



Using the Patient Reported Outcome Measures Tool (PROMT)

Using the Patient Reported Outcome Measures Tool

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Using the Patient Reported Outcome Measures Tool (PROMT)

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Purpose

PROMs provide a patient reported assessment of health, often expressed as a single number. Changes in PROMs scores as a result of surgery are a measure of “outcomes”.

All providers of NHS-funded hip and knee replacements, groin hernia and varicose vein surgeries have been required to collect and report PROMs since 1st April 2009. The programme covers nearly £1bn of expenditure and collection of these data for a whole healthcare system is a world-first.

The purpose of the tool is to provide commissioners with easily understandable information and interpretation of PROMs data to assist their health investment decisions. It is the first such tool designed specifically for commissioners.

The tool allows commissioners to benchmark and compare their PROMs information on groin hernia, hip replacements, knee replacements and varicose vein procedures with other PCTs to improve future investment decisions.

The Patient Reported Outcome Measures Tool (PROMT) is designed to help commissioners identify issues to investigate further.

The Patient Reported Outcome Measures Tool should not be used in isolation. Rather, PROMT is one of a number of tools designed to support commissioners with their health investment decisions. These tools are available on the webpage:

<http://www.networks.nhs.uk/nhs-networks/health-investment-network>

The tools are best used together, and coupled with the commissioner’s own local knowledge, to create a more coherent and complete view of the situation before health investment decisions can be taken with confidence. Then commissioners will be best placed to make judgements on the appropriate level of spend on their patients.

The tool provides commissioners with:

- PROMs data on groin hernia, hip replacements, knee replacements and varicose vein procedures from April 2009 to August 2010;
- PCT distribution chart of pre-op health status, post-op health status (raw and casemix adjusted), health gain (raw and casemix adjusted), activity volume per 1000 unified weighted population, activity expenditure (£ per unified weighted population) - all compared with a user-defined benchmark;
- quadrant chart which allows you to plot any of the above (and deprivation measured by Index of Multiple Deprivation too) on x-axis and y-axis - so you can compare what you wish;
- accompanying interpretation for each of these charts.

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Therefore, commissioners can begin to ask and answer inter-related questions such as:

- what are the clinical thresholds for treatment in the PCT? Should these be higher or lower?
- How many patients are being treated? Should this be higher or lower?
- What are the health gains and costs of treatment? Can these be improved?
- Where can we learn from other PCTs?

Using the tool, commissioners will know their current position and relative position to any national trend. This will help commissioners understand their current outcomes and may prompt issues to investigate further leading to improved outcomes and health investment decisions. Any feedback on the tool would be welcome at: healthinvestment@dh.gsi.gov.uk

Step-by-step guide to the tool

This step-by-step guide is not prescriptive, but should get you started on using the tool. It shows how by looking at a few charts, this suggests more questions and other charts you could view.

PROMs data

The tool contains PROMs data on groin hernia, hip replacements, knee replacements and varicose vein procedures from April 2009 to August 2010.

There are generic and condition specific PROMs indicators. In this first version of the tool, we include only the generic EQ-5D Index measure. This is a single number (with 0 equivalent to death and 1 to full health) and it is the most suitable indicator for comparing different conditions and for clinical and economical evaluation of healthcare.

A fuller description of PROMs and further data are available from the IC website at:

<http://www.hesonline.nhs.uk/Ease/servlet/ContentServer?siteID=1937&categoryID=1295>

This was the source of the PROMs data used in this tool.

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The table below gives a brief description of the PROMs parameters in the tool.

PROMs Parameter	Description
Pre-op health status	This tells us about the average health of patients before they had the procedure.
Post-op health status (raw)	This tells us about the average health of patients after they had the procedure.
Health gain (raw)	This tells us about the average health gain of patients who had the procedure. This is the health gain to use for economic evaluation. It is given by the equation: Post-op health status (raw) minus pre-op health status
Post-op health status (casemix adjusted)	This tells us about the quality of the providers used by the PCT's patients. It is estimated by the post-operative score the PCT would have obtained had its providers treated an average population, rather than the less/more difficult casemix they did treat.
Health gain (casemix adjusted)	This tells us about the quality of the providers used by the PCT's patients. It is estimated by the health gain the PCT would have obtained had its providers treated an average population, rather than the less/more difficult casemix they did treat. It is given by the equation: Post-op health status (casemix adjusted) minus national average pre-op health status ¹
Volume rate (Volume per 1000 unified weighted population)	This tells us about the number of procedures performed accounting for the need of the population. The volume is the total number of eligible PROMs procedures (irrespective of whether a PROMs questionnaire was issued, completed or validated) performed on the PCT's patients. As such, the PROMs parameters above only represent a subset of this total activity.
Expenditure rate (Expenditure per unified weighted population)	This tells us about the approximate cost to the commissioner of the procedures accounting for the need of the population. It is given by the equation: Volume rate multiplied by approximate national unit cost of procedure / 1000.
Deprivation (IMD)	The PCT's deprivation as measured by the Index of Multiple Deprivation.

¹ Post-op health status (casemix adjusted) and health gain (casemix adjusted) are related, with the former being larger by the national average pre-op health status, which is a constant for each set of data. Both are included in the tool as sometimes it is easier or better to think about post-op health status (casemix adjusted) and sometimes health gain (casemix adjusted). The confidence intervals for both are the same size too.

Distribution chart worksheet

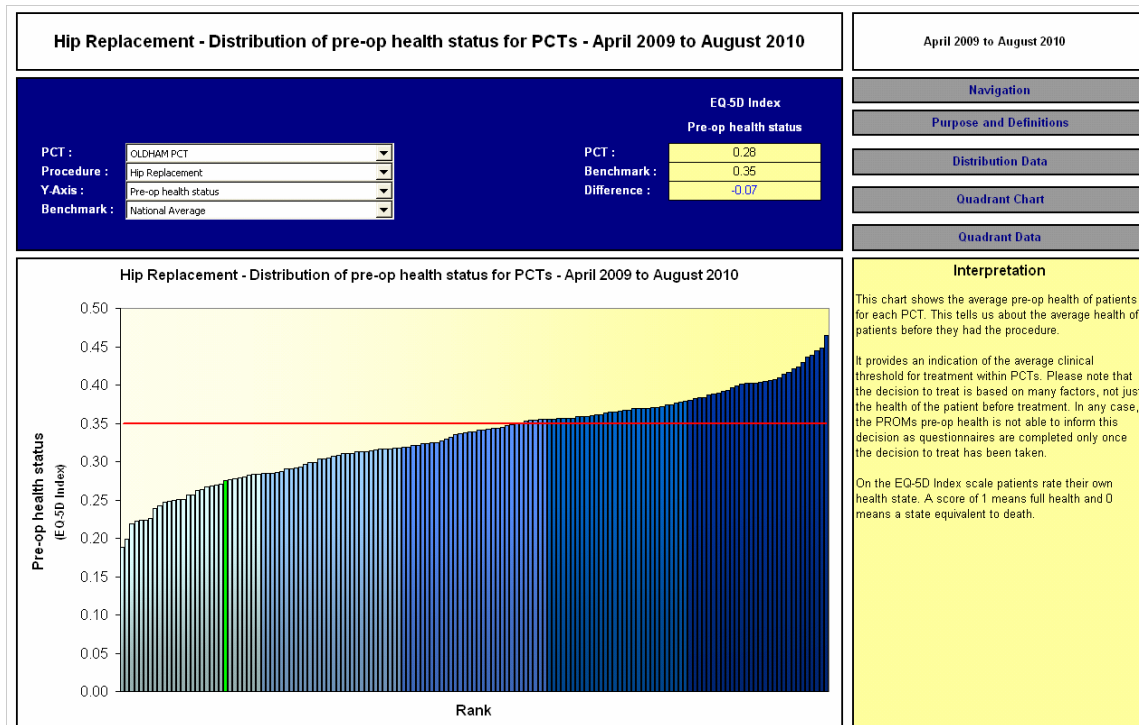
Firstly, go to the [distribution chart worksheet](#) and select your PCT and one of the four PROMs procedures (groin hernia, hip replacement, knee replacement and varicose vein). Next, select that PROMs parameter you wish to plot on the y-axis and finally the benchmark. The default benchmark is the national average, but you may select your own percentile benchmark.

