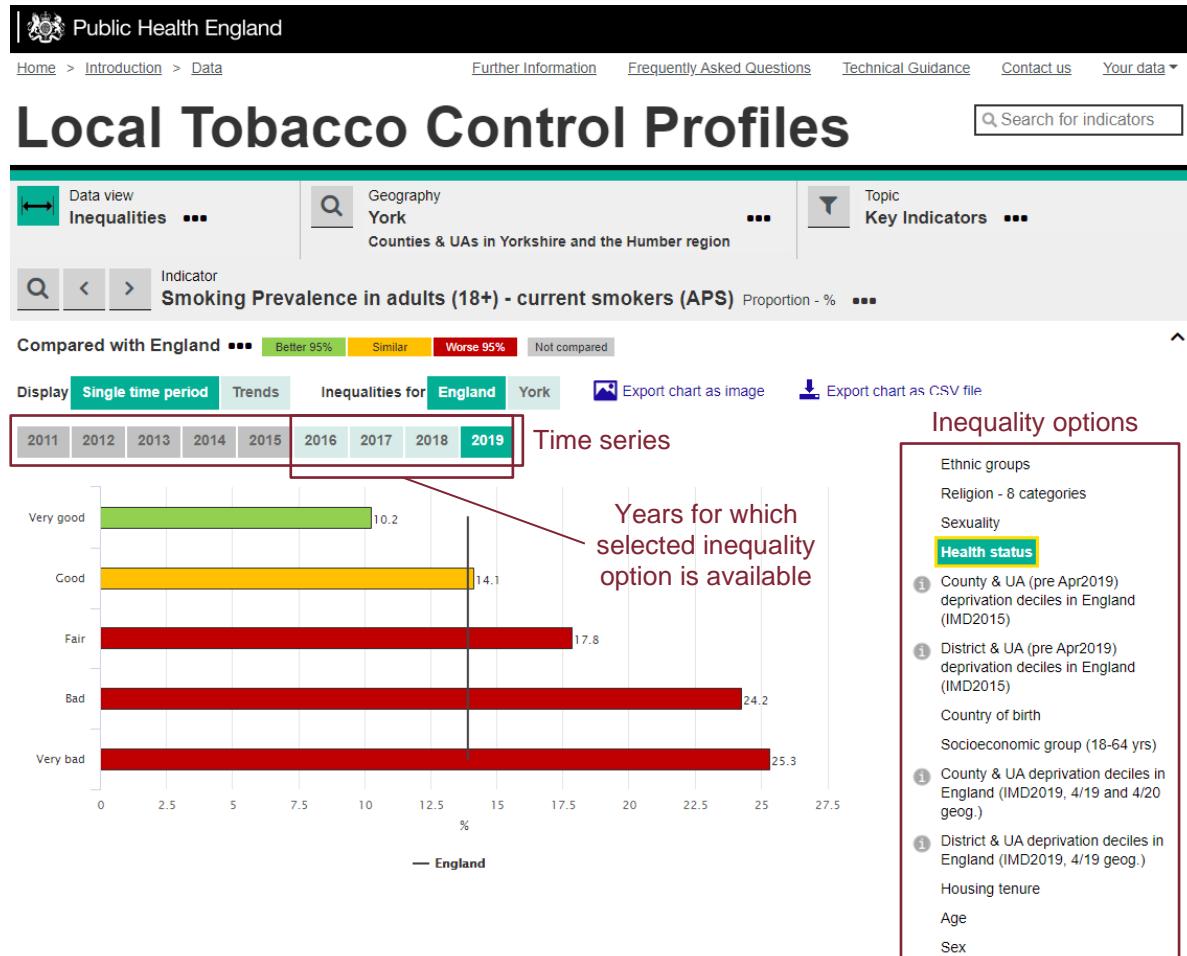
4.1.10 England

This view presents the latest values or trends for an indicator for England on its own. By default, latest values are displayed in a table with all indicators from a given topic. Table fields include period, count, indicator value, a recent trend marker and an indication of change compared to the previous time period, also called the 'direction of travel'.

You can also choose to display trends for England, either for the single, selected indicator or for all indicators in a given topic. Alongside the data table, a trend chart is displayed. The England data view is particularly useful for a general overview and very popular as a downloaded image for reports.

