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Finalised Patient Reported Outcome Measures (PROMs) in England

April 2009 – March 2010: Pre- and post-operative data

Experimental statistics

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Executive summary

This is the first annual publication of finalised post-operative scores from the Patient Reported Outcome Measures (PROMs) programme. This publication builds upon the published pre-operative and post-operative provisional data and considers the change in patients' self-reported health status for the four common elective surgical procedures in the PROMs programme: groin hernia surgery, hip replacement, knee replacement and varicose vein surgery. Analysis covers the period from April 2009 to the end of March 2010 and includes pre-operative questionnaires that all English providers treating NHS patients have been asked to collect from patients who wish to participate and post-operative questionnaires returned by patients following their surgery. Not all patients undergoing the relevant operations returned questionnaires for a variety of reasons.

The report is classed as experimental statistics as it contains official statistics that are undergoing evaluation. Its aim is to provide an overall summary and presentation of the key findings based on the data available rather than to provide a detailed interpretive analysis.

Publishing the first annual publication of finalised post-operative PROMs questionnaire data as experimental statistics enables:

- Initial findings to be presented for discussion and further investigation;
- Information on data coverage and quality to be made available to encourage local action to improve these areas;
- Users to comment on methodology and their needs for analysis. Statistical and casemix adjustments to the PROMs data, developed by contractors on behalf of the Department of Health, are being applied in this publication in advance of a planned cycle of further refinement to the methodology.

To add to the value of the information reported, the PROMs data has been linked with Hospital Episode Statistics (HES) episode-level information. Some of the findings from the linked dataset are included in the report.

Key findings

Participation and coverage

- There were 239,683 eligible[1] hospital episodes and 158,342 pre-operative questionnaires returned – a headline participation rate of 66.1%.
- Of the 151,874 post-operative questionnaires sent out[2], 121,439 have been returned – a return rate of 80.0%.

Scores

- As measured by their response to a series of questions about their condition (Oxford Hip and Knee Scores), 95.7% of hip replacement respondents and 91.4% of knee replacement respondents recorded joint related improvements following their operation.
- As measured by their response to a series of questions about their condition (Aberdeen Varicose Vein Questionnaire score), 83.4% of varicose vein respondents recorded varicose vein related improvements following their operation.
- Based on a combination of five key criteria concerning their general health (EQ-5D Index score), 87.2% of hip replacement respondents and 77.6% of knee replacement respondents recorded an increase in their general health following their operation, compared to 52.4% for varicose vein respondents and 49.3% for groin hernia respondents.

[1] An 'eligible episode' is an episode in HES, clinically coded with relevant hip, knee, varicose vein or groin hernia OPCS procedure codes, which indicates that the patient was eligible for inclusion into PROMs. Details of the eligible clinical codes are included in the PROMs guide, available to download from HESonline [http://www.hesonline.nhs.uk/Ease/servlet/ContentServer?siteID=1937&categoryID=1295].

[2] Not every pre-operative questionnaire will have a post-operative questionnaire sent out. This may be for a number of reasons including the cancellation of an operation or the death of the patient.

- An increase in the patient's EQ-VAS score (current state of the patient's general health marked on a visual analogue scale) was recorded for 61.4% of hip replacement respondents and 50.2% of knee replacement respondents, compared to 40.4% for varicose vein respondents and 38.2% for groin hernia respondents.

The variation in improvement seen for each of these scoring mechanisms may be partly due to their nature. The EQ-VAS score asks patients to score their health on the day that they complete the questionnaire. Therefore, the score provides an indication of the patient's health that may not necessarily be associated with the condition for which they underwent surgery and may be affected by factors other than healthcare. The condition-specific measures (Aberdeen Varicose Vein Questionnaire score and Oxford Hip and Knee scores) focus on clearly defined aspects of the patient's clinical condition which would be expected to be affected by their procedure. The EQ-5D Index score reflects general health status, capturing condition-specific issues in a broad way, but is more disaggregated than the EQ-VAS.

Background

The PROMs Guide

The PROMs guide [http://www.hesonline.nhs.uk/Ease/servlet/ContentServer?siteID=1937&categoryID=1295] is a reference document that contains additional information on the background to the PROMs programme. It also provides an overview of the PROMs dataset and collection process. Further information is also provided in relation to the matching and linking methodologies. This document should be used as a means of reference if any further information is required on the above. Additional information can also be found in the PROMs FAQs: [http://www.hesonline.nhs.uk/Ease/servlet/ContentServer?siteID=1937&categoryID=1433].

Coverage of PROMs

This section of the report considers the number of operations reported in HES compared with pre-operative and post-operative questionnaires completed and returned as part of the PROMs programme.

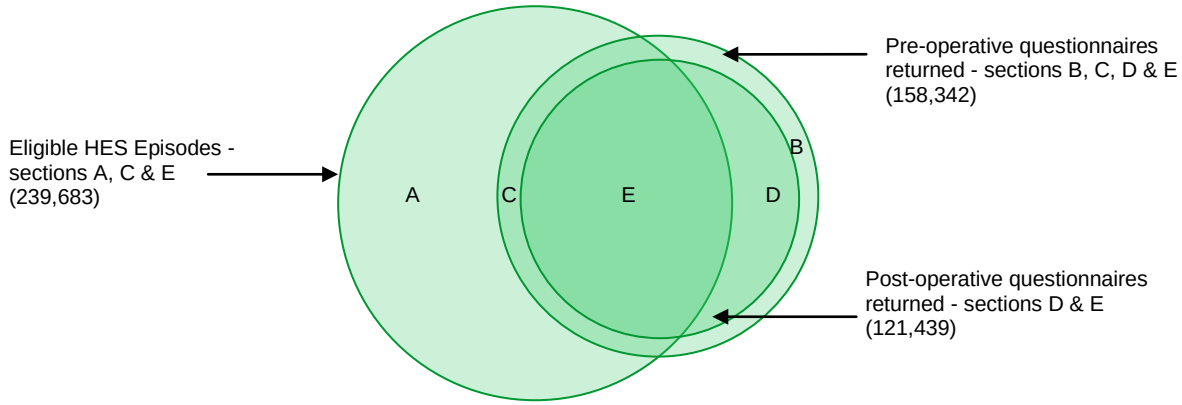
Eligible HES episodes with an episode start date between 1 April 2009 and 31 March 2010 are used in this analysis. Pre-operative questionnaires with a completion date between 1 April 2009 and 31 March 2010 are included. Where a patient did not record the date that they completed the pre-operative questionnaire, the pre-operative questionnaire scan date will be used. Any post-operative questionnaires that are linked to an eligible pre-operative questionnaire and have been sent out to patients, returned and scanned prior to annual questionnaire processing (end of June 2011) are included for analysis.

Once the pair of pre- and post-operative questionnaires has been returned, the resulting comparative data can be used for analysis.

Figure 1 below, displays three circles which represent the total number of eligible HES episodes (the large circle on the left), the number of completed pre-operative questionnaires (the large circle on the right) and the number of returned post-operative questionnaires (the smaller circle on the right).

The overlapping of the three circles in intended to show the participation and return rates.

Figure 1: Summary of the relationships between HES and the pre and post-operative questionnaires



The bullet points below identify what each of the remaining segment relates to and the number of eligible HES episodes, pre- and/or post-operative questionnaires it contains.

- A - Eligible HES episodes that do not link to a PROMs pre-operative questionnaire (122,988)

- B - Pre-operative questionnaires that do not link to an eligible HES episode and for which a post-operative questionnaire has not been returned (15,120)
- B & D - Pre-operative questionnaires that do not link to an eligible HES episode (81,341)
- C - Pre-operative questionnaires that do link to an eligible HES episode for which a post-operative questionnaire has not been returned (21,783)
- C & E - Pre-operative questionnaires that do link to an eligible HES episode (116,695)
- D - Post-operative questionnaires returned that do not link to an eligible HES episode (26,527)
- D & E - All post-operative questionnaires that have been returned (all completed questionnaire pairs) (121,439)
- E - Completed questionnaire pairs (pre and post-operative questionnaires completed) that do link to an eligible HES episode (94,912)

Overall coverage

Chart 1: Number of eligible HES episodes, linked episodes, pre-operative questionnaires, post-operative questionnaires and eligible modelled records[3] for all four procedures by month (1 April 2009 – 31 March 2010)

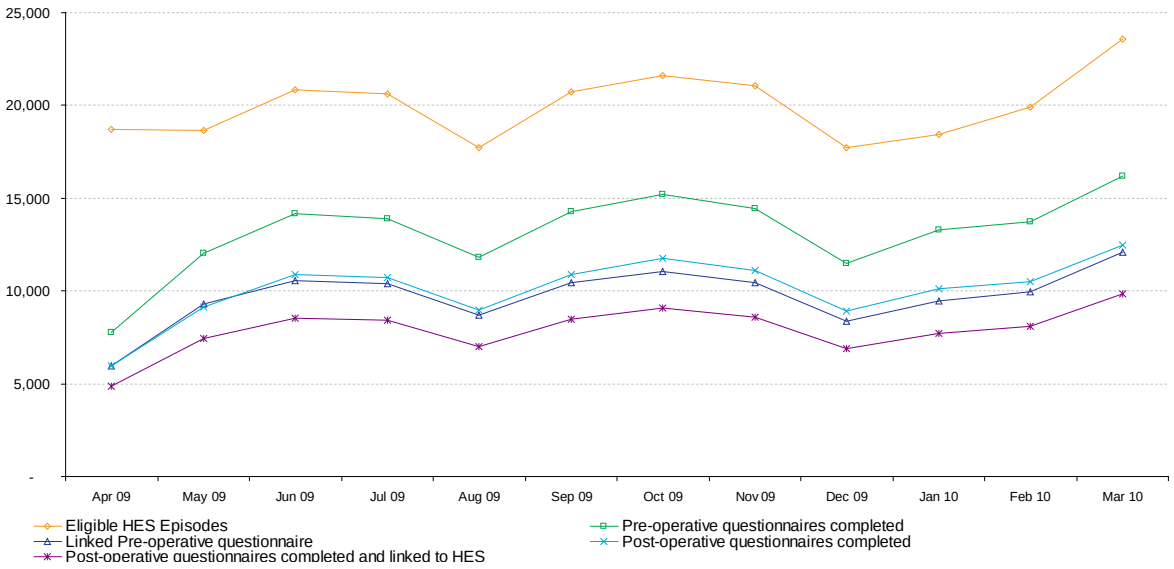


Chart 1 (above) shows that there is some seasonality to the PROMs programme. The numbers of eligible HES episodes, pre- and post-operative questionnaire, linked episodes and questionnaires and eligible modelled records increases over the spring and early summer, before falling in August. Numbers begin to rise through the autumn, before falling in December, rising again to peaks in March.