Pre-op health status

For illustration, we have chosen Oldham PCT, hip replacements and taken the national average default benchmark. It makes most sense to start with the health of patients before their operation so we select the pre-op health status.

The chart below shows the average pre-op health status of patients in the 151 PCTs² - we see variation from 0.19 to 0.47 on the EQ-5D Index. The PCTs are ordered from lowest to highest with the quintiles (groups of 20% of PCTs) coloured differently. Hovering above a bar in the chart tells you the PCT name, its quintile, ranking and the PCT's average pre-op health status³

The selected PCT is highlighted green and in this case, we see that for Oldham PCT the pre-op health status of their patients is 0.28. This is below the national average (as shown by the horizontal red line) of 0.35. The table also shows these values and the difference from the benchmark, which is -0.07 for Oldham PCT. This difference is positive for PCTs above the benchmark and negative for those below. The yellow panel on the right hand side provides some interpretation about the chart. It also includes some warnings – particularly to avoid erroneous or over-interpretation.



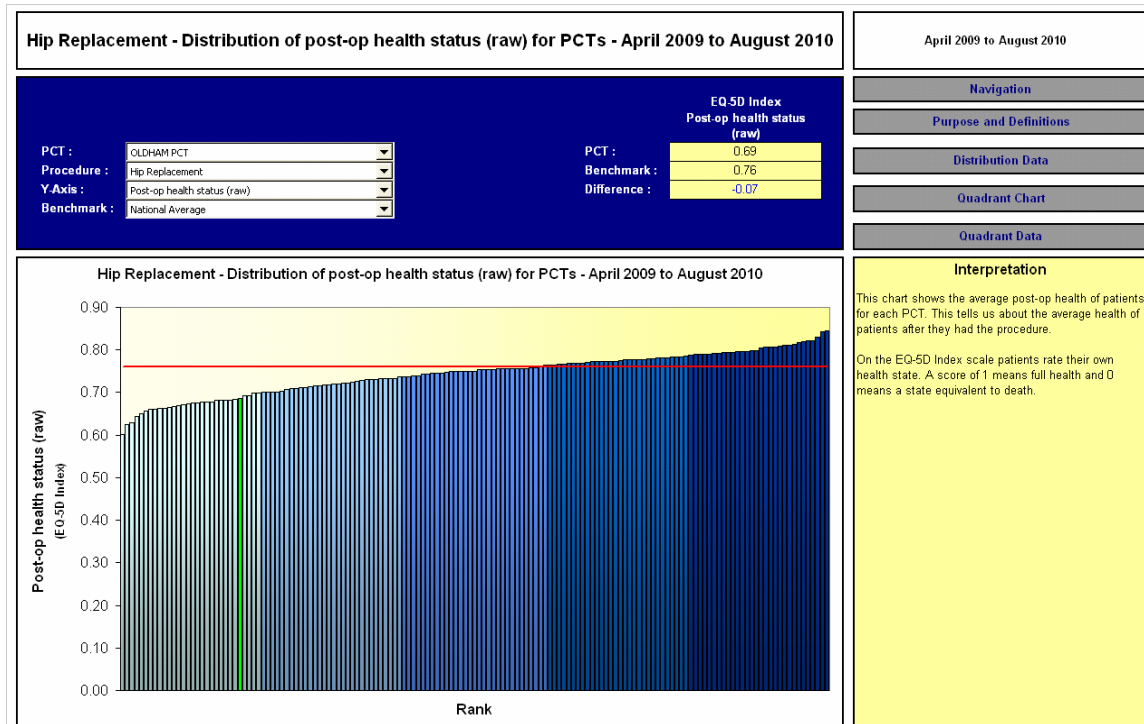
² The 151 PCTs as organised on 1 April 2010 are used as the basis of reporting.

³ This hover functionality works in Excel 2002, but not in Excel 2007.

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Post-op health status (raw)

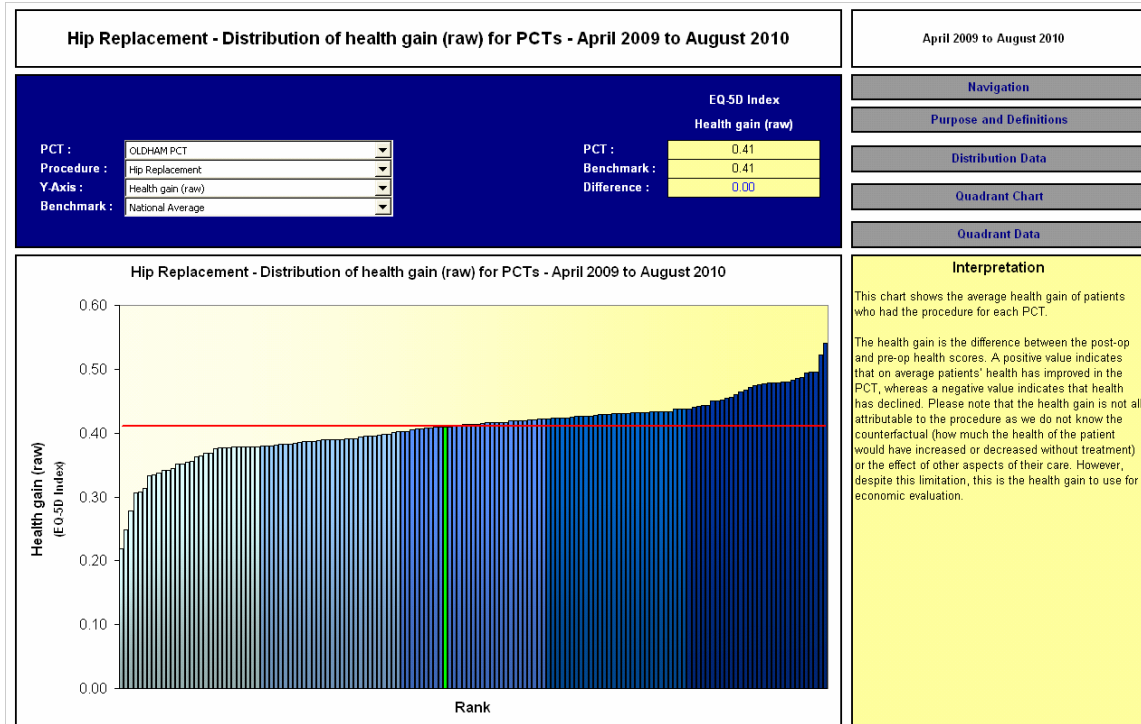
Logically, it is now sensible to examine the average post-op health status (raw) of patients in the PCTs. This is shown in the chart below, where the variation between PCTs is from 0.60 to 0.85 on the EQ-5D Index. The average post-op health of patients in Oldham PCT is 0.69, which is also 0.07 below the national average. The average health status of patients has improved following the procedure, but we can see this more clearly on the chart showing health gain (raw).



