CRUK GP Bowel Screening Tool User Guide

March 2025

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CANCER RESEARCH UK

How to use and interpret the CRUK GP Bowel Screening Tool

This tool models how socio-demographic factors may impact screening coverage in England, and how our models' predictions are compared to the actual screening coverage of each GP practice area.

This short guide:

- explains what information is found in the tool
- supports your navigation of the tool
- explores a few examples of the types of results you might find
- explains how the tool can help you to identify evidence-based improvements and interventions for your local population.

This guide is split into four sections:

1. Background & Purpose
2. ICB Level Data View
3. Practice Population Data View
4. Supporting Materials for Interventions

1. Background & Purpose

We know that socio-demographic factors can affect screening coverage. We produced this tool to look at the impact of these factors on screening coverage at a local level within systems. We have been able to do this because data on screening coverage is reported according to the GP practice at which people invited for screening are registered. This is generally considered to be a proxy for other information, such as where people live or the level of deprivation in their area, but this does not imply that screening coverage is the sole responsibility of the GP practice.

This tool models how socio-demographic factors may impact screening coverage to produce an estimated local level which is then compared to the actual screening coverage of each GP practice area. This could help identify populations where screening coverage is higher, lower or similar to the level that their socio-demographics would predict, and therefore help systems identify the right strategies to increase screening coverage in those areas. This tool can also provide an idea of where systems may want to target resources when used in conjunction with local knowledge.

This tool looks at coverage for bowel screening, rather than uptake. Coverage is the proportion of the eligible population that is screened and has a result documented. By looking at coverage, the data will be less affected by short-term changes to the data and should allow a more accurate estimated level of screening, rather than using uptake which looks at those screened within 6-months of an invitation.

For further information on the exact modelling used please see the Methodology tab along the top of the tool.

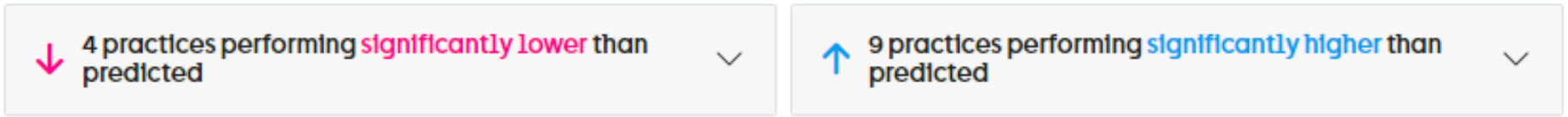
This narrative and guidance document can support your navigation and interpretation of the tool. It covers what each view shows and how you might use it locally. We will also link through to other resources that may support you to identify evidence-based improvements and interventions for your local population.

The link to the tool is here: https://crukcancerintelligence.shinyapps.io/GPBowelScreeningTool/

2. ICB Focus Section

The first section of this tool is the ICB Focus section. Here you will be asked to select the ICB you would like to view the data for, by typing in this box or selecting from the drop-down list.

Once an ICB has been selected, the tool highlights practices where the level of population coverage is higher or lower than the model predicted. By clicking the highlight boxes, you can see a list of practice areas and click the area name to highlight it within the tool.



In any of the ICB level views you can hover your mouse over a bar to see the name of the GP practice represented. You can also click on 'higher', 'lower' or 'similar' in the legend at the bottom of the graph to filter which types of practice you want the graph to hide/show.