Productive Healthy Ageing Profile

Q Search for indicators

Data view **England** •••	Geography **Counties & UAs (pre 4/19) in East Midlands region** •••	Topic **Enhance Care & Support** •••

Compared with England •••   ● Better 95%   ○ Similar   ● Worse 95%   ○ Not applicable   *Quintiles:* Low ●●●●○ High   ○ Not applicable

» a note is attached to the value, hover over to see more details

Recent trends: — Could not be calculated   ➡ No significant change   ⬆ Increasing & getting worse   ⬆ Increasing & getting better   ⬇ Decreasing & getting worse   ⬇ Decreasing & getting better   ⬆ Increasing   ⬇ Decreasing

Display **Latest values** Trends   🖼 Export table as image   ⬇ Export table as CSV file

All indicators in the 'Enhance Care & Support' topic	Period	England count	England value	Recent trend	Change from previous time period
Falls & Fractures					
Emergency hospital admissions due to falls in people aged 65 and over	2019/20	234,793	2,222	⬆	⬆
Emergency hospital admissions due to falls in people aged 65-79	2019/20	77,427	1,042	⬆	➡
Emergency hospital admissions due to falls in people aged 80+	2019/20	157,366	5,644	⬆	⬆
Hip fractures in people aged 65 and over	2019/20	60,575	572	⬇	⬆
Hip fractures in people aged 65-79	2019/20	17,772	240	➡	➡
Hip fractures in people aged 80+	2019/20	42,803	1,534	⬇	⬆
Osteoporosis: QOF prevalence (50+)	2019/20	187,810	0.9%	⬆	⬆
Independent Living Support					
Percentage of people aged 65 and over offered reablement services following discharge from hospital.	2019/20	43,335	2.6%	➡	⬇
Percentage of people aged 65 and over who were still at home 91 days after discharge from hospital	2019/20	35,536	82.0%	➡	➡
Percentage of people aged 65 and over using social care who receive self-directed support, and those receiving direct payments	2019/20	248,603	91.6%	➡	⬆
Social Care Service User & Carer Experience					
Percentage of adult social care service users satisfied with care and support services, age 65+	2019/20	225,205	61.5%	—	➡

4.1.11 Box plots

Box plots provide a quick and clear idea of the overall changes to the distribution of values of the selected indicator over time. It is a simple way to show the variability of an indicator (how wide are the ranges between the bars, how big are the 'boxes') and if a distribution is skewed (where lies the median?). The chart is drawn based on the selected area type (i.e. GPs, CCGs, etc.). By default, box plots are shown for England.

In the example below, they show the distribution of values for all GPs in England, although it is also possible to view box plots for GP practices only in the selected CCG (e.g. NHS Morecambe Bay CCG). Choosing a different area type to group areas by will influence the range of values (i.e. the size of the box and extent of the bars are smaller when the values are less extreme because they are based on larger populations).
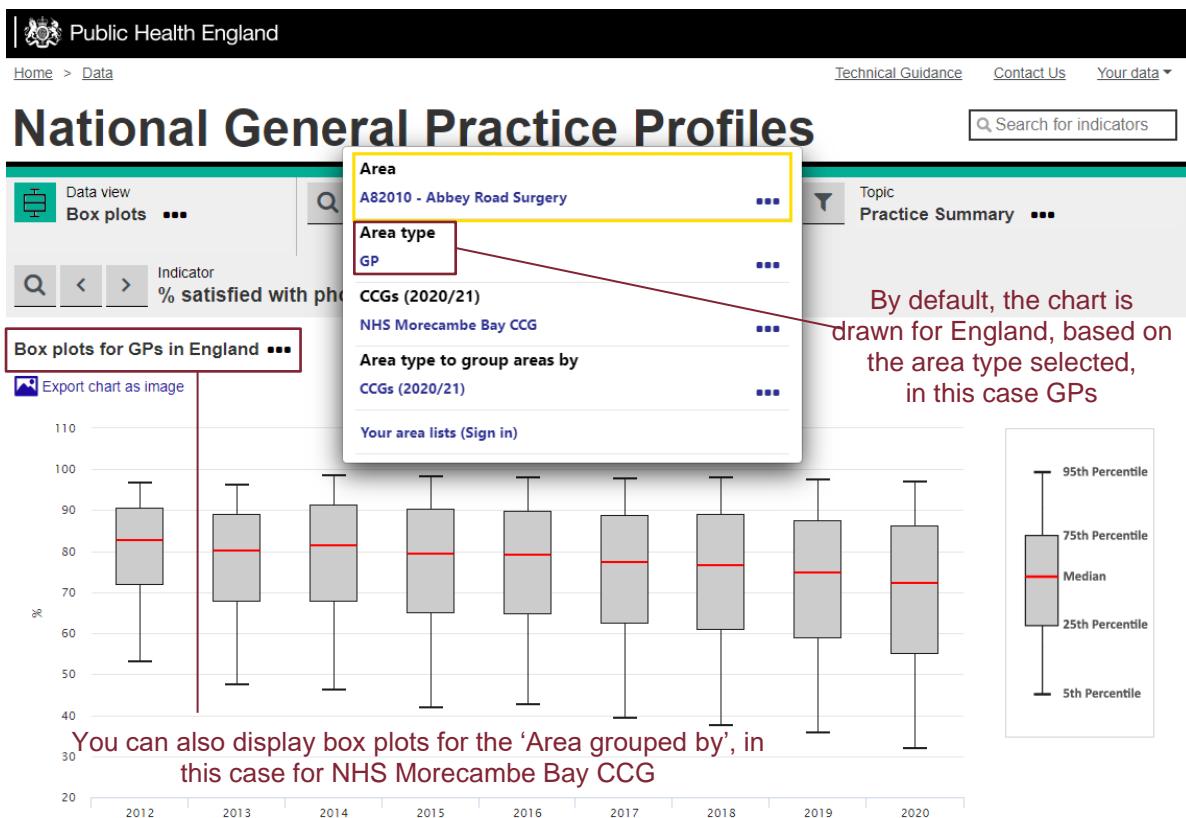
4.1.12 Map