Health gain (raw)

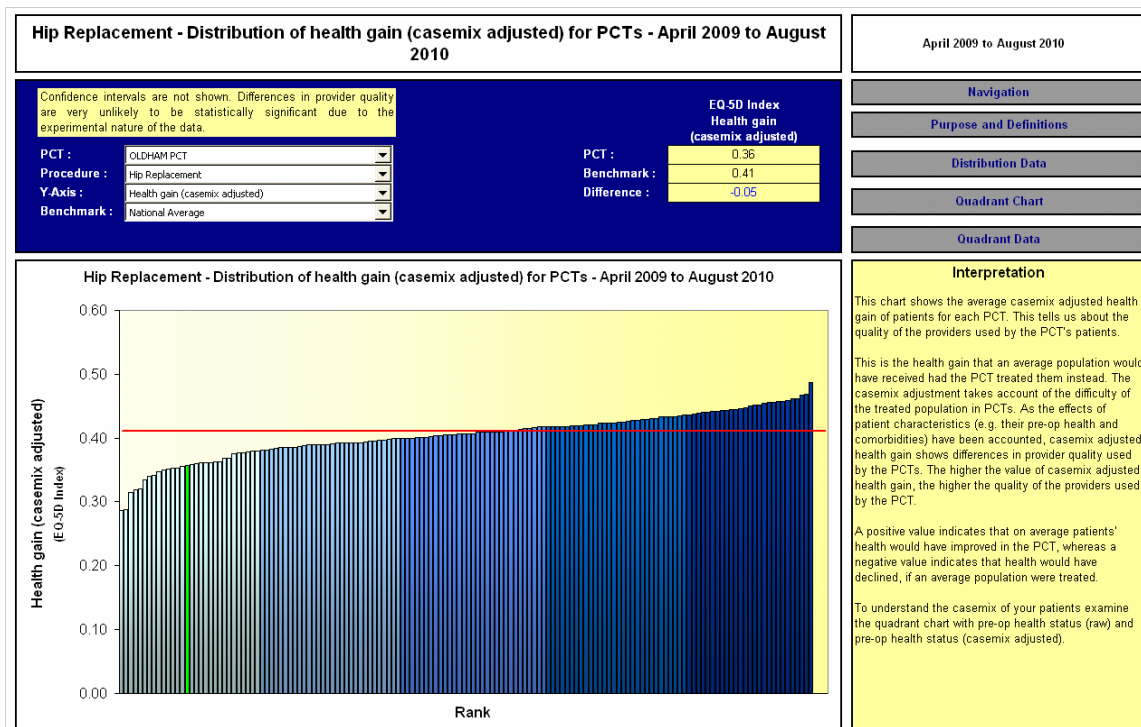
We select health gain (raw) on the y-axis and observe the chart below and notice there is variation between the PCTs from 0.22 to 0.54. Here, we see that the average health gain of patients in Oldham PCT is about the national average of 0.41. On average, hip replacements provide quite a large improvement to health (of 0.41) considering that a health status of 0 is equivalent to death and 1 to full health. It is difficult to examine this further using just distribution charts so we will return to this later when we look at quadrant charts.

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Health gain (casemix adjusted)

If we now select health gain (casemix adjusted) as the y-axis, we see variation from 0.29 to 0.49 in the chart below. Oldham PCT's score is 0.36, which is slightly below the national average of 0.41. But, what does this mean?



The health gain (casemix adjusted) tells us about the quality of the providers used by the PCT's patients. It is estimated by the average health gain the PCT would have obtained had its

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providers treated an average population, rather than the less/more difficult casemix they did treat. In this case, had the providers used by Oldham PCT's patients treated an average population then their health gain would have been slightly less than average. However, this is not a statistically significant difference and could have arisen due to random variation, so it is not evidence that Oldham PCT's providers are worse on quality. Whenever casemix adjusted data is selected then a yellow warning panel appears in the upper left corner of the screen to alert you to this fact. Over time, with more data and as statistically significant outliers emerge, commissioners and providers may wish to discuss these highlighted areas.

The casemix adjustment is being specifically developed to inform providers about their performance but can still be useful for commissioners too. However, the methodology is experimental and is still under development. Currently, there are very few statistically significant outliers and so differences in provider quality should not be inferred at this stage. We have included casemix adjustment in the tool to begin the process of familiarisation and try to prevent either misinterpretation or over-interpretation of this. Furthermore, one should also consider whether statistically significant differences are also clinically significant – if they are not clinically significant then it does not matter. Owing to these reasons, confidence intervals are not shown in the tool, but they are available for the latest data PROMs data at the following website:

<http://www.hesonline.nhs.uk/Ease/servlet/ContentServer?siteID=1937&categoryID=1295>

The aim of the casemix adjustment process is to adjust the reported PROMs health status data to take account of factors that could influence it – such as patient characteristics, age, sex, presence of co-morbidities, and the nature of the intervention itself – which are beyond the control of the provider, so that outcomes data can be compared across providers on a like-for-like basis. Further detail of the casemix adjustment is available at the following website:

http://www.northgate-proms.co.uk/docs/PROMS_risk_adjustment_methodologies_SEPT_10.pdf

We appreciate that the communication and interpretation of casemix adjustment is difficult and any feedback on this issue would be welcome at: healthinvestment@dh.gsi.gov.uk

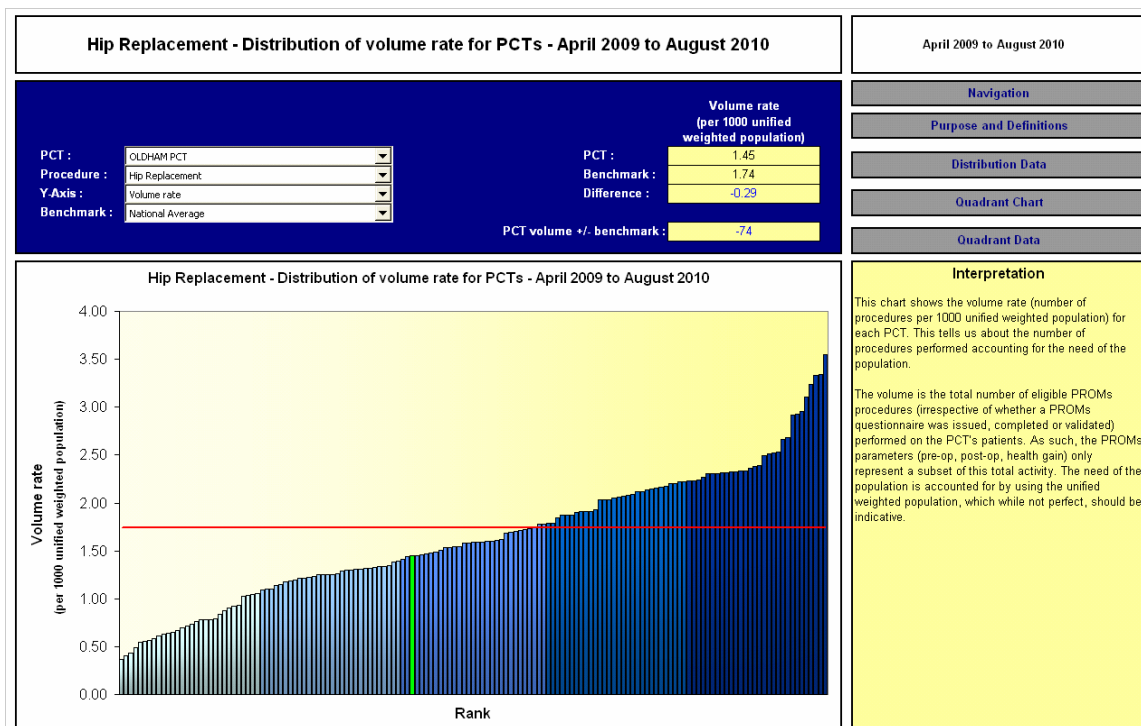
Returning to the chart above, you may notice that there appear to be missing PCTs (evidenced by the yellow space on the right of the chart.) In order to perform the casemix adjustment with the necessary accuracy, there need to be 30 matching validated pre-op and post-op questionnaires for the PCT. If there are fewer than 30 then the calculation will not be performed. If this is the case for your PCT then the table in the chart above would display the following warning below. [For the other PROMs indicators, there only need to be 5 matching validated pre-op and post-op questionnaires for the PCT. This level ensures that individual patients cannot be identified.]