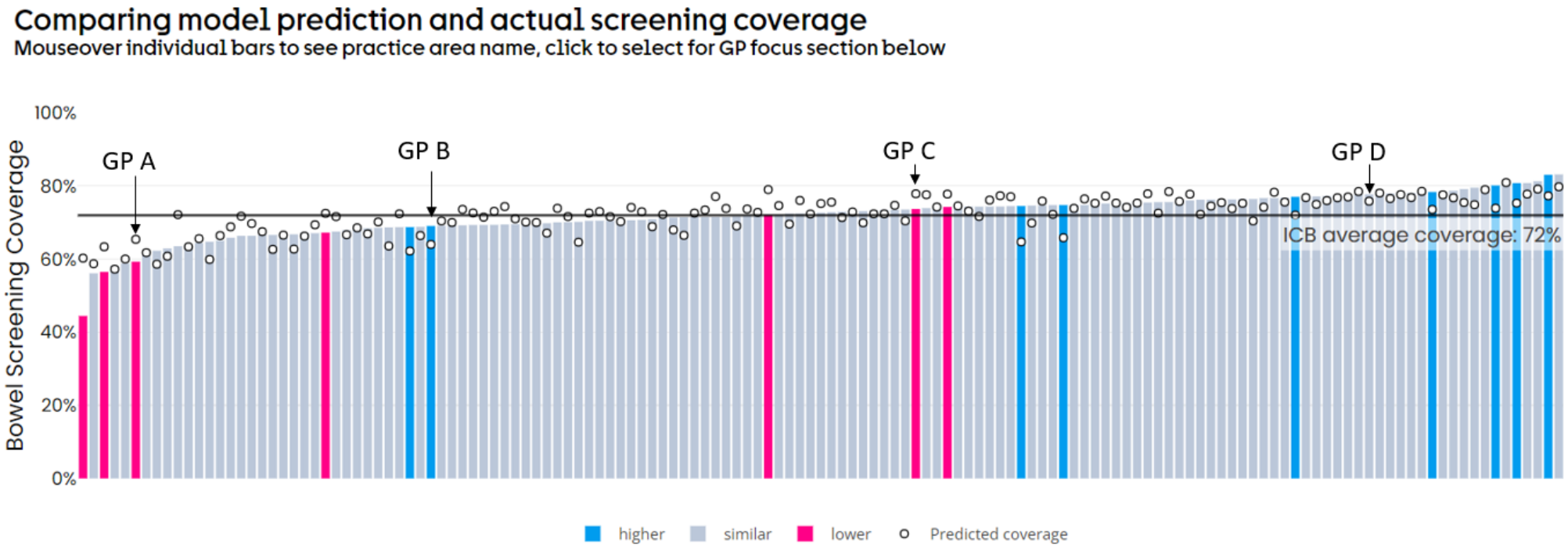


Figure 1: This graph shows an ICB-level view, with each GP practice within that ICB displayed as a bar. Please note for this analysis only GPs with a list size of over 1,000 have been included. We've annotated a few GP practices to explain what this data shows.

On each of these graphs you can click and drag over an area of the chart to zoom in, or use the plus and minus buttons that appear in the top right corner of the chart when you hover your cursor over it. The house button in the top right corner will reset your view if you have zoomed in.

GP A

GP A is highlighted in pink, which indicates the practice area's screening coverage is statistically significantly lower [1]than our model

[1] When a difference is described as statistically significant, it means that confidence intervals calculated on this difference do not overlap. For further information on statistical significance and confidence intervals, please see the 'Methodology' tab of the tool.

estimated it would be based on local factors. We can also see GP A's screening coverage is below the ICB average of 72%, as indicated by the horizontal bar.

This could mean GP A could benefit from some local interventions or support from their ICB or PCN.

GP B

In contrast, GP B is highlighted in blue, which means that the area's screening coverage is higher than our model estimated it would be based on local factors. This may be because the GP is in a more deprived area, or has a small population of screening age, which this model would take into account when estimating coverage.

While GP B is still below the ICB average, it may have some positive practice in place that practice area A could benefit from.

GP C

GP C is highlighted in pink which means that, although the practice area's coverage is higher than the ICB average, the screening coverage is not as high in the population as we would expect based when local demographic factors are taken into account.

This means they might not be an area for immediate ICB prioritisation, but there may be improvements that could help this area achieve even higher screening numbers.

GP D

GP D is performing approximately as our model calculated it would, so is highlighted in grey. It's worth noting that practices highlighted in grey may be above or below the ICB average, or other performance targets. Therefore, it's important to view this tool alongside other local data when making decisions about areas to support with their bowel screening.

In the top-right corner of the chart of GP practices by predicted performance, there is also a button to allow you to order the graph by the model's predicted coverage for each GP practice.

Please note the coverage data in this tool is currently financial year 2022/23.

Standardised screening ratio chart

This chart is useful to understand how big the difference is between the model's prediction and the observed screening levels.