Where possible, Fingertips lets you display data on a map. By default, maps use the same colour scheme as all other data views (i.e. red-amber-green (RAG) or blue-orange-blue (BOB), based on the comparison with benchmark), although you can also choose to display data as quartiles, quintiles or on a continuous scale. You can also add contextual layers, adjust transparency or zoom in and out of the map by clicking on **'+'** and **'-'** signs, respectively.

By clicking on the area(s) of interest, you can create a data table listing the selected area(s), count, indicator values and confidence limits. As well as that, all area values are sorted and displayed in a column chart below. By default, the chart contains a line for the benchmark value, too. Hovering over the columns on the chart gives you more details about an area, including its rank.
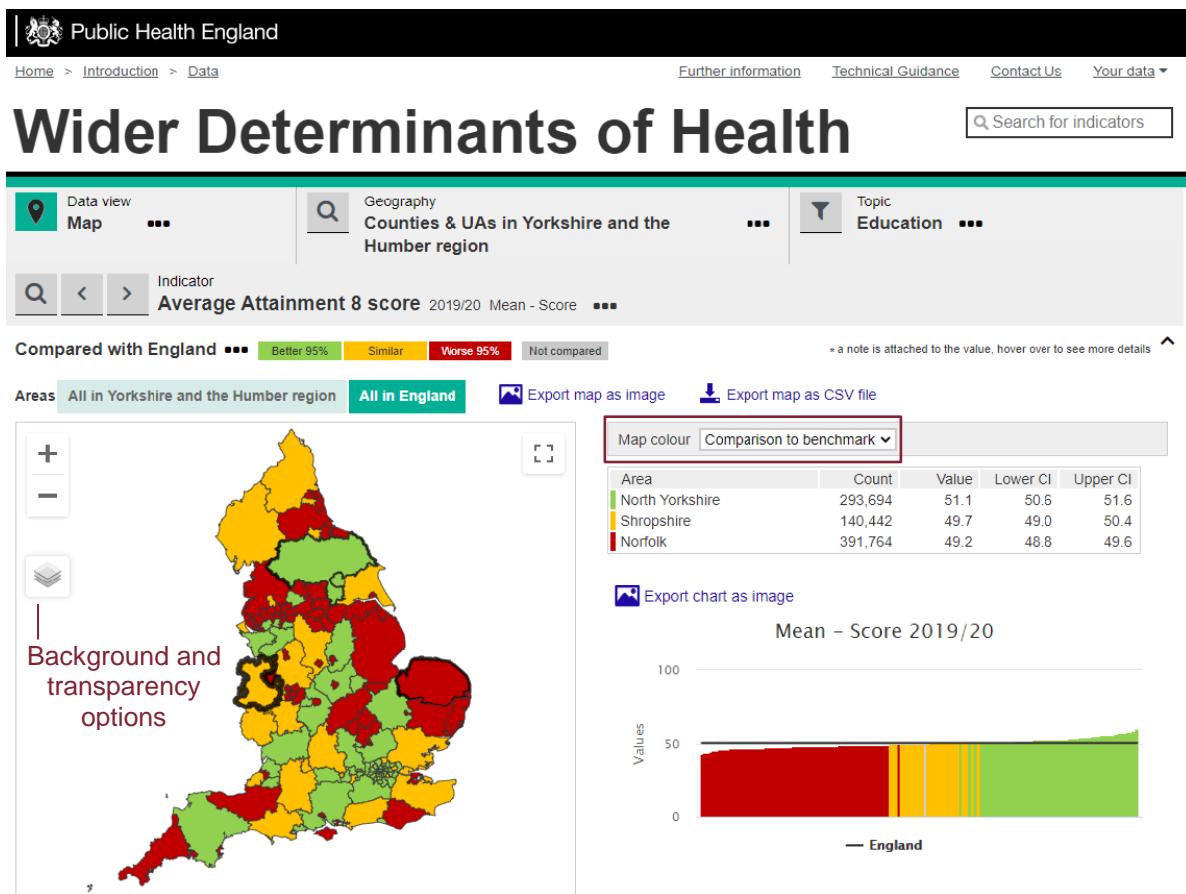
4.1.13 Download