EQ-5D Index Post-op health status (casemix adjusted)	
PCT :	*
Benchmark :	0.76
Difference :	Not appropriate

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Volume rate

The final distribution chart which we will cover explicitly in this guide (though you may wish to examine the others too) has the volume rate as the y-axis and is shown below. The volume rate tells us about the number of procedures performed accounting for the need of the population and ranges from 0.36 to 3.55 procedures per 1000 unified weighted population. We see that Oldham PCT has performed slightly fewer hip replacements than the national average having accounted for its population. The extra feature in the table is the PCT volume +/- benchmark and is positive for PCTs above the benchmark and negative for those below. In this case, it is -74, which means that Oldham PCT would have needed to perform 74 more hip replacements to meet the benchmark.



The volume rate is the number of procedures performed per 1000 unified weighted population. The volume is the total number of eligible PROMs procedures (irrespective of whether a PROMs questionnaire was issued, completed or validated) performed on the PCT's patients. As such, the PROMs parameters (pre-op, post-op, health gain) only represent a subset of this total activity. The need of the population is accounted for by using the unified weighted population, which while not perfect, should be indicative.

Distribution data worksheet

The data which you select for the [distribution chart worksheet](#) automatically appears in the [distribution data worksheet](#). You can then copy and paste special these data as values and number formats should you wish to perform extra analyses elsewhere.

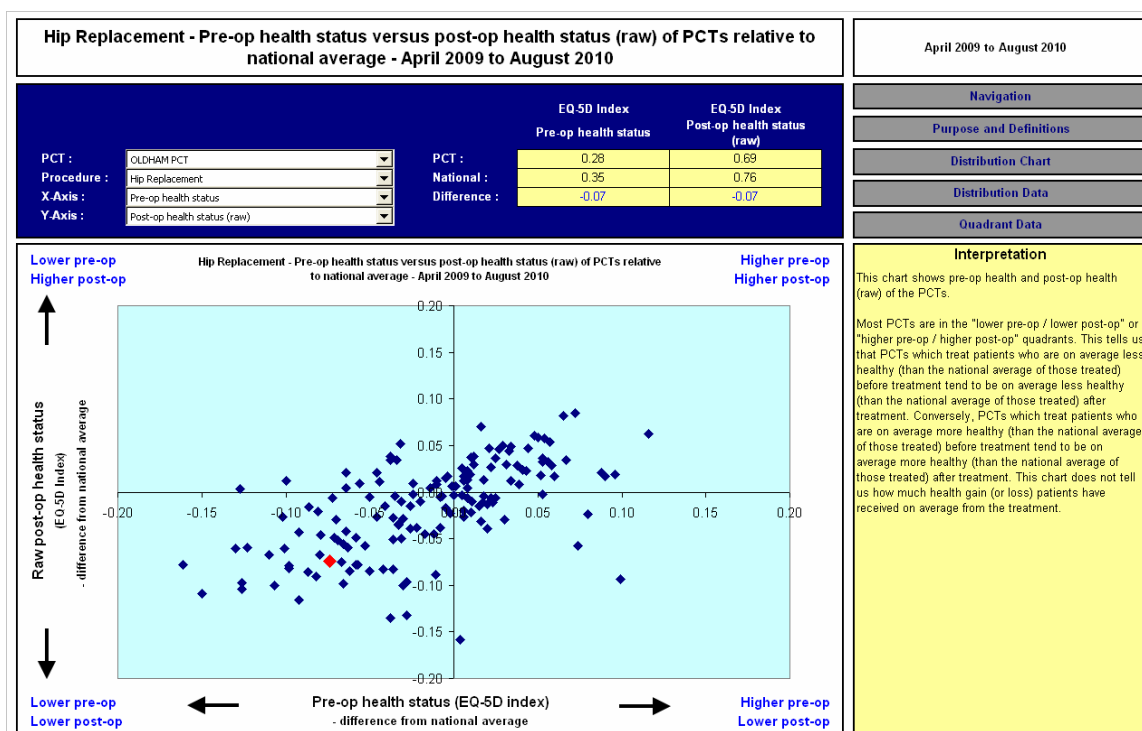
Quadrant chart worksheet

We now move on to the [quadrant chart worksheet](#) which allows you to investigate trends between the PROMs parameters, explain some of the results and identify areas for investigations or possible actions to take.

Pre-op health status and post-op health status (raw)

We will stay with example of hip replacements in Oldham PCT. The tool remembers both the PCT and PROMs procedure – as they were already selected in the [distribution chart worksheet](#) then they will be selected here too (and vice versa). It makes sense to look at the relationship between pre-op health status and post-op health status (raw) as these were the first two parameters we examined in the [distribution chart worksheet](#). If we select pre-op health status as the x-axis and post-op health (raw) as the y-axis then we get the chart below.

Instead of showing their crude values, the quadrant chart shows their values relative to the national average. For the x-axis, values lower than the national average are to the left (marked lower pre-op) and values higher than the national average are to the right (marked higher pre-op). For the y-axis, values lower than the national average are to the bottom (marked lower post-op) and values higher than the national average are to the top (marked higher post-op). A PCT with both values at the national average would be at the origin in the centre of the quadrant chart.



For Oldham PCT, the average pre-op health status is 0.28, which is 0.07 below the national average of 0.35, as shown in the table. As its pre-op health status is lower than the national average, its x-coordinate is -0.07, so it is to the left on the chart. Likewise, its post-op is lower than the national average (coincidentally by 0.07 too) so its y-coordinate is also -0.07. This explains why Oldham PCT (the red diamond) is in the lower left hand quadrant marked lower pre-op, lower post-op. The other PCTs are the other diamonds in the quadrant chart – you can

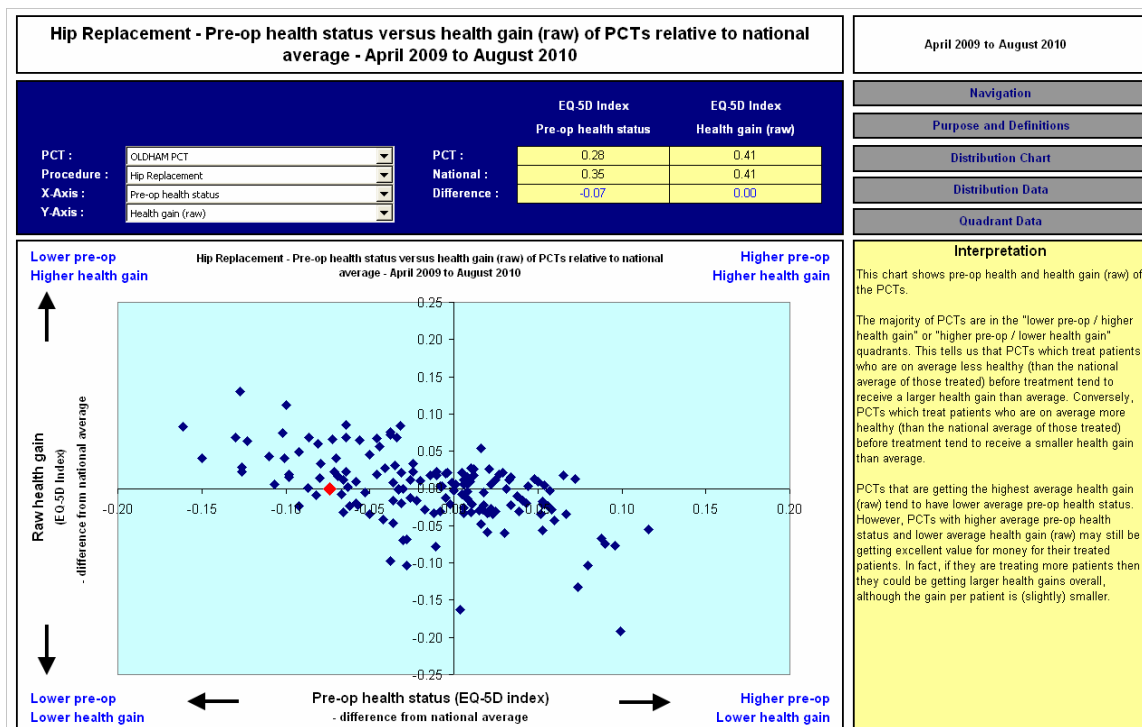
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identify the PCT and its values by hovering over it with the pointer⁴. Again, there is an interpretation panel to the right, which is particularly useful for assisting with these quadrant charts.