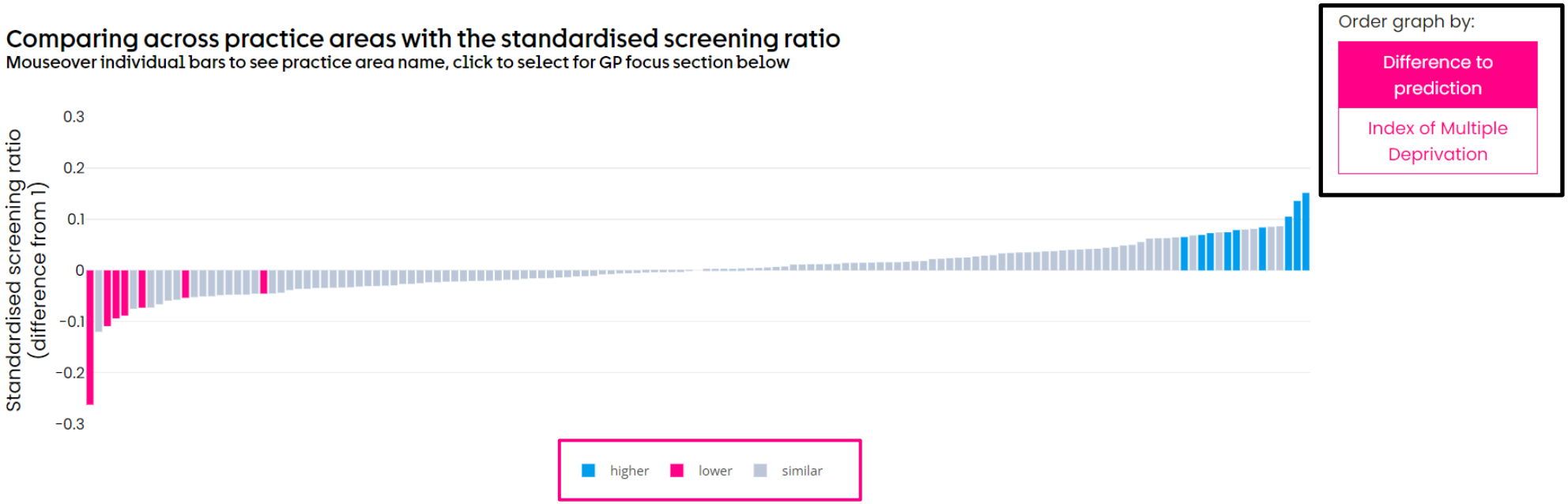


Figure 2: The next view seen in the tool is this view, which looks at the difference from 1 in our standardised screening ratio (SSR)

The SSR is the observed coverage divided by the predicted coverage for a practice area. If a practice screens the same number of people as our model predicts, then the standardised screening ratio would be 1. This graph is showing the difference above or below a SSR of 1, so how big the difference between the prediction from our model is to each practice's actual coverage. SSR should be considered alongside list size in order to understand potential room for improvement, for example a large negative SSR may be calculated for a small practice so the number of unscreened patients is not as high as a larger practice with a smaller negative SSR.

This might be a useful starting point for considering which local areas might be a priority for further support or learning.

In any of the ICB level views you can hover your mouse over a bar to see the name of the GP practice local to a population represented. You can also click on 'higher', 'lower' or 'similar' in the legend at the bottom of the graph (highlighted here in a pink rectangle) to filter on which types of practice you want the graph to show.

This chart can also be ordered by Index of Multiple Deprivation (IMD) quintile by clicking the toggle in the top right corner (here highlighted in a blue box).