[3] The month for the number of post-operative questionnaires, linked questionnaires and modelled records is based upon the pre-operative questionnaire completion date.

Chart 2: Monthly participation rates for all four procedures (1 April 2009 – 31 March 2010)

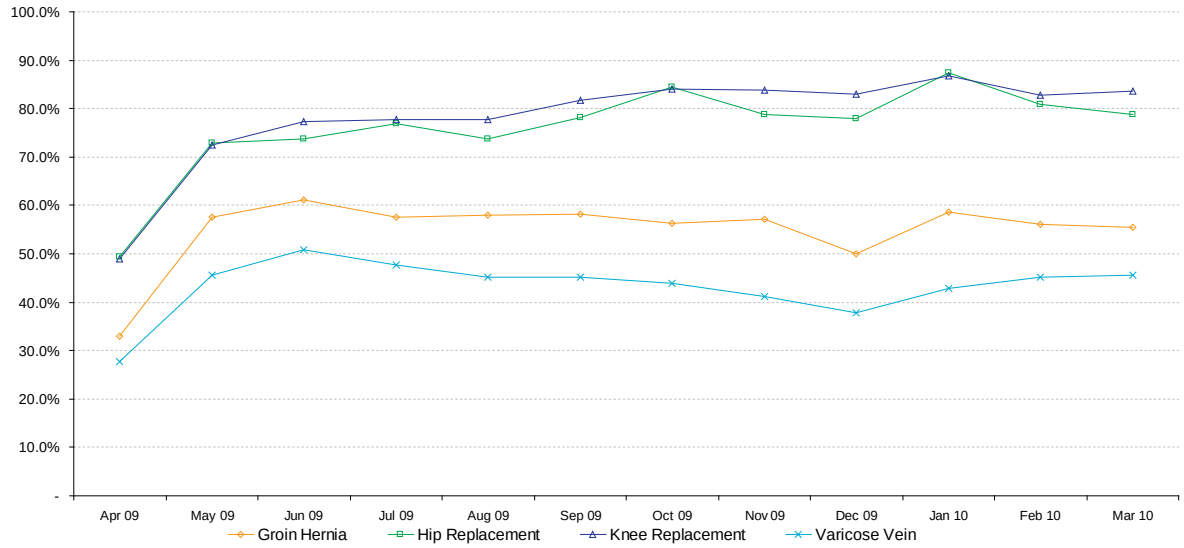


Chart 2 (above) shows the monthly participation rates for each of the four procedures. This chart uses the start date of the HES episode and the date that the pre-operative questionnaire was completed[4]. It should be remembered that on occasions, the pre-operative questionnaire may be completed by a patient significantly in advance of the operation, so the questionnaire may be counted but the eligible episode may not have occurred. This chart shows that after a slow take-up of PROMs, participation rates for each procedure remain relatively stable, although there is some month-on month variation.

Chart 3: Monthly linkage rates for all four procedures based upon the pre-operative questionnaire completion date (1 April 2009 – 31 March 2010)

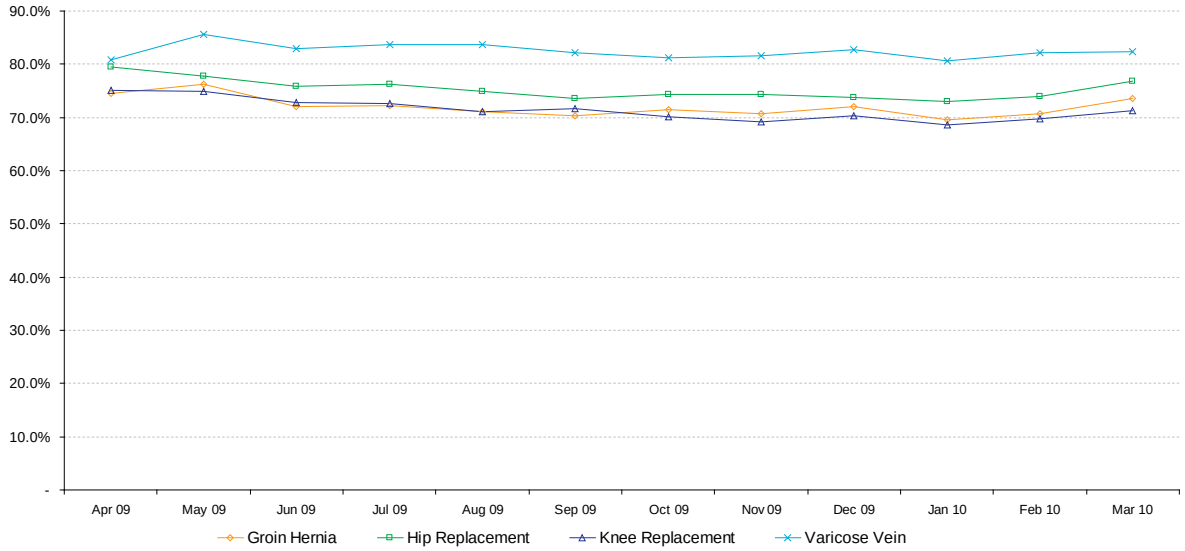


Chart 3 (above) shows the monthly linkage rates for all four procedures based upon the pre-operative questionnaire completion date. This shows that the linkage rates for all procedures remain relatively constant over time.

[4] If the date of the pre-operative questionnaire is not recorded, the pre-operative questionnaire scan date (Q1_SCAN_DATE) is used.

Chart 4: Return percentage of post-operative questionnaires based upon the month that the pre-operative questionnaire was completed (1 April 2009 – 31 March 2010)

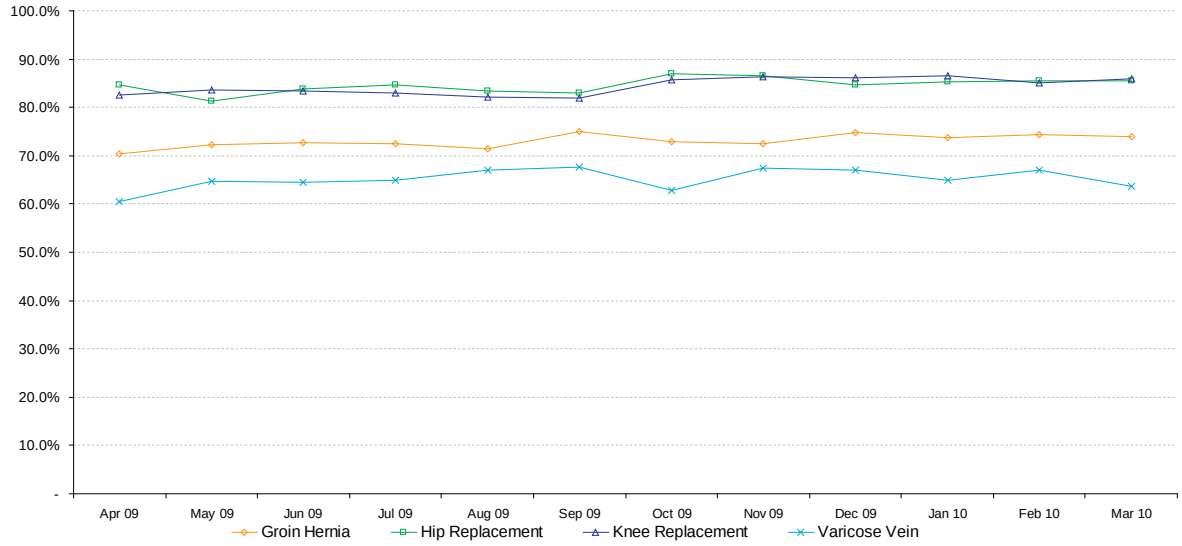


Chart 4 (above) shows the return percentage for post-operative questionnaires based upon the pre-operative questionnaire's date of completion. As with linkage rate, the post-operative questionnaire return rates remained relatively constant over the 2009-10 period.

Questionnaire Validity

In order to undertake any analysis on PROMs data and for comparisons to be made (where applicable), the pre- and post-operative questionnaires must have been returned with valid responses in the appropriate fields. Table 1 (on the following page) identifies the number of pre- and post-operative questionnaire pairs for each procedure and the number of valid responses for each measure and the additional post-operative questions.

Table 1: Number of valid and invalid questionnaire pairs by measure and for the additional post-operative questions (1 April 2009 – 31 March 2010)

	Groin Hernia		Hip Replacement		Knee Replacement		Varicose Vein		Total	
Measure	**Valid**	**Invalid**	**Valid**	**Invalid**	**Valid**	**Invalid**	**Valid**	**Invalid**	**Valid**	**Invalid**
EQ-5D Index	25,019 (93.6%)	1,699 (6.4%)	34,883 (88.5%)	4,521 (11.5%)	40,444 (88.4%)	5,329 (11.6%)	8,788 (92.1%)	756 (7.9%)	109,134 (89.9%)	12,305 (10.1%)
EQ-VAS	23,398 (87.6%)	3,320 (12.4%)	32,949 (83.6%)	6,455 (16.4%)	38,020 (83.1%)	7,753 (16.9%)	8,341 (87.4%)	1,203 (12.6%)	102,708 (84.6%)	18,731 (15.4%)
Oxford Hip Score	-	-	38,342 (97.3%)	1,062 (2.7%)	-	-	-	-	38,342 (97.3%)	1,062 (2.7%)
Oxford Knee Score	-	-	-	-	44,015 (96.2%)	1,758 (3.8%)	-	-	44,015 (96.2%)	1,758 (3.8%)
Aberdeen Varicose Vein Score	-	-	-	-	-	-	9,262 (97.0%)	282 (3.0%)	9,262 (97.0%)	282 (3.0%)