Data contained in all Fingertips Profiles can be downloaded as CSV files. You can choose to download data for the selected geography, the grouping area or for England. Alternatively, all indicators within a topic or even the entire Profile can be downloaded.

You can also retrieve all public health data via Fingertips API (best viewed in Chrome, Firefox or Safari). Our API offers more flexibility than a traditional download of a CSV file. By embedding 'Request URLs' generated by the API, you can get real time data straight into your interactive reports, e.g. in Power BI (for details, see **Section 6: Fingertips API**).

Users more interested in programming can connect to the API from within a programming environment via our dedicated packages: fingertipsR (R users) and fingertips_py (Python users).

4.2 Geography

This menu helps users focus their data search on an area of interest. For most indicators, Fingertips holds data at different geographical levels and offers more than one area grouping option. Therefore, you need to set some parameters to arrive at your desired geography. Start by selecting the right **'Area type'** (1) (in our example: District & UA 4/19 – 3/20), then choose a suitable **'Area type to group areas by'** (2) (in our example: Region). The next step is the selection of a specific **'Grouping option'** (3) (in our example: North East region), followed by the top-most option – **'Area'** (4), which will now be populated with all relevant options (in our example: Districts & UAs of the North East), from which you can select your area of interest (in our example: County Durham). Depending on the availability of data, areas can be grouped by region, CCGs, NHS region, ONS groups, deprivation deciles, etc. The default option for statistical comparisons is England, however most Profiles also allow to benchmark against other grouping options (click on the ellipsis (**'...'**) next to 'Compared with England').

In some cases, Fingertips also lets users present data for the selected area alongside its 15 nearest neighbours (CIPFA) or 10 most similar CCGs (where the area type is set to CCGs since 4/20). Because each area (whether it is an administrative or a health geography) has its own ranked set of neighbours, these are offered as a separate option in the Geography menu. You can return to the area navigation page by clicking 'Exit nearest neighbours'.

4.3 Topic

Within each Profile, indicators are grouped thematically into 'Topics'. You can explore available topics by clicking on the ellipsis (**'…'**) in the Topic menu.

A list of topics available in the National General Practice Profiles

## 4.4 Statistical significance and colour-coding

Wherever possible, indicator values are colour-coded to enable a quick visual interpretation of the display. Colours red, amber and green (RAG-rating) as well as amber between the two shades of blue show if a measure for the selected area is statistically above or below the benchmark or if it is similar (amber). The default comparator is the national average, although this can be changed to a sub-national grouping. For some indicators, a data quality flag is provided to alert users to potential concerns about the data used to produce the indicators.

Where statistical testing is not performed, indicator values are often presented as quintiles (see below) or left without comparison. In most cases this is because the raw data used to calculate the indicator, and which are necessary to undertake statistical comparison, were not available, or the necessary benchmark value could not be obtained.