So now we understand what a quadrant chart is, what does this particular quadrant chart show? There is a clear trend between pre-op and post-op health status. PCTs that treat patients with higher average pre-op health status tend to have higher post-op health status also. We would expect healthier than average patients before treatment also to be healthier than average after treatment - so this is sensible. Oldham PCT's lower than average post-op health status is explainable (to a degree at least as it appears to be on the trend) by its lower than average pre-op health status. Whether on trend (or not), commissioners can always seek to improve outcomes. This could possibly be due to learning from PCTs that exceed the trend, having greater post-op (raw) for the same pre-op. Alternatively, PCTs could try to change their position on trend by increasing pre-op health status (possibly by treating earlier) and so hopefully getting an increase in post-op (raw) health status too. However, before making decisions it would be better to use more evidence, some of which is in the rest of this tool.

Pre-op health status and health gain (raw)

Next, we might consider examining the first and third PROMs parameters – to see if there is any relationship at the PCT level between pre-op health status and health gain (raw). Does the health gain patients receive depend upon their initial health level? The chart below suggests (at the PCT level) those with higher pre-op health status tend to receive smaller health gain.



Earlier we saw that Oldham PCT's patients received about the national average health gain – which is confirmed here, as its y-value is 0.00 (so on x-axis). However, PCTs with similar average pre-op health status tend to achieve larger average health gain. Are there lessons

⁴ This hover functionality works in Excel 2002, but not in Excel 2007.

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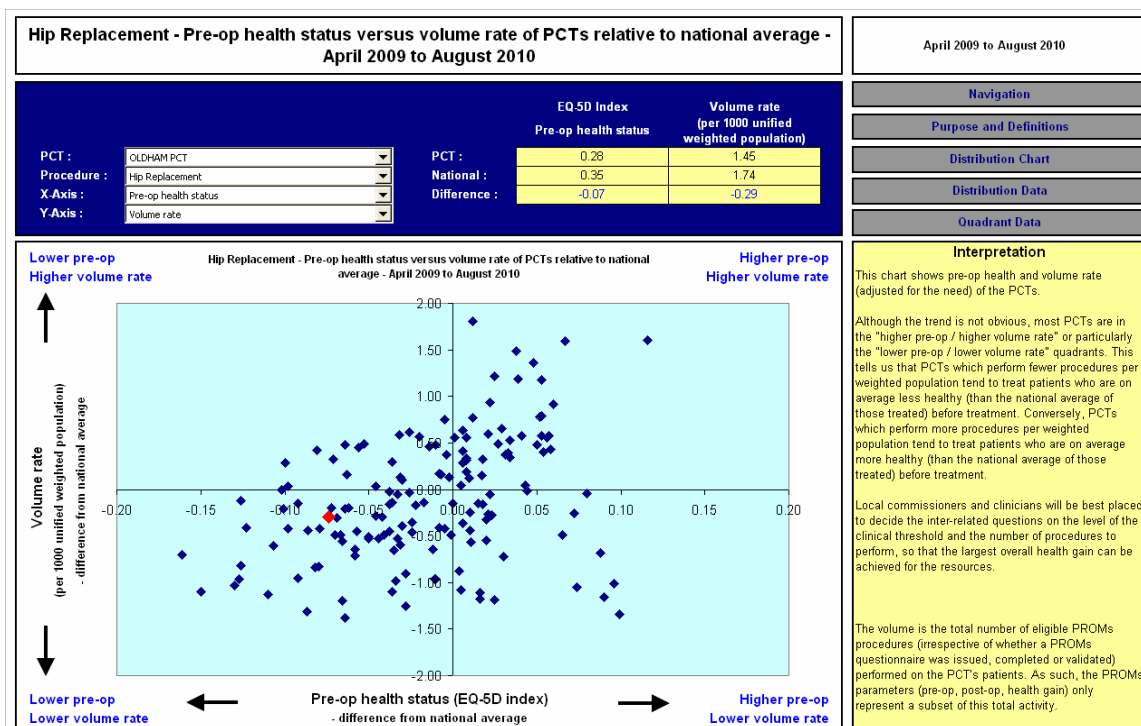
that can be learned from these PCTs? This is a clear example where comparing two PROMs parameters in a quadrant chart has told us something that looking at individual PROMs values in distribution charts (or even tables) could not.

PCTs that secure larger average health gains for their patients are (likely to be) achieving better value for money on those treatments. PCTs that are getting the highest average health gain (raw) tend to have lower average pre-op health status. However, PCTs with higher average pre-op health status and lower average health gain (raw) may still be getting excellent value for money for their treated patients. In fact, if they are treating more patients then they could be getting larger health gains overall, although the gain per patient is (slightly) smaller. The tool allows you to investigate these relationships.

So, the real question for all commissioners is whether hip replacements are better value for money than the next thing they would fund if they had not funded these procedures. Conversely, could more hip replacements be performed by not doing other procedures which have lower value for money than this? Clearly, these are only averages and clinical decisions with the patient will be based on individual circumstances.

Pre-op health status and volume rate

If we now select pre-op health status as the x-axis and volume rate as the y-axis we generate the chart below. While there is quite a bit of variation (indicative that PCTs may be acting differently), there is clearly a trend, which Oldham PCT is broadly on. PCTs with higher average pre-op health status tend to perform more procedures per head of weighted population. One could imagine that PCTs that perform more procedures per head of weighted population have a lower average clinical threshold for treatment so their patients are healthier before treatment. This average threshold is formed from the actions of many different clinician and patient interactions and so is not a sharp threshold.



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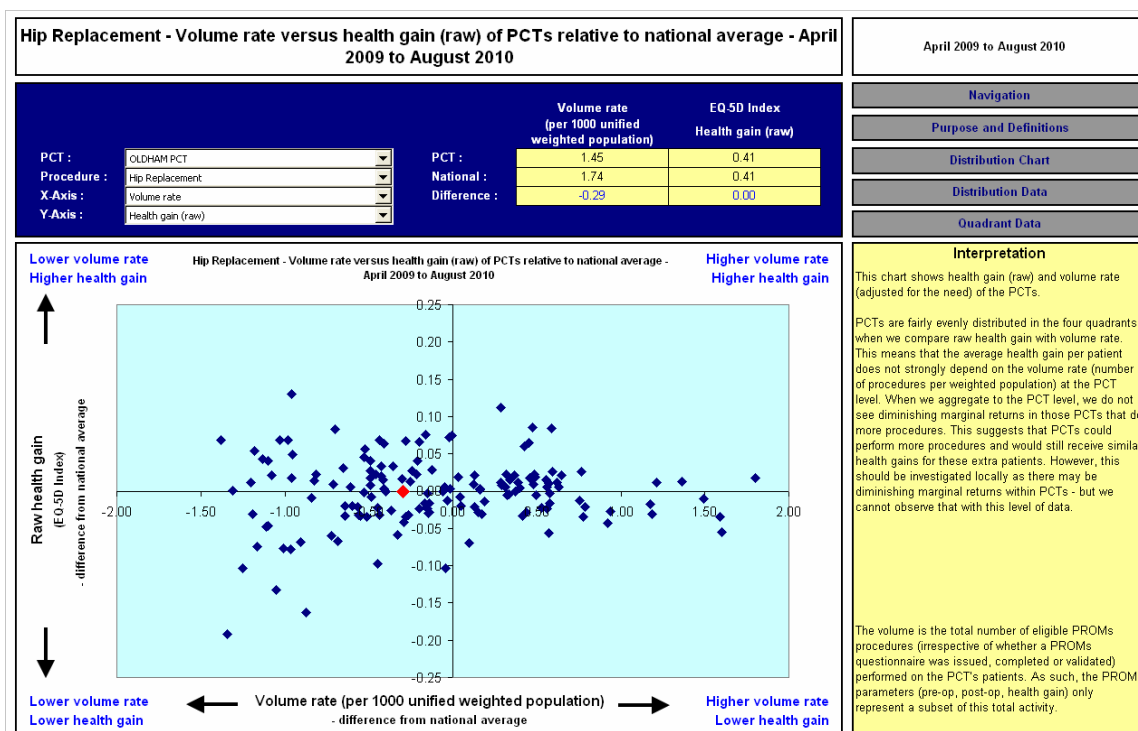
Local commissioners and clinicians will be best placed to decide the inter-related questions on the level of the clinical threshold and the number of procedures to perform, so that the largest overall health gain can be achieved for the resources. This suggests that we also look at the quadrant chart of volume rate and health gain (raw).