Additional post-operative questions

	Groin Hernia		Hip Replacement		Knee Replacement		Varicose Vein		Total	
Measure	**Valid**	**Invalid**	**Valid**	**Invalid**	**Valid**	**Invalid**	**Valid**	**Invalid**	**Valid**	**Invalid**
Problems compared to before operation	26,147 (97.9%)	571 (2.1%)	38,296 (97.2%)	1,108 (2.8%)	44,749 (97.8%)	1,024 (2.2%)	9,335 (97.8%)	209 (2.2%)	118,527 (97.6%)	2,912 (2.4%)
Results of operation	26,220 (98.1%)	498 (1.9%)	38,233 (97.0%)	1,171 (3.0%)	44,642 (97.5%)	1,131 (2.5%)	9,334 (97.8%)	210 (2.2%)	118,429 (97.5%)	3,010 (2.5%)
Complications – Allergy/Reaction	24,608 (92.1%)	2,110 (7.9%)	35,696 (90.6%)	3,708 (9.4%)	41,111 (89.8%)	4,662 (10.2%)	8,698 (91.1%)	846 (8.9%)	110,113 (90.7%)	11,326 (9.3%)
Complications – urinary problems	24,588 (92.0%)	2,130 (8.0%)	35,182 (89.3%)	4,222 (10.7%)	40,078 (87.6%)	5,695 (12.4%)	8,545 (89.5%)	999 (10.5%)	108,393 (89.3%)	13,046 (10.7%)
Complications – Bleeding	24,409 (91.4%)	2,309 (8.6%)	34,575 (87.7%)	4,829 (12.3%)	39,403 (86.1%)	6,370 (13.9%)	8,789 (92.1%)	755 (7.9%)	107,176 (88.3%)	14,263 (11.7%)

Additional post-operative questions										
	Groin Hernia		Hip Replacement		Knee Replacement		Varicose Vein		Total	
Measure	Valid	Invalid	Valid	Invalid	Valid	Invalid	Valid	Invalid	Valid	Invalid
Complications – Wound problems	24,883 (93.1%)	1,835 (6.9%)	35,247 (89.5%)	4,157 (10.5%)	40,531 (88.5%)	5,242 (11.5%)	8,862 (92.9%)	682 (7.1%)	109,523 (90.2%)	11,916 (9.8%)
Readmitted to hospital	26,115 (97.7%)	603 (2.3%)	38,254 (97.1%)	1,150 (2.9%)	44,659 (97.6%)	1,114 (2.4%)	9,314 (97.6%)	230 (2.4%)	118,342 (97.4%)	3,097 (2.6%)
Further surgery	26,007 (97.3%)	711 (2.7%)	38,244 (97.1%)	1,160 (2.9%)	44,661 (97.6%)	1,112 (2.4%)	9,272 (97.2%)	272 (2.8%)	118,184 (97.3%)	3,255 (2.7%)

Results

Overall and average change

The following table has been produced to provide a high-level overview of the change from pre-operative to post-operative score for each of the procedures and scoring mechanisms. Any tables or charts that look to compare the response from a pre-operative questionnaire against a post-operative questionnaire require both questionnaires to be completed and have valid responses for that field (see Table 1 for further details).

Table 2, below shows the number of patients (and percentage) that recorded an increase in their score, those that stayed the same and those that saw a decrease in their score. Table 3 (on page 13) shows the mean, median and quartiles for each of the procedures and scoring mechanisms for pre- and post-operative questionnaires where both have been completed and have valid scores.

Table 2: Number and percentage of scores that have increased, stayed the same or decreased by procedure (1 April 2009 – 31 March 2010)

EQ-5D Index Change	Groin Hernia	Hip Replacement	Knee Replacement	Varicose Vein	Total
Increase	12,344 (49.3%)	30,425 (87.2%)	31,404 (77.6%)	4,608 (52.4%)	78,781 (72.2%)
Same	8,125 (32.5%)	2,154 (6.2%)	4,426 (10.9%)	2,899 (33.0%)	17,604 (16.1%)
Decrease	4,550 (18.2%)	2,304 (6.6%)	4,614 (11.4%)	1,281 (14.6%)	12,749 (11.7%)
Total[1]	**25,019**	**34,883**	**40,444**	**8,788**	**109,134**
Unknown	1,699 (6.4%)	4,521 (11.5%)	5,329 (11.6%)	756 (7.9%)	12,305 (10.1%)
Total	**26,718**	**39,404**	**45,773**	**9,544**	**121,439**

EQ-VAS Change	Groin Hernia	Hip Replacement	Knee Replacement	Varicose Vein	Total
Increase	8,944 (38.2%)	20,235 (61.4%)	19,104 (50.2%)	3,372 (40.4%)	51,655 (50.3%)
Same	4,370 (18.7%)	3,751 (11.4%)	5,315 (14.0%)	1,579 (18.9%)	15,015 (14.6%)
Decrease	10,084 (43.1%)	8,963 (27.2%)	13,601 (35.8%)	3,390 (40.6%)	36,038 (35.1%)
Total [1]	**23,398**	**32,949**	**38,020**	**8,341**	**102,708**
Unknown	3,320 (12.4%)	6,455 (16.4%)	7,753 (16.9%)	1,203 (12.6%)	18,731 (15.4%)
Total	**26,718**	**39,404**	**45,773**	**9,544**	**121,439**

Condition-specific	Groin Hernia	Hip Replacement	Knee Replacement	Varicose Vein	Total
Increase		36,680 (95.7%)	40,241 (91.4%)	7,722 (83.4%)	84,643 (92.4%)
Same		239 (0.6%)	609 (1.4%)	5 (0.1%)	853 (0.9%)
Decrease		1,423 (3.7%)	3,165 (7.2%)	1,535 (16.6%)	6,123 (6.7%)
Total [1]		**38,342**	**44,015**	**9,262**	**91,619**
Unknown		1,062 (2.7%)	1,758 (3.8%)	282 (3.0%)	3,102 (3.3%)
Total		**39,404**	**45,773**	**9,544**	**94,721**

Footnotes

[1] Number of records where change could be measured

Table 2 identifies the number of patients who saw their score improve, stay the same or fall for each procedure and scoring mechanism. 87.2% and 77.6% of hip and knee replacement respondents respectively saw their post-operative EQ-5D Index score increase when compared against their pre-operative score. 50.3% of all respondents saw an increase in their post-operative EQ-VAS score. The condition-specific scoring mechanisms, Oxford Hip and Knee Scores and Aberdeen Varicose Vein Questionnaire score, saw 95.7%, 91.4% and 83.4% of respondents with increases respectively.

It should be noted that a large proportion of groin hernia and varicose vein patients who recorded the same EQ-5D Index score could not have seen their score improve as they had recorded a score of 1 in their pre-operative questionnaire (the highest possible score). Of those that respondents that saw no change in their EQ-5D Index score, 5,632 groin hernia respondents (22.5%) and 1,654 varicose vein respondents (18.8%) scored 1 (answered no problems to each of the five questions) on both the pre-operative and post-operative questionnaires.

The variation in improvement seen for each of these scoring mechanisms may be partly due to their nature. The EQ-VAS score asks patients to score their health on the day that they complete the questionnaire and therefore provides an indication of the patient's health that may not necessarily be associated with the condition for which they underwent surgery and may be affected by factors other than healthcare. The condition-specific measures (Aberdeen Varicose Vein Questionnaire score and Oxford Hip and Knee scores) focus on clearly defined aspects of the patient's clinical condition which would be expected to be affected by their procedure. The EQ-5D Index score reflects general health status, capturing condition-specific issues in a broad way, but is more disaggregated than the EQ-VAS.

Table 3: Pre- and post-operative mean, median and quartiles for each procedure and scoring mechanism (1 April 2009 – 31 March 2010)

	Mean		1st Quartile		Median		3rd Quartile	
	Pre-operative	Post-operative	Pre-operative	Post-operative	Pre-operative	Post-operative	Pre-operative	Post-operative
EQ-5D Index Scores								
Groin Hernia	0.795	0.873	0.727	0.796	0.796	1.000	1.000	1.000
Hip Replacement	0.356	0.763	0.055	0.639	0.516	0.796	0.673	1.000
Knee Replacement	0.410	0.702	0.088	0.620	0.587	0.727	0.691	1.000
Varicose Vein	0.771	0.864	0.725	0.796	0.796	1.000	0.848	1.000
EQ-VAS Scores								
Groin Hernia	80.198	79.223	75	70	81	80	90	90
Hip Replacement	66.374	75.278	50	65	70	80	80	90
Knee Replacement	68.917	71.903	59	60	70	75	81	85
Varicose Vein	80.214	79.849	74	70	83	85	90	90
Condition-Specific Scores								
Hip Replacement	18.363	37.913	12	33	18	41	24	46
Knee Replacement	19.034	33.634	13	27	19	36	24	42
Varicose Vein	18.863	10.992	11.752	3.637	17.257	8.656	23.772	15.787

Table 3 (on the previous page) shows the pre- and post-operative scores mean, median and quartiles for each scoring mechanism and procedure.

Careful interpretation needs to be applied to Tables 2 and 3 due to the natures of the scoring mechanisms for the EQ-5D Index and EQ-VAS scores. An EQ-5D Index score can range between -0.594 and 1 with coefficients applied to the score for any response other than no problems. However, the resulting scores are not linear (every value between the highest and lowest score is not achievable). In contrast, the EQ-VAS scoring mechanism is perfectly linear (every value between the highest and lowest score is achievable). However, it does demonstrate a high use of rounding. In both cases this means that there are a limited number of discrete scores that cover a high proportion of patients.

Charts 5 through 9 inclusive show the 5th and 95th percentiles, median, mean (shown by an 'X') and quartiles for each procedure and scoring mechanism. Dashed lines represent the minimum and maximum scores possible.