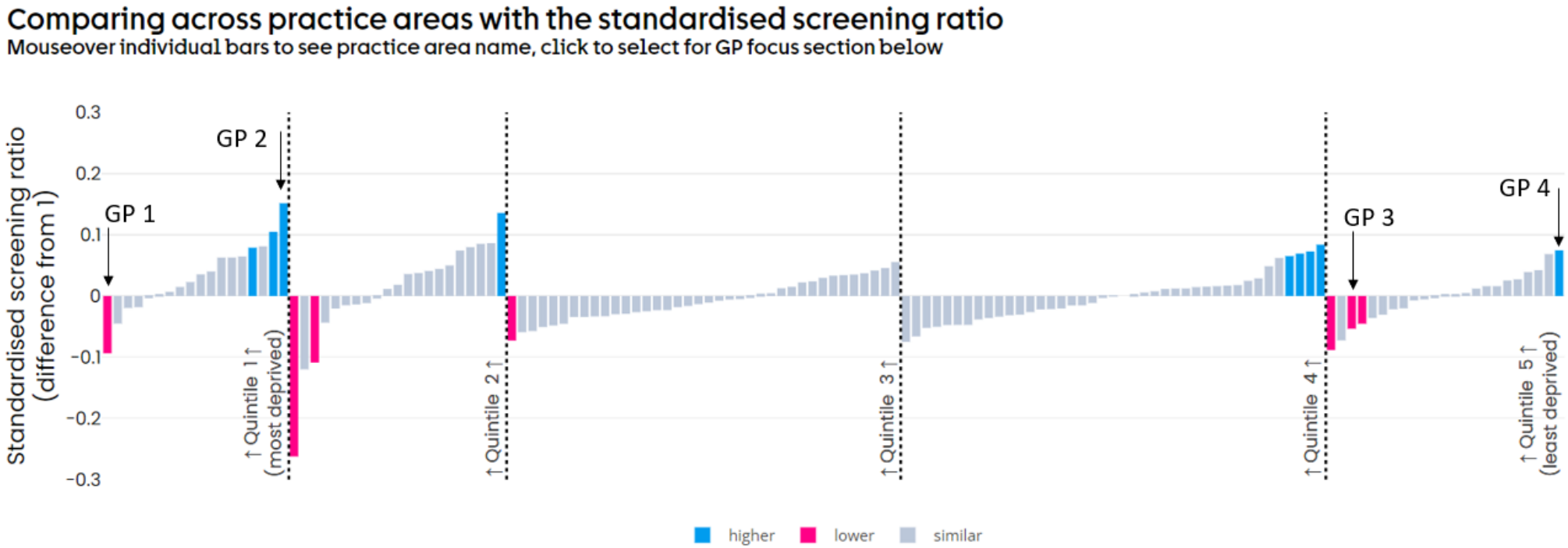


Figure 3: The above chart shows the practices grouped by their IMD quintile and then ordered by their difference from one in the standardised screening ratio. As in the above graphs those practice areas highlighted in blue represent where areas are performing statistically significantly higher than our model estimated, and those in pink below what our model estimated. Again, we have highlighted a few practices to explore what this may mean for local context.

Having selected the option to order this graph by Index of Multiple Deprivation (IMD), the chart will automatically group the practice area's according to their IMD quintile as seen in figure 3. Using this chart, we can see that GP 1 is in the most deprived quintile, and has significantly lower bowel screening coverage than our model predicts.

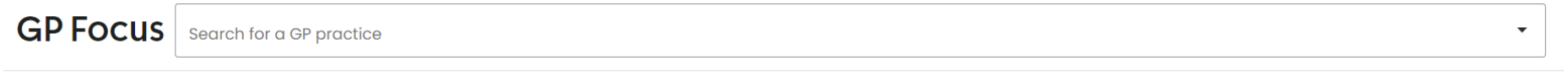
In contrast, GP 2 is also in the most deprived quintile but is screening statistically significantly more people than our model estimated. This could mean that from an ICB-view there may be positive learning or campaigns taking place in the practice area of GP 2 which could be positive to share or look to implement within GP practice area 1. These interventions may be more applicable as they have some overlap with populations in terms of their level of deprivation.

Similarly in the least deprived quintile we can see there is GP 3 screening fewer people than our model expected, while GP 4 screened more than expected. This may also be an opportunity for sharing learning and best practice at a local level to find improvements that work for local populations.

It's important to remember than any of the above practices may be performing above or below national performance targets. While our tool may help in identifying areas needing support or areas showcasing best practice, it is always important to understand the unique individual context each area is experiencing. Absolute coverage is also important to keep in mind when reviewing this data to avoid reinforcing inequalities and ensuring bowel screening is being made as accessible to all communities as possible.

3. Practice Population Level Data View

Below the ICB level view, you will come to a GP level view. You will be asked to search for the GP you would like to view the data for, by typing in this box or selecting from the drop-down list.