Volume rate and health gain (raw) – diminishing marginal returns

One criterion for treating patients could be their ability to benefit from the procedure. In this case, ideally commissioners would treat patients in order of their ability to benefit. The first patient treated would benefit the most, the 50th less and so on – which is termed diminishing marginal returns. Do PCTs which perform more procedures per head of weighted population begin to get lower health gains per patient?

We can answer this by comparing the volume (or expenditure) rate on the x-axis and health gain (raw) on the y-axis. In this case, we chose volume rate – though both give the same trend as the tool uses a fixed national price for all PCTs. The quadrant chart below shows that there are no diminishing marginal returns at the PCT level. PCTs that perform more procedures per weighted population tend to get the same average health gain as PCTs that perform fewer procedures per weighted population. Again, we see that our example PCT, Oldham, is in the middle of this trend.

This suggests that PCTs could do more hip replacements and would still receive similar health gains for these extra patients. However, this should be investigated locally as these are average health gains and the PCT may be near its point of diminishing marginal returns. (E.g. If the PCT has already treated all those who could significantly benefit then there is nobody left to treat.) Obviously, each procedure is considered on its individual merits rather than just the health gains of the procedures before.

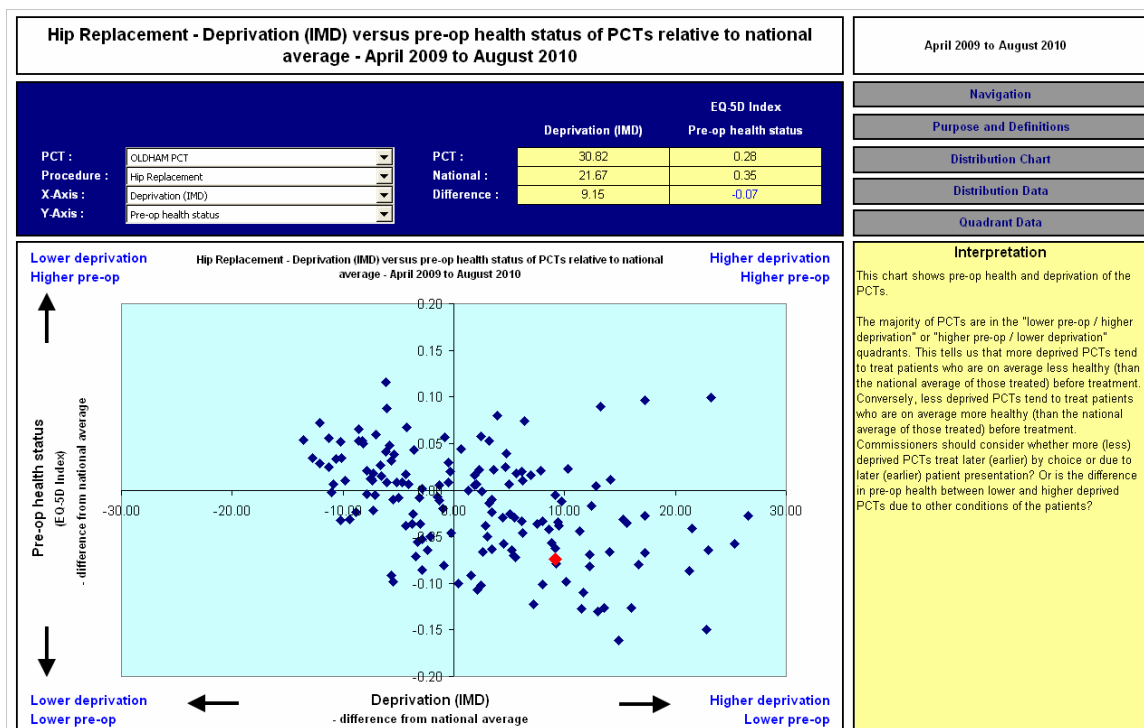


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Deprivation and pre-op health status

As well as maximising health gain and value for money, there is the objective to reduce avoidable inequalities. If we select deprivation on the x-axis and pre-op health status on the y-axis then we generate the chart below.

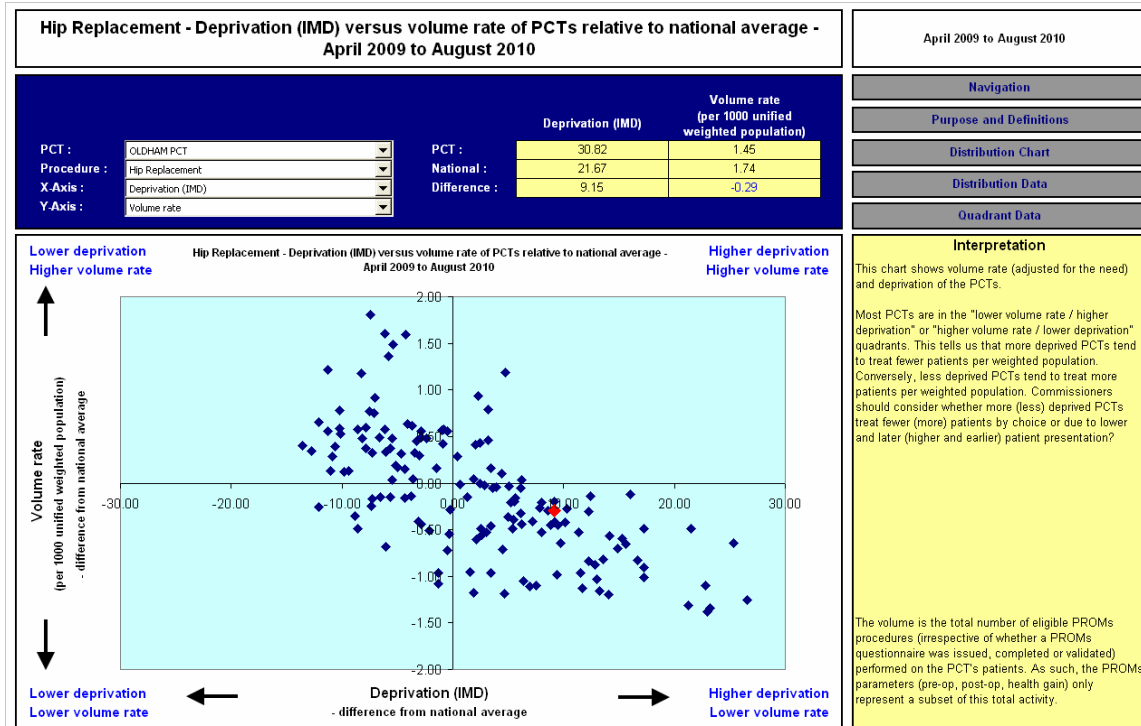
The chart confirms that PCTs with higher deprivation tend to have lower pre-op health status (i.e. sicker patients) and that Oldham PCT is on this trend. Commissioners should investigate this issue locally and seek to improve their own outcomes and reduce inequalities within their own area.