Chart 5: Box plot showing the 5th and 95th percentiles, median, mean (shown by an 'X') and quartiles for EQ-5D index score for each procedure (pre-operative and post-operative) (1 April 2009 to 31 March 2010)

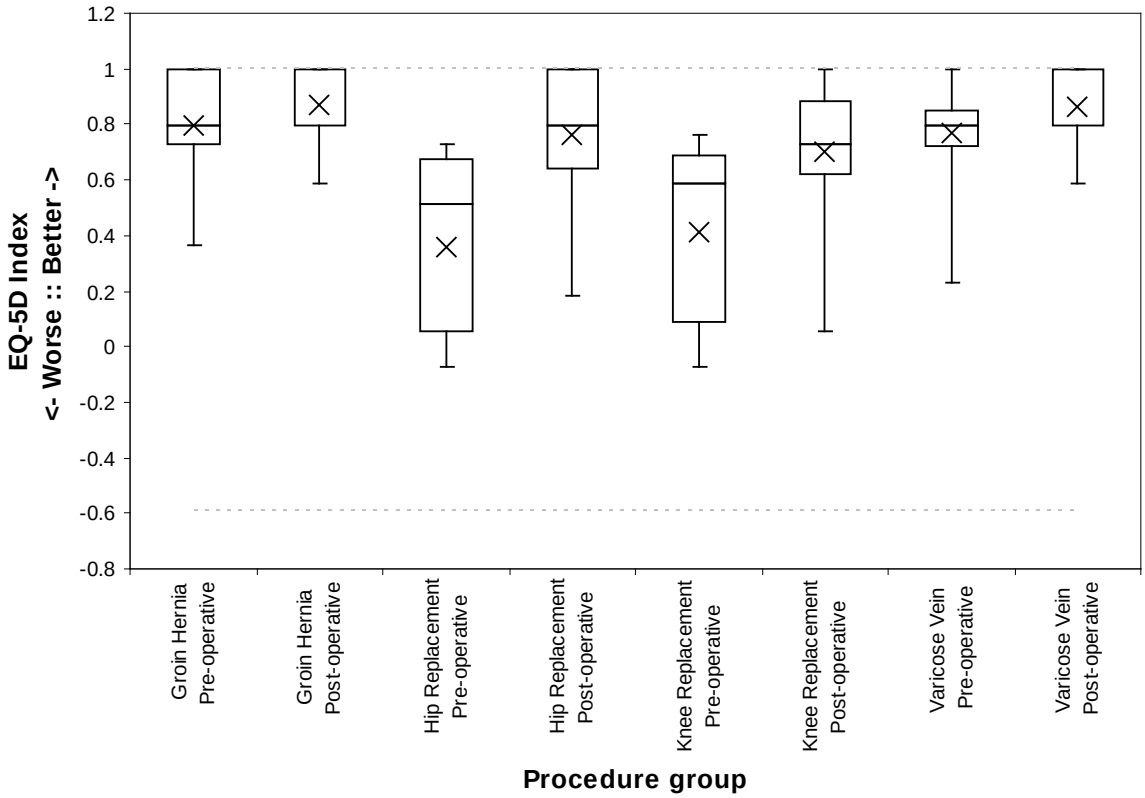


Chart 5 shows that for each procedure the 5th and 95th percentiles, median mean and quartiles have all increased (where possible) when comparing the pre-operative data against the post-operative data. It should be noted that it was not possible for the groin hernia upper quartile and varicose vein 95th percentile to have increased as they were already recorded as 1 (the highest value possible). The pre- and post-operative mean, median and quartile values can be seen for each procedure in Table 3, on page 13.

Chart 6: Box plot showing the 5th and 95th percentiles, median, mean (shown by an 'X') and quartiles for EQ-VAS score for each procedure (pre-operative and post-operative) (1 April 2009 to 31 March 2010)

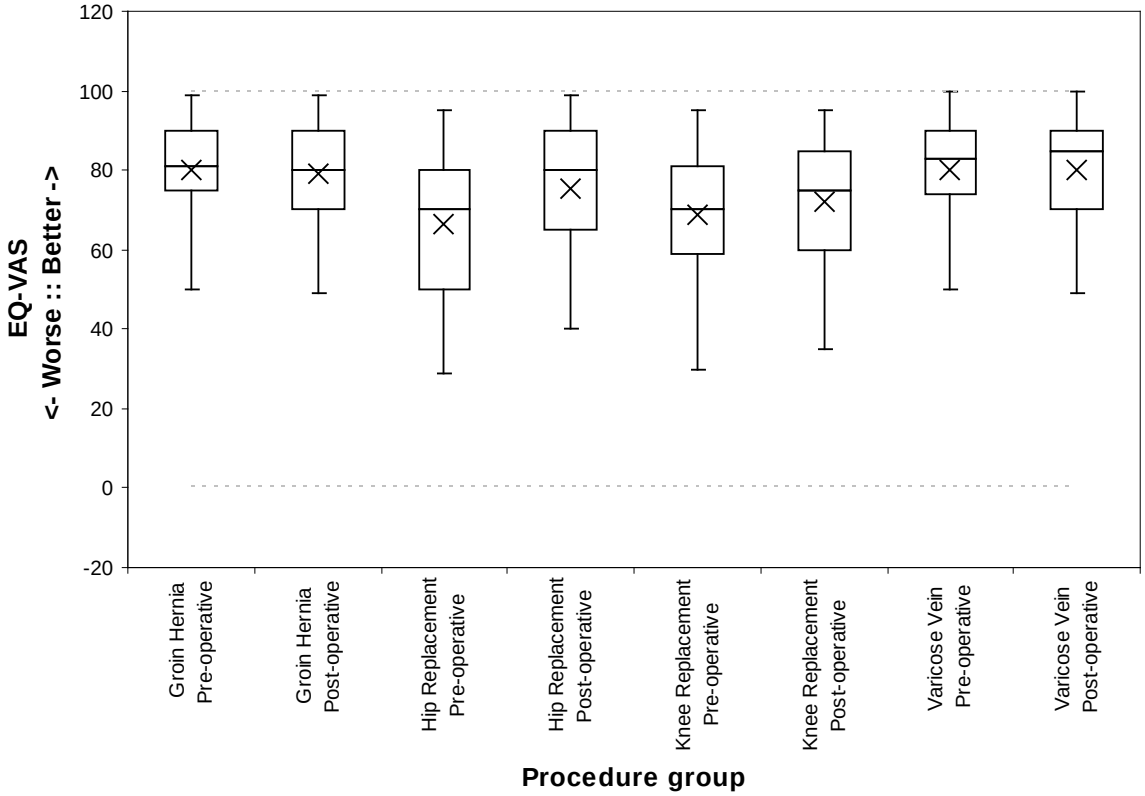


Chart 6 shows that for hip and knee replacements, the 5th and 95th percentiles, median, mean and quartiles have all increased. Limited difference can be seen between the box plots for both groin hernias and varicose veins, with only the change to the lower quartiles clearly visible. This may be in part due to the wording of the EQ-VAS question, which asks the patient to record how good or bad their own health is on the day that they complete the questionnaire. This leaves the question open for individual interpretation and may or may not include consideration of the condition for which they are completing the questionnaire, along with influences other than the respondent's health status. The pre- and post-operative mean, median and quartile values can be seen for each procedure in Table 3 on page 13

Chart 7 Box plot showing the 5th and 95th percentiles, median, mean (shown by an 'X') and quartiles for Oxford Hip Score for Hip Replacement procedures (pre-operative and post-operative) (1 April 2009 to 31 March 2010)

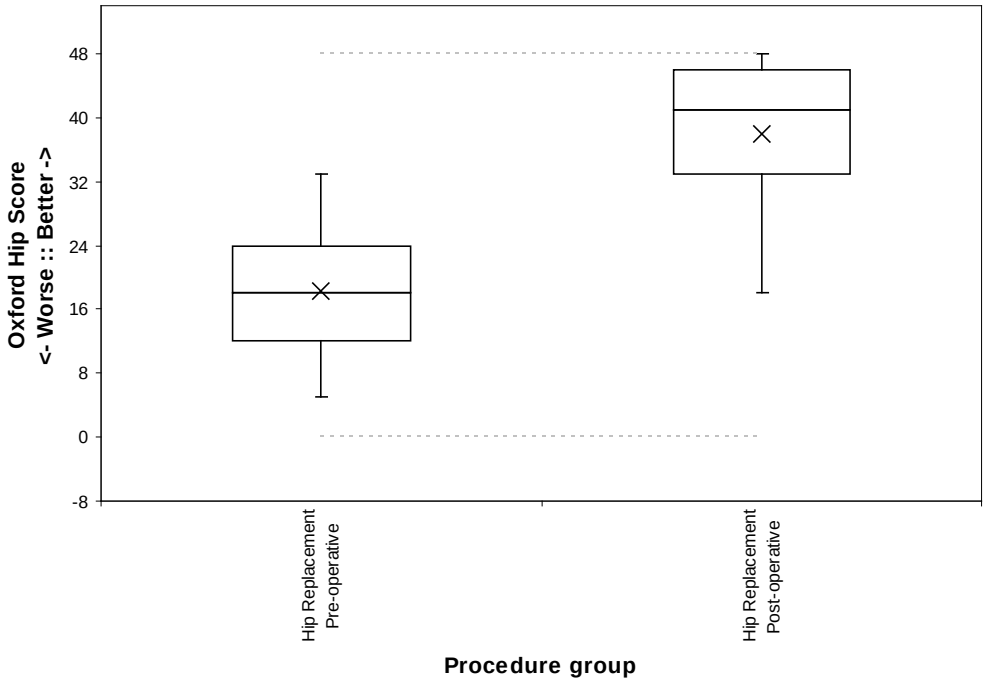


Chart 8 Box plot showing the 5th and 95th percentiles, median, mean (shown by an 'X') and quartiles for Oxford Knee Score for Knee Replacement procedure (pre-operative and post-operative) (1 April 2009 to 31 March 2010)