This will then populate the below table and chart with the data for your selected GP practice population. You can also select a GP by clicking on the any of the bars in the ICB level views. Selecting a GP from the above menu will also then highlight that practice on the ICB level view charts.

The bowel screening coverage for this practice is **significantly lower** than our model's prediction for this practice. In other words, similar patient populations to this practice would usually have a higher bowel screening coverage.

Out of **1,160** people eligible for screening, **655 (56.5%)** people were screened while our model predicted **735 (63.4%)**, a difference of **80 people.**

The predicted bowel screening coverage for your practice is based on the following information:

Practice list size	10,599
Practice population aged 60-74 year olds	11%
Proportion of 60-74 year olds that are male or female	Male: 51% Female: 49%
Proportion of local area residents who are White British	60%
Deprivation decile	3 (IMD score 29)
Practice's rural/urban classification	C1: City & Town

Figure 4: The above table shows the details that can populate for a practice. We can see the above practice area is screening fewer people than our model predicts based on coverage, with a difference of about 80 people to what the model estimated. This could serve as a target when implementing interventions, or to just give a scale of the gap between actual and estimated coverage.

You will also be able to see the coverage percentage for your area, which could be compared to the ICB average above, or national performance targets.

There is also a further GP-specific breakdown of the practice list size, proportion of population aged 60-74, split by sex, proportion of residents who are white British in the GP area, the deprivation decile and IMD score, and the practice's rural/urban classification. All of these factors could influence the type of interventions you may want to consider implementing to improve screening coverage for bowel cancer. We are exploring a future version of the tool that will help quantify the contribution each of these factors may make to the level of coverage in each population area. In the next section [Supporting Materials for Interventions] we will cover how you might want to explore population-focused, evidence-based interventions in this space.

Please note that we currently do not have demographic data for; homelessness, learning disabilities and severe mental illness, granular ethnicity split, etc. factored into our model. Please use existing local data and knowledge to support your use of this tool.

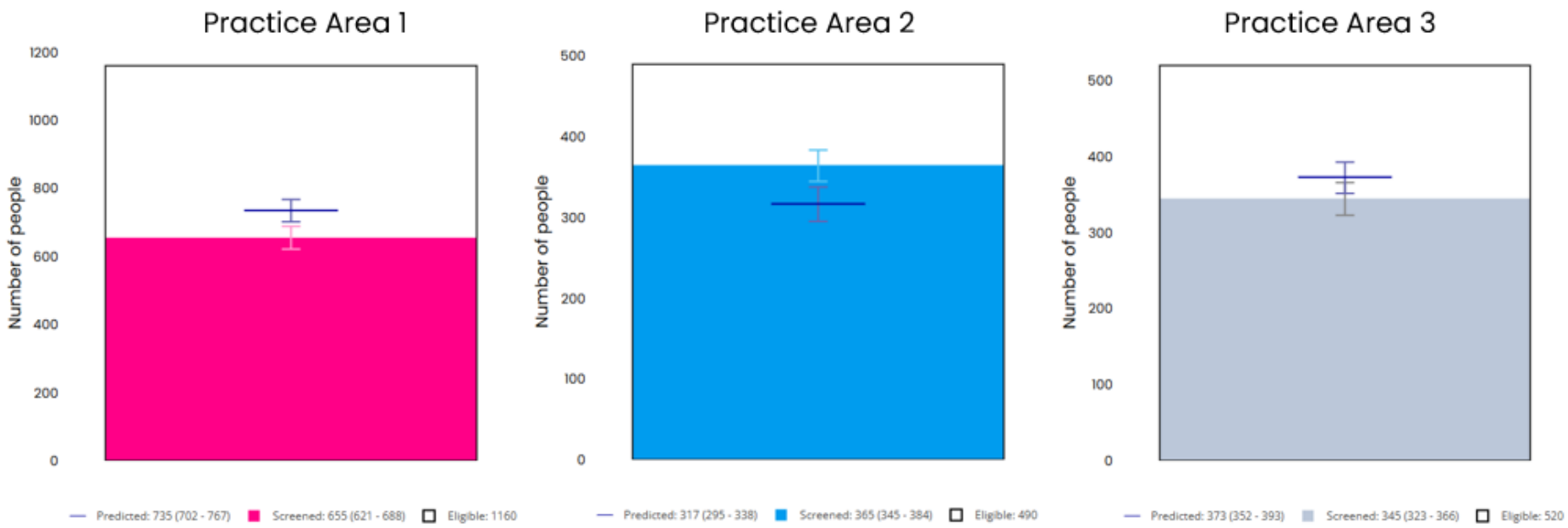


Figure 5: In this GP level view, you can also see a box and whisker plot to show the confidence intervals around the actual and predicted coverage numbers.