Deprivation and volume rate

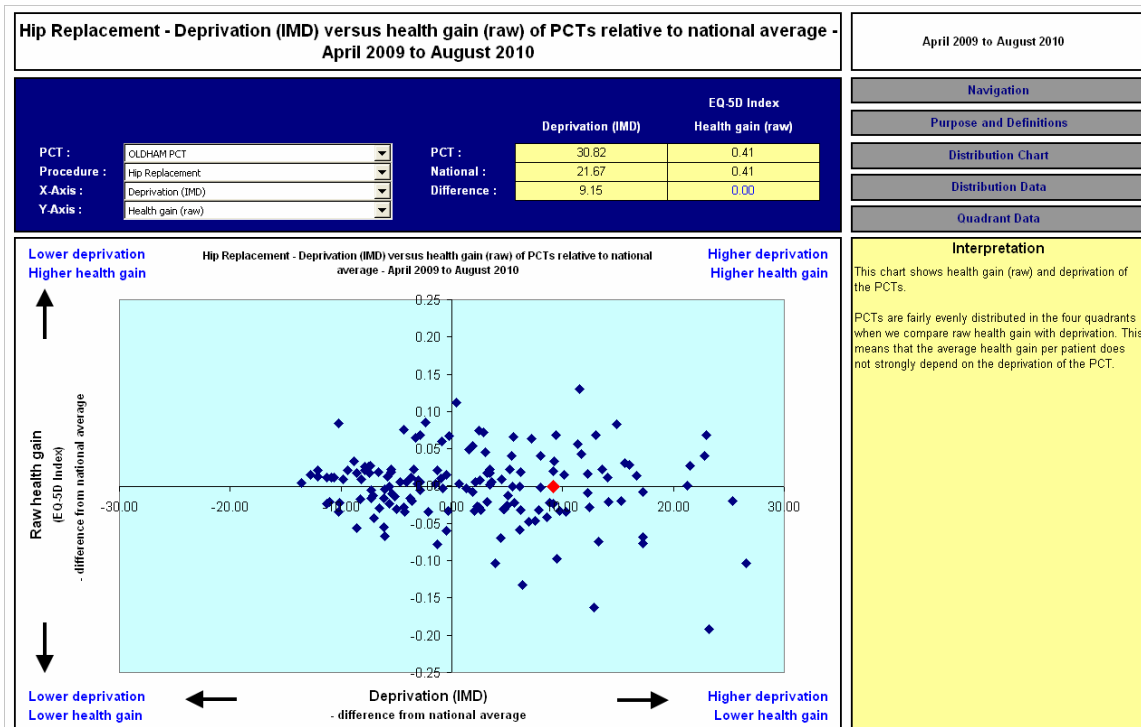
While we are on theme of deprivation – let us examine the issue of access. If we select deprivation as the x-axis and volume rate as the y-axis then we create the following chart. Here, we see another negative trend with deprivation. More deprived PCTs tend to perform fewer procedures per head of weighted population – with Oldham PCT fitting this description. While this might be the result of over-accounting for need in the calculations, commissioners should investigate locally.

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Deprivation and health gain (raw)

More positively, when we compare deprivation with the average health gain (raw) we see no trend. PCTs that are more deprived tend to achieve similar health gains for their patients as less deprived PCTs.



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Deprivation analysis and interpretation is at PCT not patient level

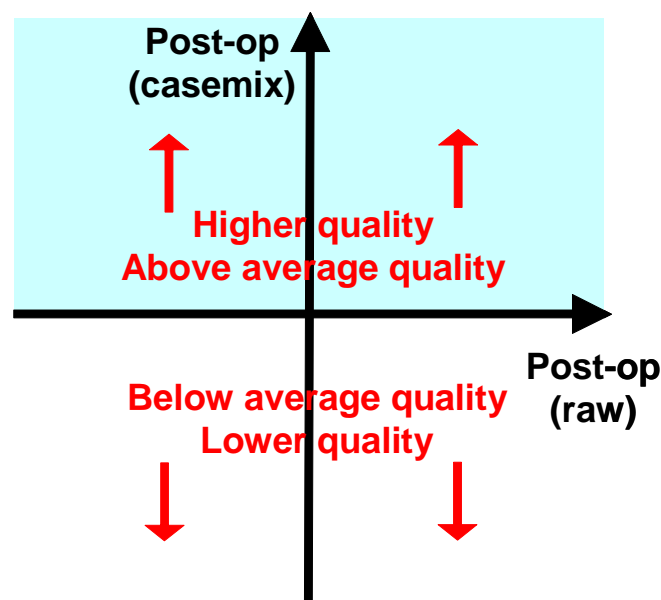
The above analysis is at the PCT level and not at individual patient level. From the above, we cannot conclude that more deprived patients are less likely to have a procedure. Instead, patients in more deprived PCTs are on average less likely to have a procedure (having adjusted for need as best we can) but if they do so will on average benefit just as much as patients in less deprived PCTs. Furthermore, these charts cannot tell us which patients (e.g. more or less deprived) within a PCT have had hip replacements.

Post-op health status (raw) and post-op health status (casemix adjusted)

The final quadrant chart we explicitly cover in this guide concerns casemix adjustment and is probably the most complicated useful chart in the tool. The post-op health status (casemix adjusted) is the post-operative score the PCT would have obtained had its providers treated an average population, rather than the less/more difficult casemix they did treat. This tells us about the quality of the providers used by the PCT's patients.

Select post-op health status (raw) on the x-axis and post-op health status (casemix adjusted) on the y-axis. In particular, this chart will tell us two new things simultaneously: the quality of the providers used by the PCT's patients and the casemix of these treated patients. Fortunately, we can think about these in turn, as they are independent of each other.

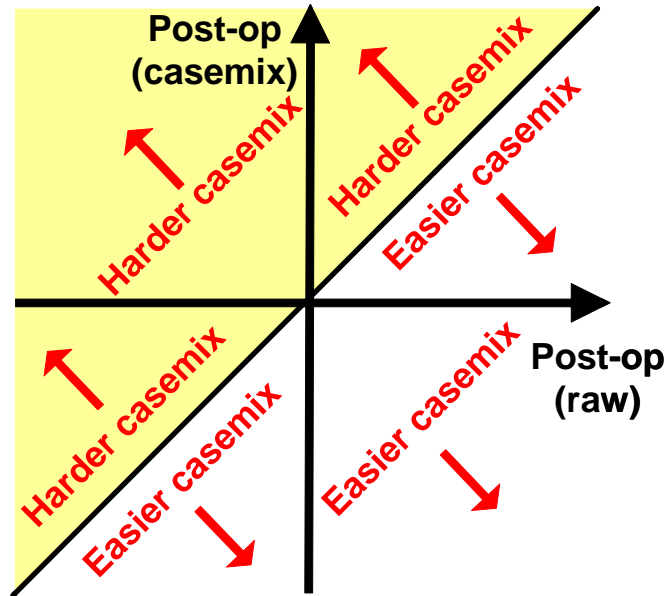
Firstly, PCTs with a post-op health status (casemix adjusted) above the x-axis have used providers of above average quality. If they had treated an average population then they would have got better outcomes than average. Those with a post-op health status (casemix adjusted) below the x-axis have used providers of below average quality⁵. This is shown in the schematic chart below.



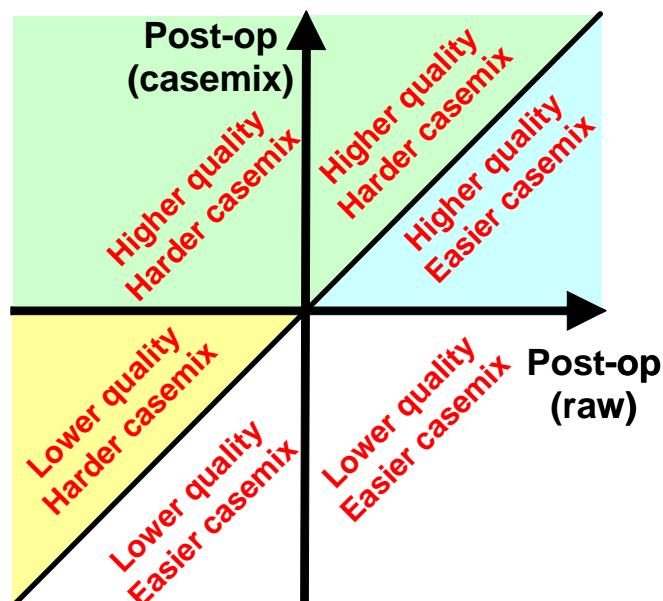
⁵ The tool does not have confidence intervals in the quadrant charts for the same reasons as they are not in distribution charts. Refer to page 10 for more detailed discussion of statistical significance.