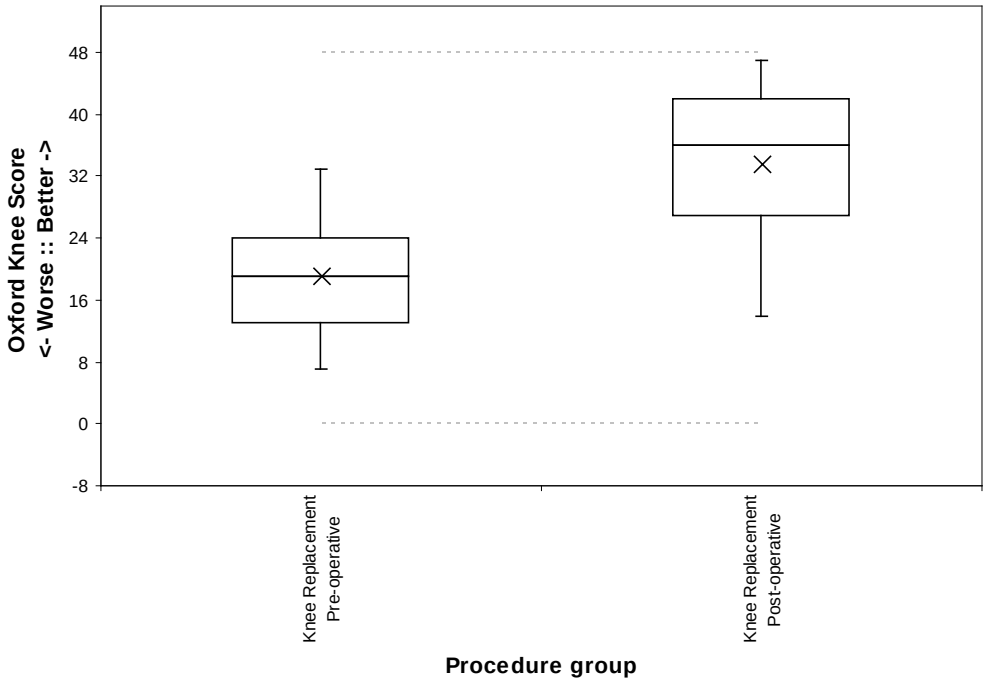
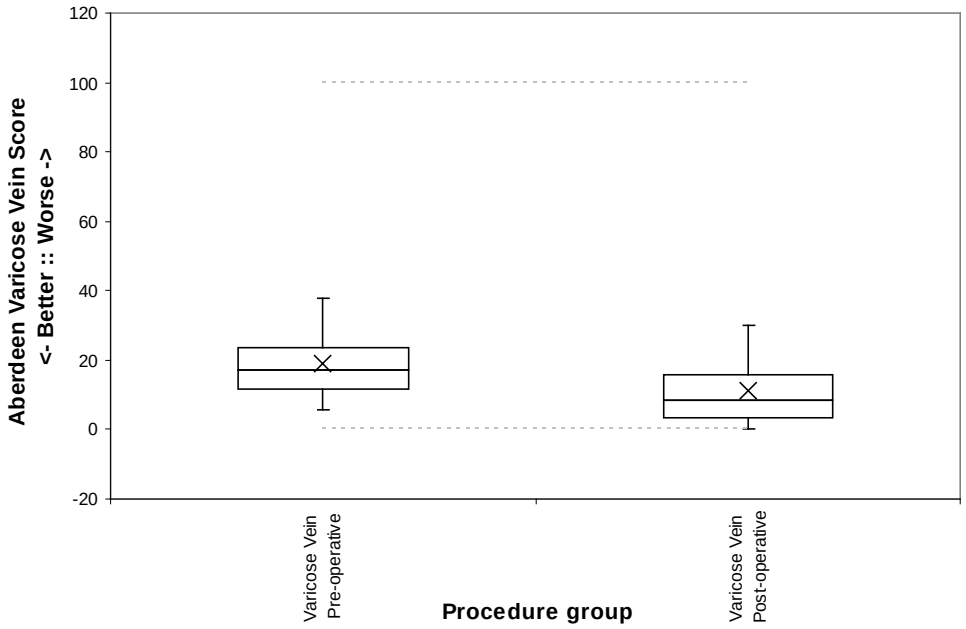


Chart 9 Box plot showing the 5th and 95th percentiles, median, mean (shown by an 'X') and quartiles for Aberdeen varicose Vein Scores for Varicose Vein procedure (pre-operative and post-operative) (1 April 2009 to 31 March 2010)



Charts 7, 8 and 9 shows that for hip replacements, knee replacements and varicose vein procedures, the 5th and 95th percentiles, median, mean and quartiles have all increased for the respective scoring mechanism. Please note that Aberdeen Varicose Vein Questionnaire score generates a high score for patients who are most affected by the condition. Therefore decreasing scores in Chart 9 represent an improvement in condition. The pre- and post-operative mean, median and quartile values can be seen for each procedure in Table 3 on page 13.

Organisation-level analysis

Accompanying this document are spreadsheets containing participation rates and scores by organisation. Scores are presented in organisational-level tables. Scores include both the EQ-5D system and the condition-specific questions by organisation. In addition to the presentation of raw data, adjusted post-operative scores and measures of health gain are included. An adjusted measure has been included to allow the comparison of trusts with national figures based on health gain. The adjusted measure, based on models developed by contractors[5] on behalf of the Department of Health, takes into account the fact that organisations deal with patients with a differing casemix. Further information regarding the methodology can be found at http://www.chks.co.uk/index.php?id=24 and http://www.northgate-proms.co.uk/documents.html.

Feedback and comments are welcome on the methodology and should be sent to: enquiries@ic.nhs.uk.

Further to the organisational level spreadsheets, an interactive comparison spreadsheet has been provided. The initial tab illustrates the key facts for a given provider, giving a quick and easy summary of the organisations data, while there are tables that allow for the selection of data for by selecting the organisation that you require, the procedure and scoring mechanism. Also included is a funnel plot which allows organisations to compare their results to the national picture. The funnel plot supersedes previous comparison charts, incorporating the recently issued guidance from the PROMs programme: [http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_128440]

A description of the methodology change can be accessed through the following link: [http://www.ic.nhs.uk/statistics-and-data-collections/publications-calendar/methodological-changes]

Geographical variation

The average pre- and post-operative scores and average adjusted health gain have been used to help identify if there is any geographical variation for each procedure and scoring mechanism. Figures 2 through 12 display three maps for each procedure and scoring mechanism combination at a commissioner level. In each figure, the left-hand side map shows the average pre-operative score for that procedure and measure combination, the middle map shows the average post-operative score and the right-hand side map shows the average adjusted health gain.

These maps are based upon modelled data and therefore, if an organisation has an input count of less than 30, the model cannot be applied to produce and adjusted health gain. As previously noted, it is important that the trends shown are taken to be a starting point for further investigation rather than giving a definitive conclusion on organisational performance.

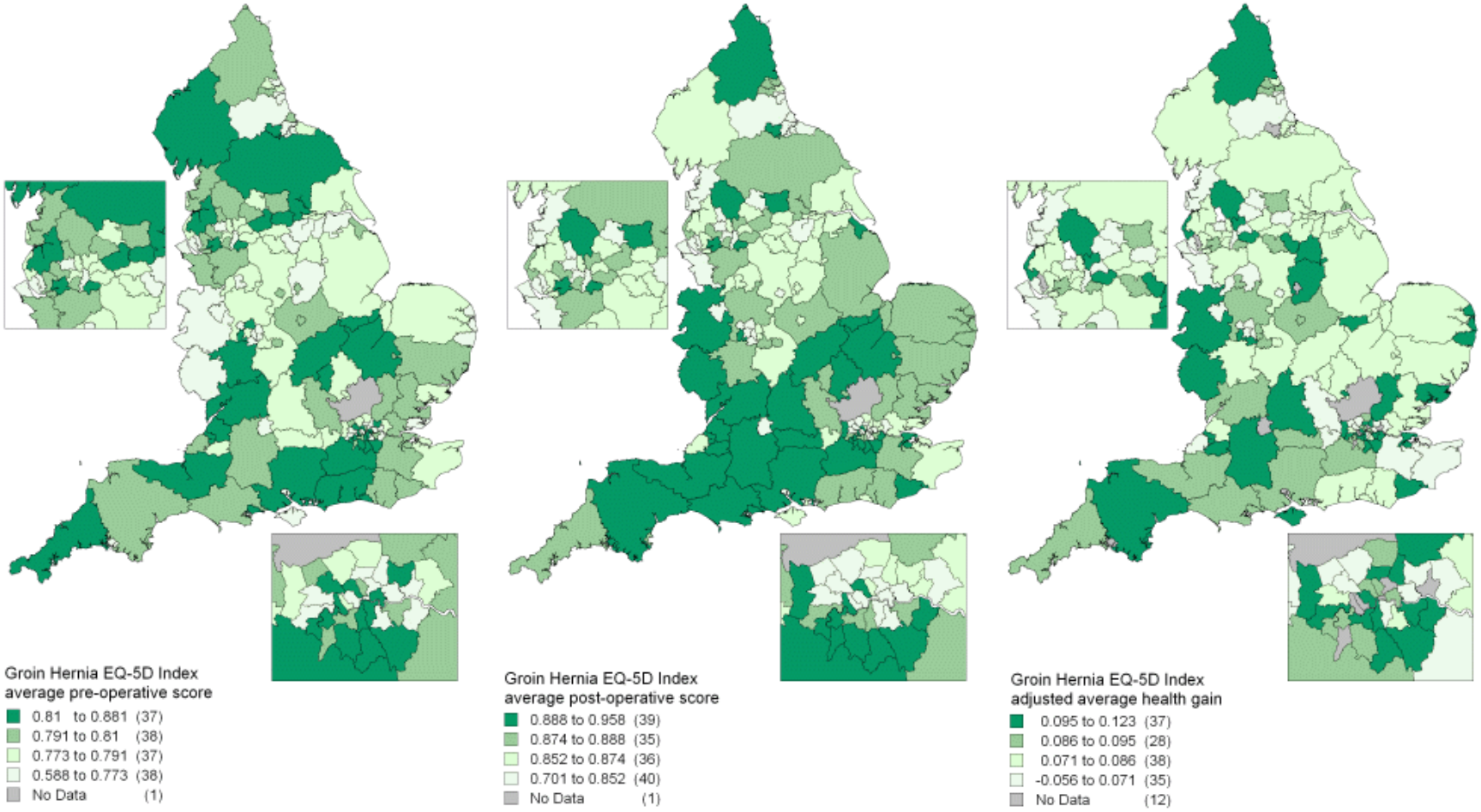
The ranges for each map look to have an equal count of commissioners, allowing for the basic comparison of organisations. It is recommended that these maps are used in conjunction with the commissioner level tables and/or score comparison spreadsheet.

Caution should also be exercised where ranges have a very narrow band as this may cause a 'cliff-edge' effect, whereby a small change in the range could cause a number of organisations to move to a higher/lower band. Using the commissioner level tables and/or score comparison spreadsheet will help to identify where this is the case. In addition the non-linear nature of the EQ-5D Index and Aberdeen Varicose Vein Scores could have an affect on the average scores and banding width.

Due to a geographical boundary change, the maps present only a very small proportion of data for Hertfordshire. During 2009/10, Hertfordshire contained two separate PCTs, East and North Hertfordshire PCT and West Hertfordshire PCT. These PCTs merged in April 2010 into a single Hertfordshire PCT. As these maps are to the latest geographical boundaries, the majority of Hertfordshire's data, which are recorded against the two previous PCTs, are not presented. However, the data are available within the Commissioner spreadsheet.