Practice Area 1 is highlighted in pink, meaning the practice area has significantly lower coverage than our model estimated based on local factors.

- In the box and whisker plot for this area we can see the black outline indicating that 1,160 people are eligible for screening in this area, with that number notes in the legend below the plot.
- The pink area of this box shows that of the 1,160 people eligible, 655 were screened in our data. The light pink lines around the top of this pink area show the confidence intervals calculated for this number of people screened.
- The wider black line sitting above the pink area show the number our model estimated would be screened in this area, with the confidence intervals shown above and below this in dark grey. We can see that the pink confidence intervals around the actual

screening coverage do not overlap with the black confidence intervals of the model's estimated coverage, therefore this difference is statistically significant.

Practice Area 2 is highlighted in blue, meaning the practice area has significantly higher coverage than our model estimated based on local factors.

- In the box and whisker plot for this area we can see the black outline indicating that 490 people are eligible for screening in this area.
- The blue area of this box shows that of the 490 people eligible, 365 were screened in our data. The light blue lines around the top of this blue area show the confidence intervals calculated for this number of people screened.
- The wider black line sitting below the blue area show the number our model estimated would be screened in this area, with the confidence intervals shown above and below this in dark grey. We can see that the blue confidence intervals around the actual screening coverage do not overlap with the black confidence intervals of the model's estimated coverage, therefore this difference is statistically significant.

Practice Area 3 is highlighted in grey, meaning the practice area has similar coverage to our model's estimate based on local factors.

- In the box and whisker plot for this area we can see the black outline indicating that 520 people are eligible for screening in this area.
- The grey area of this box shows that of the 520 people eligible, 345 were screened in our data. The light grey lines around the top of this grey area show the confidence intervals calculated for this number of people screened.
- The wider black line sitting above the grey area show the number our model estimated would be screened in this area, with the confidence intervals shown above and below this in dark grey. We can see that the confidence intervals around the actual screening coverage overlap with the black confidence intervals of the model's estimated coverage, therefore this difference is not statistically significant. This means that practice is performing broadly in line with our model's estimated coverage based on local factors.

Supporting Materials for Interventions

In the user guide above we have shown a number of scenarios that the data might indicate for a population or practice area. While users might take different information from the tool, we want all areas to consider their population and what interventions might be most helpful to support.

It's important that areas are not limited by their performance compared to ICB averages or national targets, as there may be further improvements that could support wider coverage or uptake for bowel screening in local populations.

Cancer Research UK have a number of resources for health systems looking to improve their bowel screening participation:

- Bowel Cancer Screening | Cancer Research UK – The Cancer Research UK webpage for health professionals provides information and resources to help you support people to make an informed decision about participating in bowel cancer screening.
- Bowel Cancer Screening – Primary care good practice guide – This Cancer Research UK good practice guide provides actions and information about the barriers to bowel screening.
- Reducing inequalities in cancer screening – This guide from Cancer Research UK supports you to identify inequalities in your local population, and breaks down the key actions you can take.

As more resources are made available, we will continue to update this guide with the latest evidence and interventions.

Have you put into place an intervention following use of this screening tool? Please let us know so that we can collate these interventions and update the resources in this tool.

Next Steps

Further developments will be applied to this tool going forwards, including:

- Incorporating bowel cancer screening uptake data
- Annual data updates, and an exploration of changes over time
- Highlighting key local factors that may be affecting screening coverage.

We will continually work to improve the GP bowel cancer screening tool to ensure it is best placed to support system change in the important area of improving of bowel cancer screening participation.

If you would like further support around these interventions or have questions not listed in the FAQs of the tool, or if you want to develop a tool for a different screening programme and want to speak to us about the code behind our model then please get in touch.