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Secondly, if the average post-op health status (casemix adjusted) is larger than the average post-op health status (raw) then the PCT has treated a harder casemix than the national average of treated patients. Why? If they had treated an average population then (by definition) they would have achieved the post-op health status (casemix adjusted). As they only achieved a lower post-op health status (raw) then their treated population must have been a harder casemix. This is indicated in the schematic chart below, where the yellow section shows where post-op health status (casemix adjusted) is greater than post-op health status (raw). The dividing line (with national average casemix) is simply the $y = x$ line with gradient of 1.



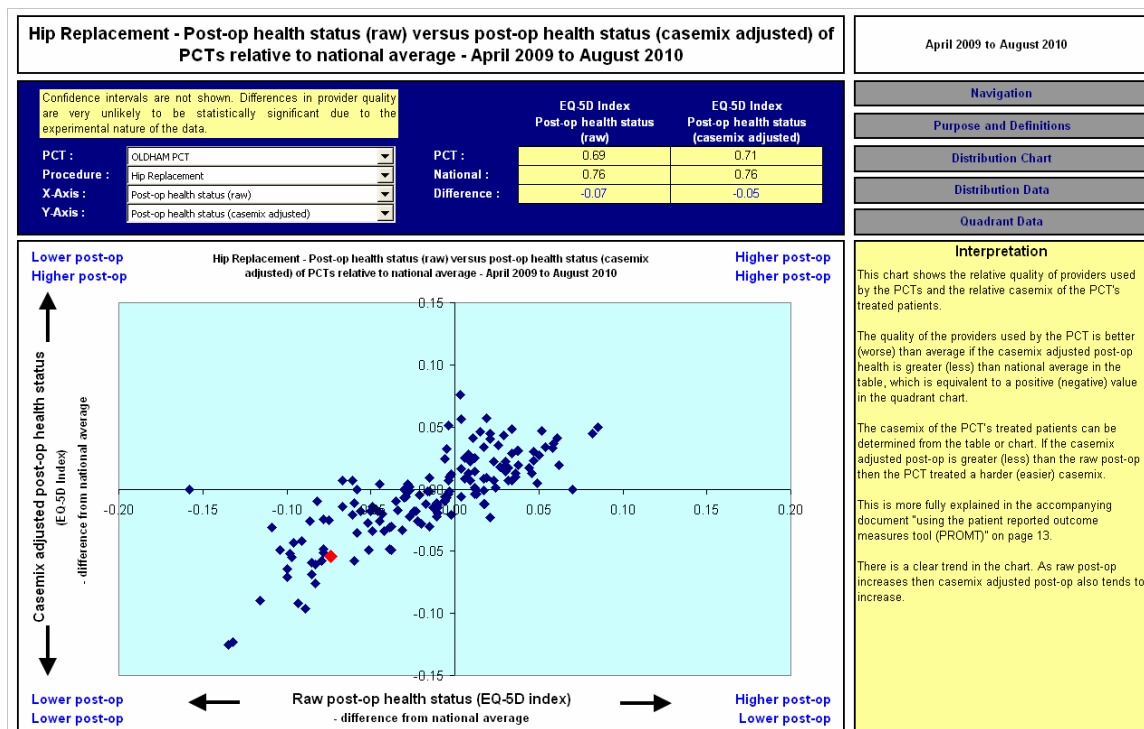
Taken together, we get this more complicated chart below. However, we find it easier (and recommend) thinking about the two independent issues of quality and casemix separately as in the first two schematics. Furthermore, as quality can be so much easier inferred from the distribution chart of post-op health status (casemix adjusted) or health gain (casemix adjusted) then we suggest using this chart (or accompanying table) primarily to assess the relative casemix of the treated patients.



Using the Patient Report Outcome Measures Tool (PROMT)

Let us return to our case study with Oldham PCT. If we plot post-op health status (raw) on the x-axis and post-op health status (casemix adjusted) on the y-axis then we get the chart below.

Firstly, the post-op health status (casemix adjusted) is below the national average (and x-axis) so the quality of the providers would have been worse than average had this been a statistically significant difference. As discussed previously, this is not a statistically significant difference from the national average, so it is not evidence that Oldham PCT's providers are worse on quality⁶. Whenever casemix adjusted data is selected for either axis in a quadrant chart then a yellow warning panel appears in the upper left corner of the screen to alert you to this fact.



Secondly, the post-op health status (casemix adjusted) is 0.71 (so -0.05 in the chart) which is greater than the post-op health status (raw) of 0.69 (so -0.07 in the chart). This tells us that Oldham PCT's treated patients were a more difficult casemix than the national average. (Had they had an average casemix the PCT's post-op score would have been 0.71 not 0.69.)

Other quadrant charts

There are many other quadrant charts in the tool – though not all of the charts are equally useful. Every chart does have an accompanying interpretation, but some of these are particularly difficult! In some cases, the information in the quadrant chart might be better extracted from a distribution chart or a different quadrant chart altogether. Any feedback on these interpretations would be welcome at: healthinvestment@dh.gsi.gov.uk

⁶ Refer to page 10 for more detailed discussion of statistical significance.

Using the Patient Report Outcome Measures Tool (PROMT)

Post-op health status (casemix adjusted) and health gain (casemix adjusted) values in quadrant charts

The values for post-op health status (casemix adjusted) and health gain (casemix adjusted) are equal in all quadrant charts (as these are relative to the national average). In the tables, it is the differences from the national average which are equal. This is because post-op health status (casemix adjusted) and health gain (casemix adjusted) are related, with the former being larger by the national average pre-op health status, which is a constant for each set of data. This also means that the confidence intervals for both are also the same size.

Unspecified values in quadrant charts

If a value is unspecified, then the value in the table is denoted by an asterisk (*) and the cell is coloured magenta – just like in the distribution chart. The most common reason for this is because there have been fewer than 30 procedures performed on a PCT's patients and the casemix adjusted values have not been calculated. In these cases, we cannot distinguish the value from the national average, so we assume this is the value. This means the point will appear on the appropriate axis. Therefore, care must be taken when many values are unspecified (most usually for casemix adjustment) as they will appear on the axes and could potentially lead you to infer a different trend. You can check for this by viewing the data in the [quadrant data worksheet](#).

Quadrant data worksheet

The data which you select for the [quadrant chart worksheet](#) automatically appears in the [quadrant data worksheet](#). You can then copy and paste special these data as values and number formats should you wish to perform extra analyses elsewhere.

Summary

This guide is not prescriptive and there are many possible ways to flow through the tool. However, for ease of reference, here is a list of the charts we have examined in the case study in this document. This need not be taken as an exhaustive list to study.

Pre-op health status
Post-op health status
Health gain (raw)
Health gain (casemix adjusted)
Volume rate
Pre-op health status and post-op health status
Pre-op health status and health gain (raw)
Pre-op health status and volume rate
Volume rate and health gain (raw)
Deprivation and pre-op health status
Deprivation and volume rate
Deprivation and health gain (raw)
Post-op health status (raw) and post-op health status (casemix adjusted)

Using the Patient Report Outcome Measures Tool (PROMT)

The Patient Reported Outcome Measures Tool should not be used in isolation. Rather, PROMT is one of a number of tools designed to support commissioners with their health investment decisions. These tools are available on the webpage:

<http://www.networks.nhs.uk/nhs-networks/health-investment-network>

The tools are best used together, and coupled with the commissioner's own local knowledge, to create a more coherent and complete view of the situation before health investment decisions can be taken with confidence.

Feedback

Your feedback on this tool would be welcome at: healthinvestment@dh.gsi.gov.uk