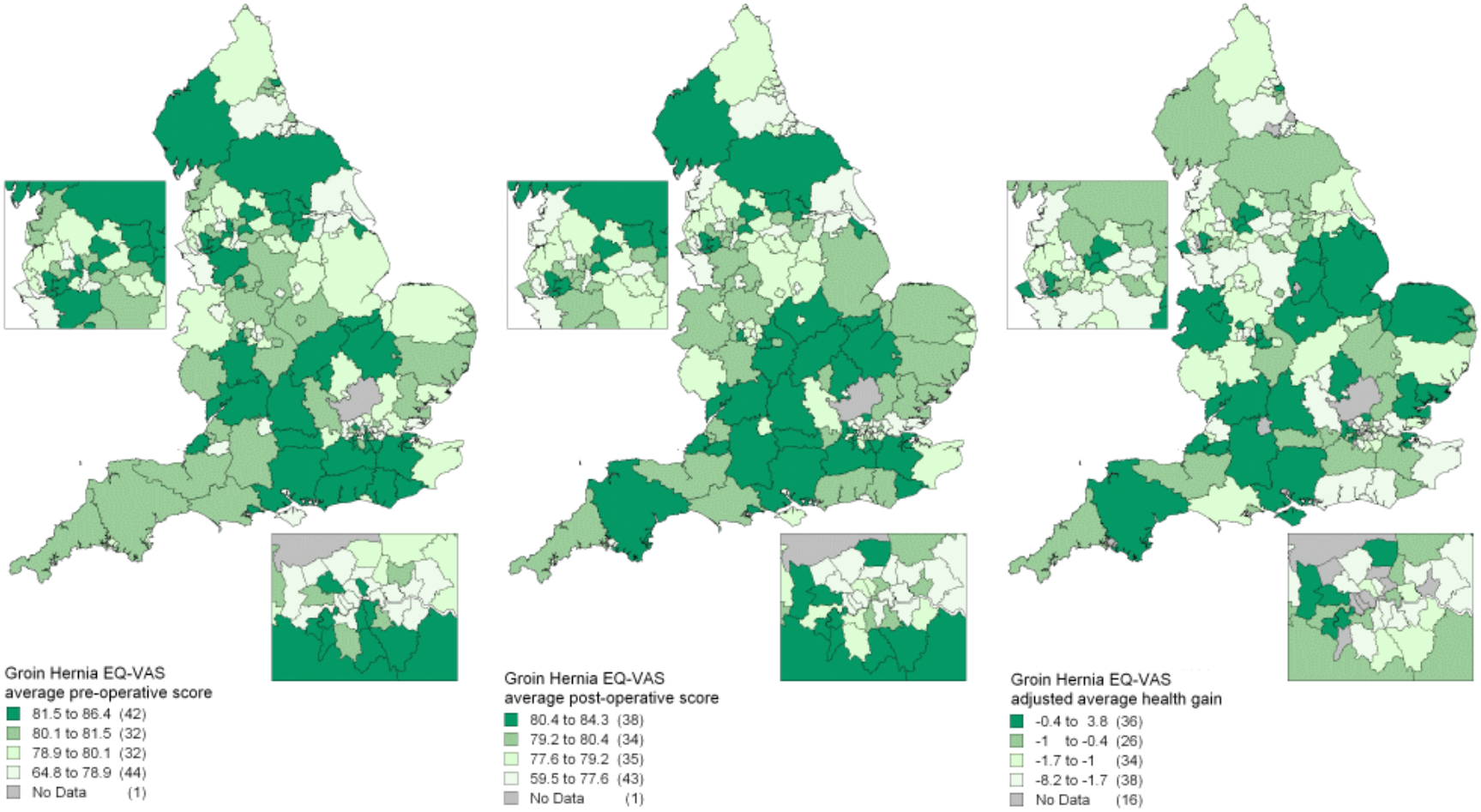
[5] CHKS Ltd in conjunction with Northgate Information Solutions Ltd.

Figure 2: Groin Hernia EQ-5D Index Score[6]



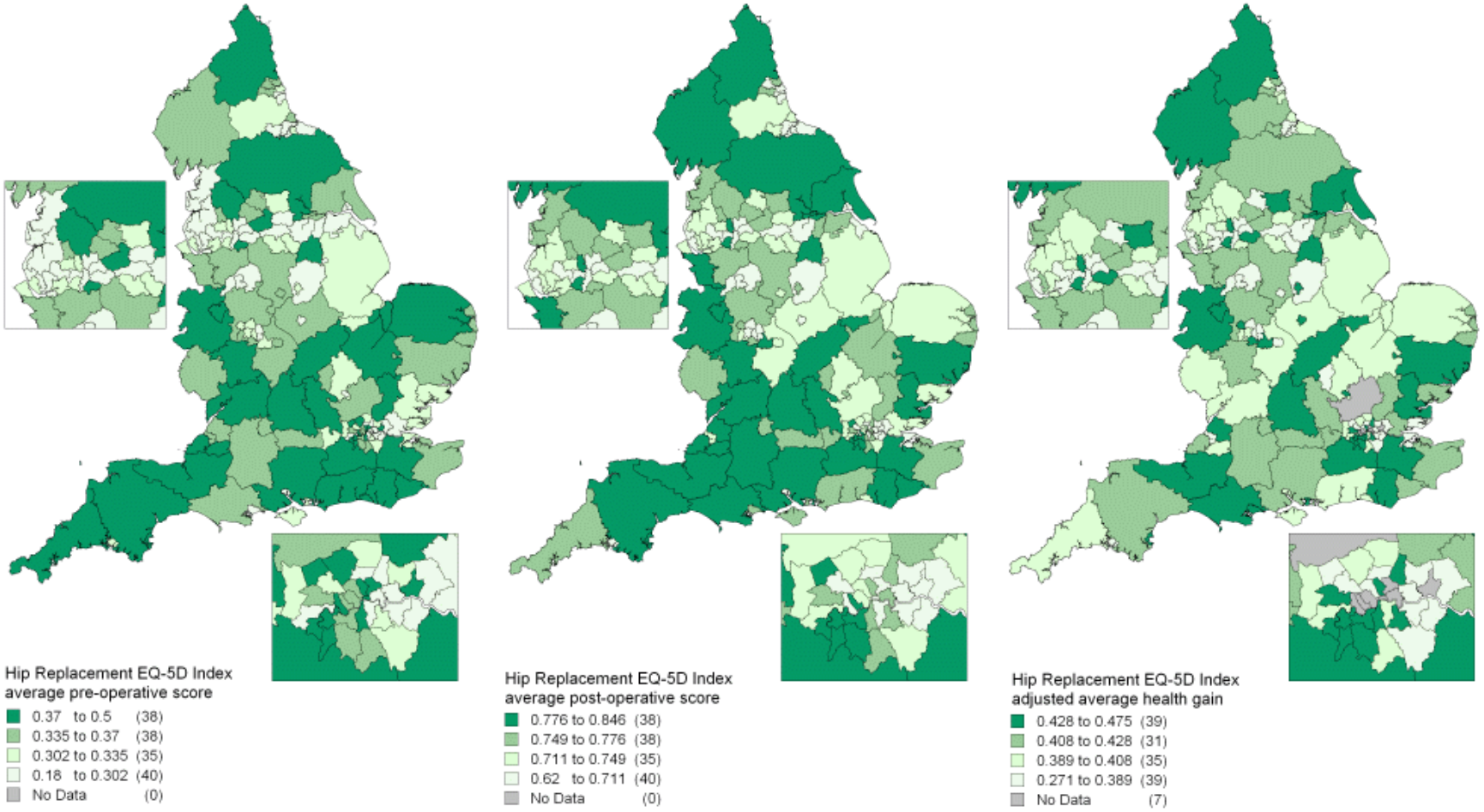
[6] © Crown copyright and database rights 2011 Ordnance Survey 0100044406

Figure 3: Groin Hernia EQ-VAS Score[7]



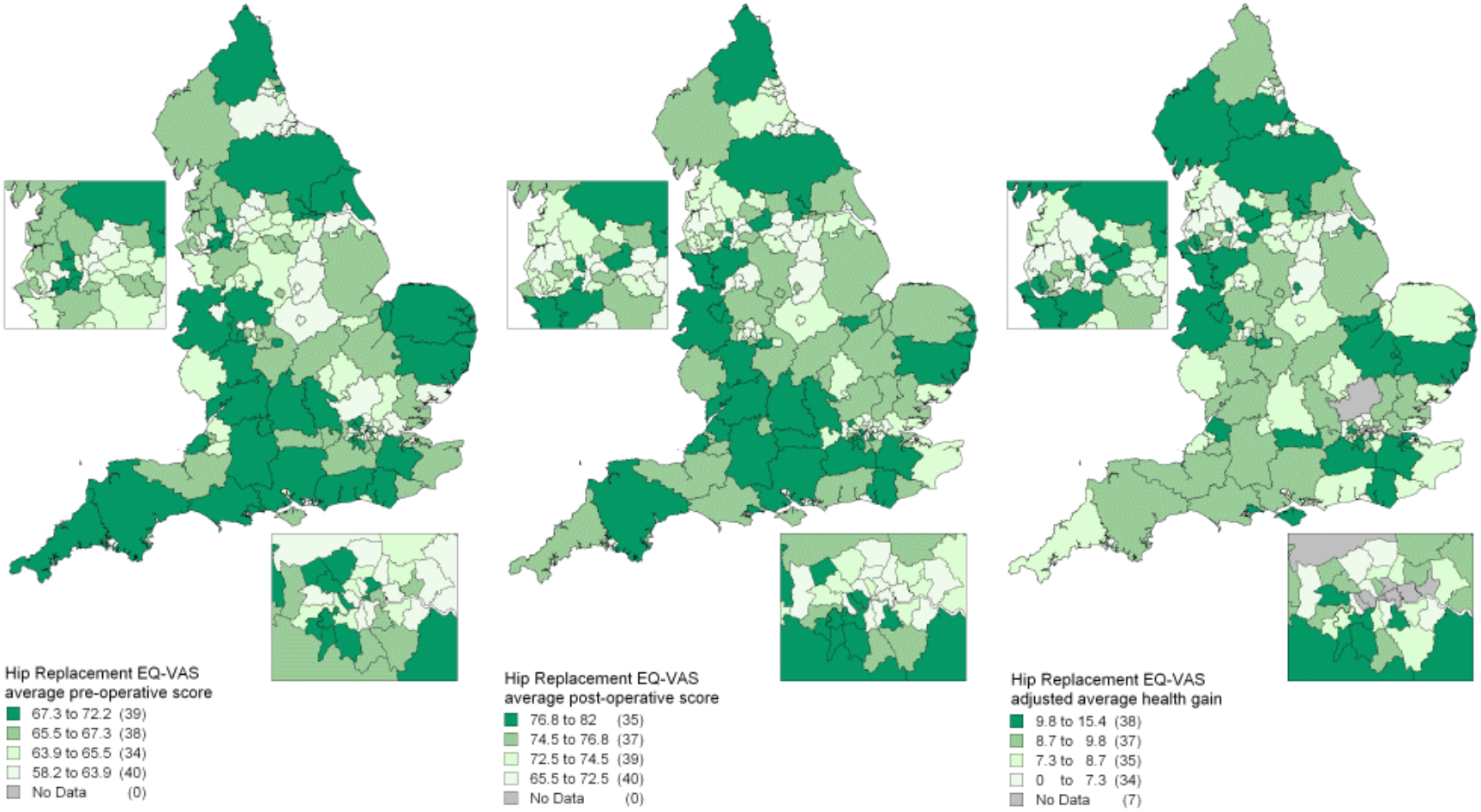
[7] © Crown copyright and database rights 2011 Ordnance Survey 0100044406