The five shades of purple represent values for which a judgement is made (best or worst), whereas blue shading is applied based on the value alone (low or high). In other words, blue shading is used when it is not appropriate to say that a high or low value is good or bad, e.g. for demographic or descriptive indicators.
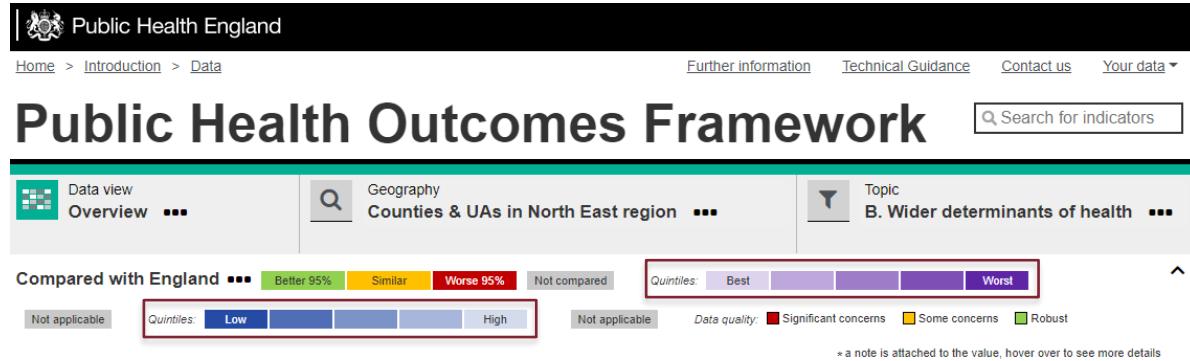
Section 5: Your data

Fingertips allows you to set up your own, personalised Profiles. A simple authentication is required to ensure users can access their lists from any computer.

5.1 Your indicator lists

Indicator lists allow you to view data for your specific choice of Fingertips indicators. Data for indicators from a bespoke list are presented just like any other Fingertips Profile. The selected indicators are stored under a chosen heading and links to them can be shared with others. Indicator lists can be viewed by clicking on the View option in the set-up tool or by following a stored link.

Create new indicator list

Search for indicators to add to your list

Indicator list name

list_example

Restrict search to

ALL PROFILES

Save list   Cancel

Search   Reset

Bespoke list of indicators created from three different Profiles

Select indicators to add to your list
⊕ Atrial fibrillation: QOF prevalence
⊕ CHD: QOF prevalence (all ages)
⊕ CKD: QOF prevalence (18+)
⊕ COPD: QOF prevalence (all ages)
⊕ CVD-PP: QOF prevalence (30-74)

Indicators in your list	
⊖ Long-Term Unemployment- rate per 1,000 working age population	≡
⊖ Asthma: QOF prevalence (all ages)	≡
⊖ Drinking in early pregnancy	≡
⊖ GP patient survey: smoking prevalence	≡

5.2 Your area lists

You can also set up your bespoke area lists, provided that your selected geographies belong to the same area type. Areas to be added to the list can be selected from a map, a list or they can be searched for using free text entries. Where data and value type(s) allow, an average indicator value for the bespoke area list is also presented. This is an ideal solution for situations where, for example, proposed future entities need to be investigated or you are interested in area aggregates that are otherwise unavailable (i.e. they do not follow official organisational structures).

Signed-in users can select their area lists from the 'Geography' menu. To do that, you should first set the correct grouping preference (i.e. same area type as in their bespoke area list).

Select the same area type as in the area list and click here to view data for areas on your bespoke list

5.3 Creating bespoke Profiles

Indicator lists and area lists can be combined and used to present completely bespoke Profiles.

Section 6: Fingertips API (Application Programming Interface)

Fingertips API (best viewed in Chrome, Firefox or Safari) can be found at https://fingertips.phe.org.uk/api. It allows you to retrieve public health data in either JSON or CSV formats. By embedding 'Request URLs' generated by the API, you can get real time data straight into your interactive reports, e.g. in Power BI. **A beginner's guide to the Fingertips API** is also available, together with the **supporting Annex**.

Users more interested in programming can connect to the API from within a programming environment via our dedicated packages: fingertipsR (R users) and fingertips_py (Python users).

Contact us

Your feedback helps us improve the quality of our products and services. Please contact us at ProfileFeedback@phe.gov.uk if you have any questions or comments about this guide or the Fingertips tool itself.

Version control

Version	Author	Date	Notes
1.0	Maciej Dobras	April 2021	First version
1.1	Maciej Dobras	June 2021	Minor edits