Figure 4: Hip Replacement EQ-5D Index Score[8]



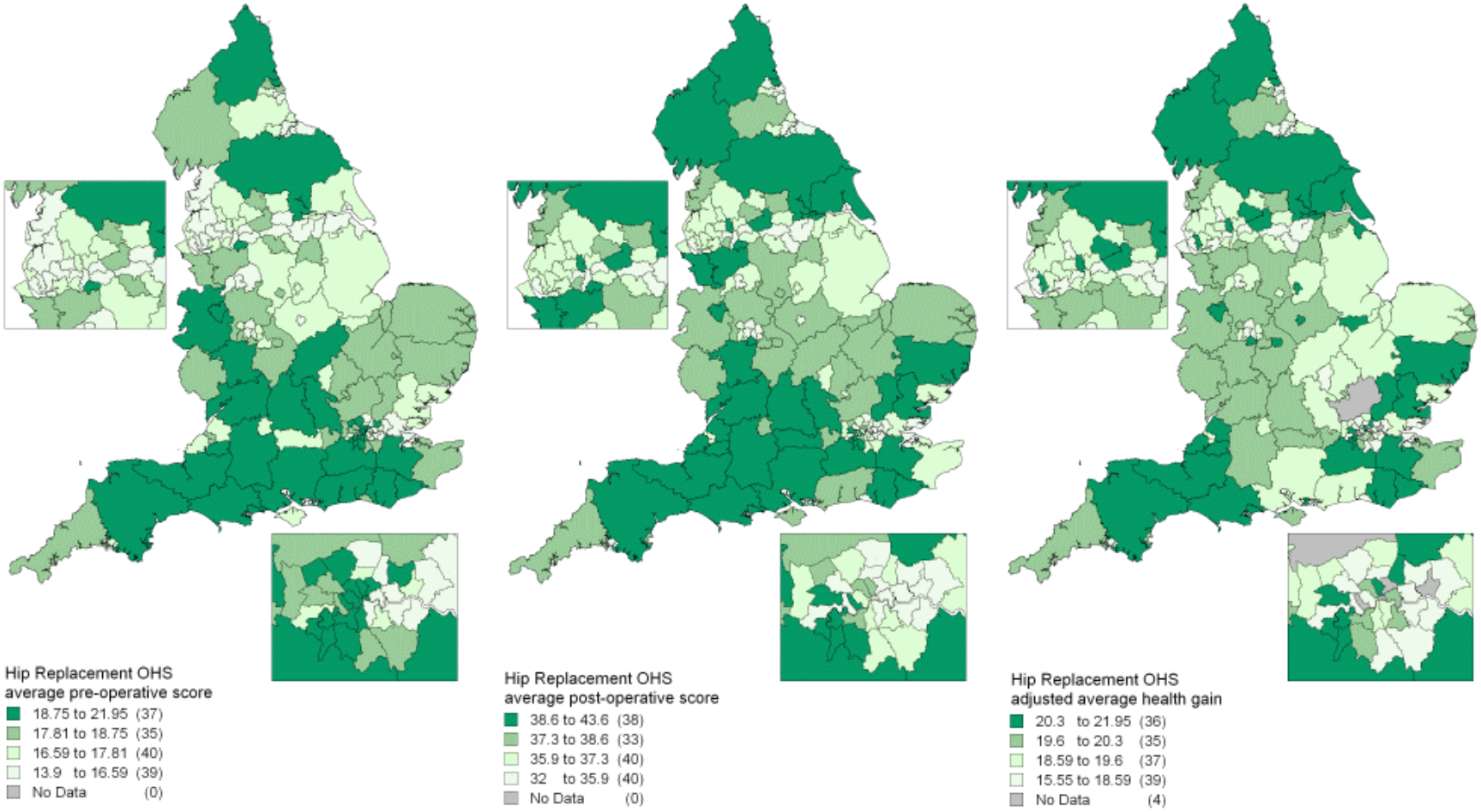
[8] © Crown copyright and database rights 2011 Ordnance Survey 0100044406

Figure 5: Hip Replacement EQ-VAS Score[9]



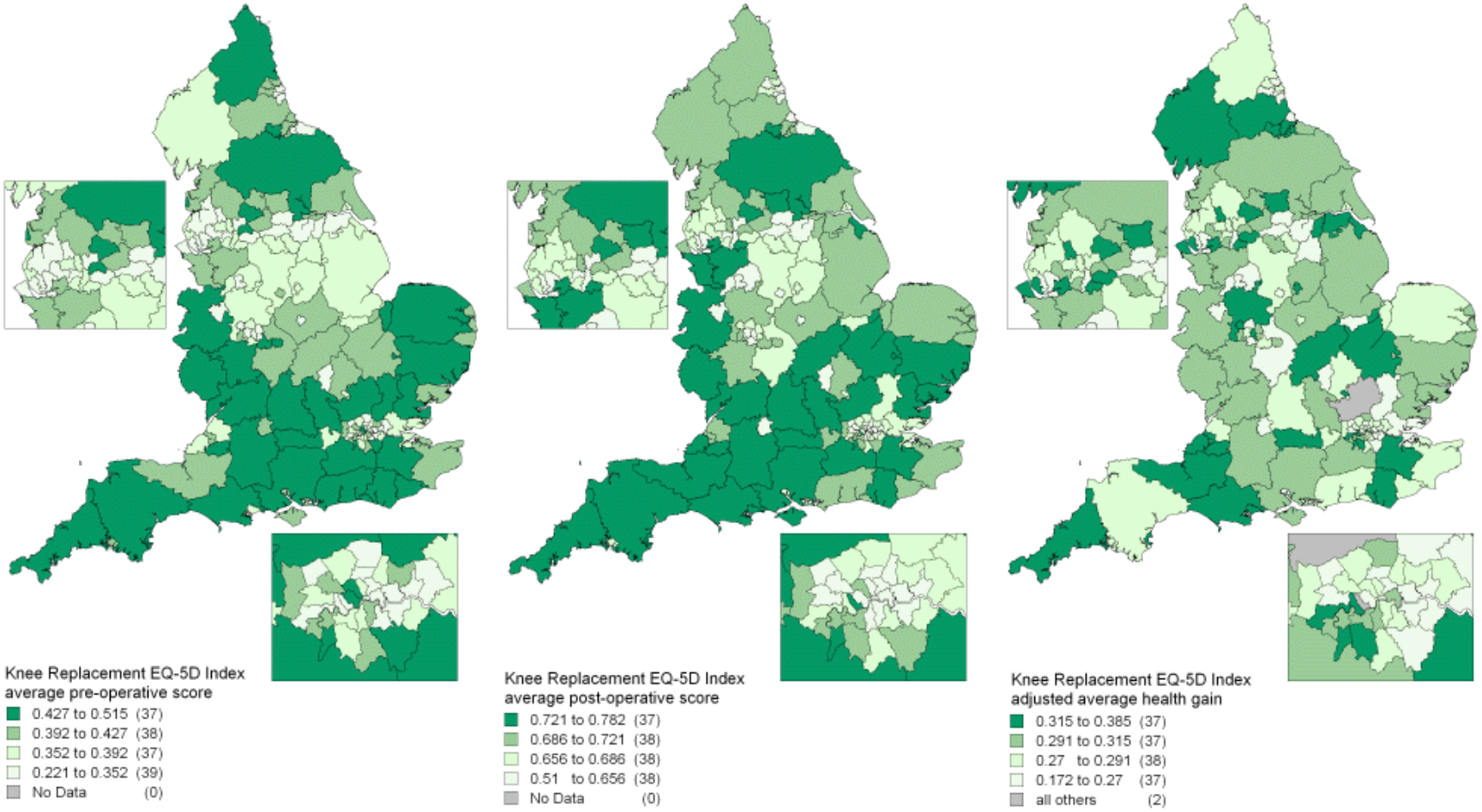
[9] © Crown copyright and database rights 2011 Ordnance Survey 0100044406

Figure 6: Hip Replacement Oxford Hip Score[10]



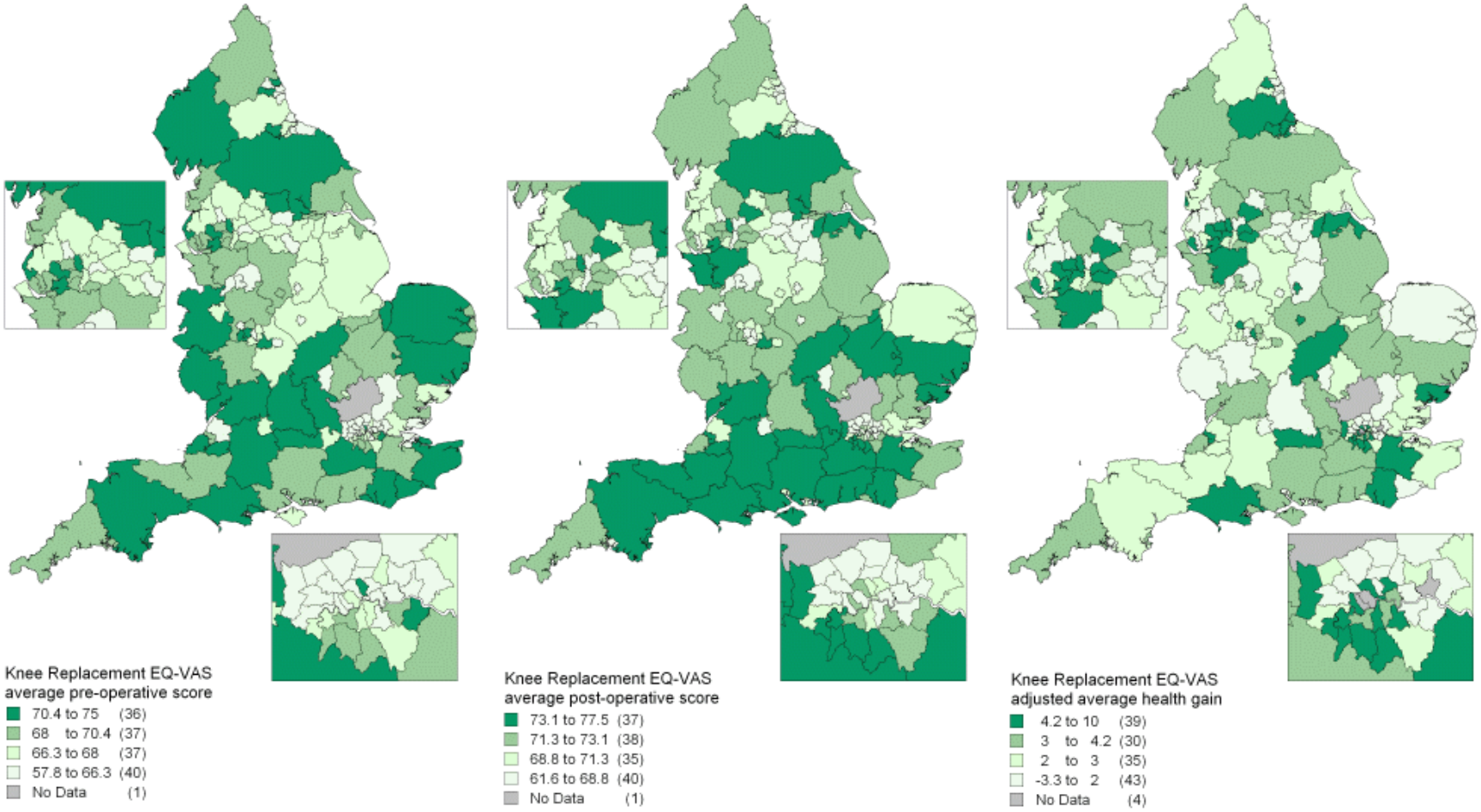
[10] © Crown copyright and database rights 2011 Ordnance Survey 0100044406

Figure 7: Knee Replacement EQ-5D Index Score[11]



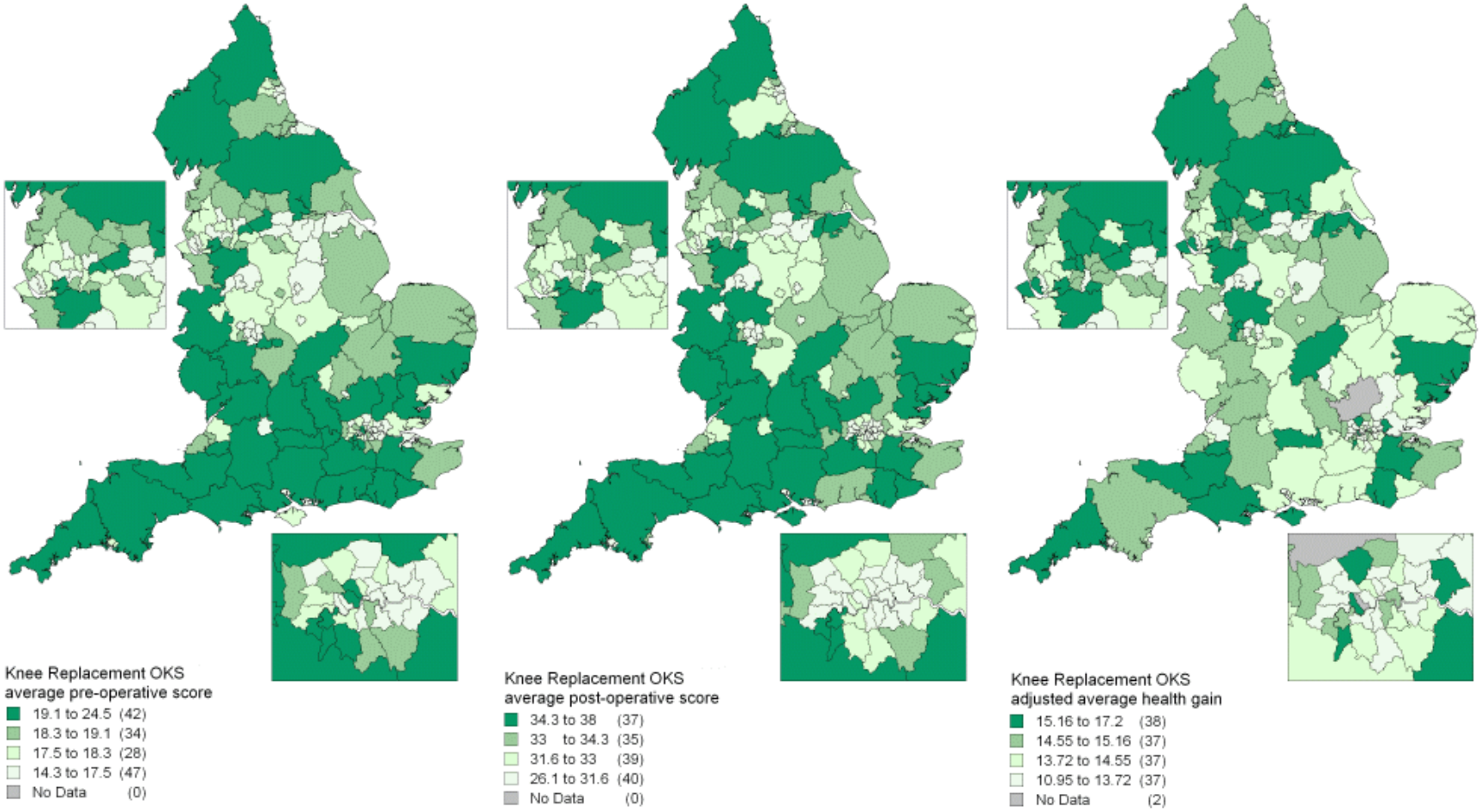
[11] © Crown copyright and database rights 2011 Ordnance Survey 0100044406

Figure 8: Knee Replacement EQ-VAS Score[12]



[12] © Crown copyright and database rights 2011 Ordnance Survey 0100044406

Figure 9: Knee Replacement Oxford Knee Score[13]



[13] © Crown copyright and database rights 2011 Ordnance Survey 0100044406

Figure 10: Varicose Vein EQ-5D Index Score[14]

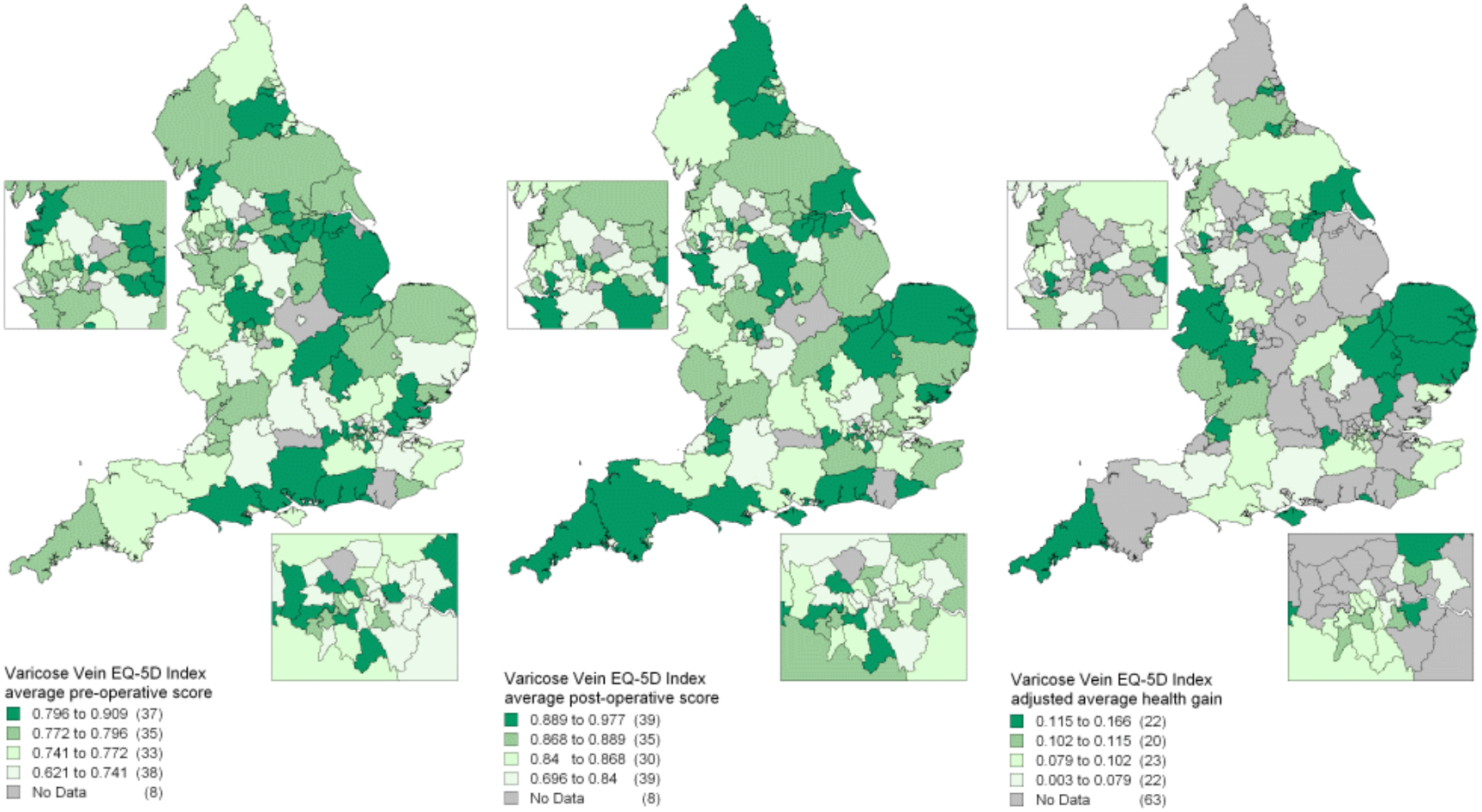


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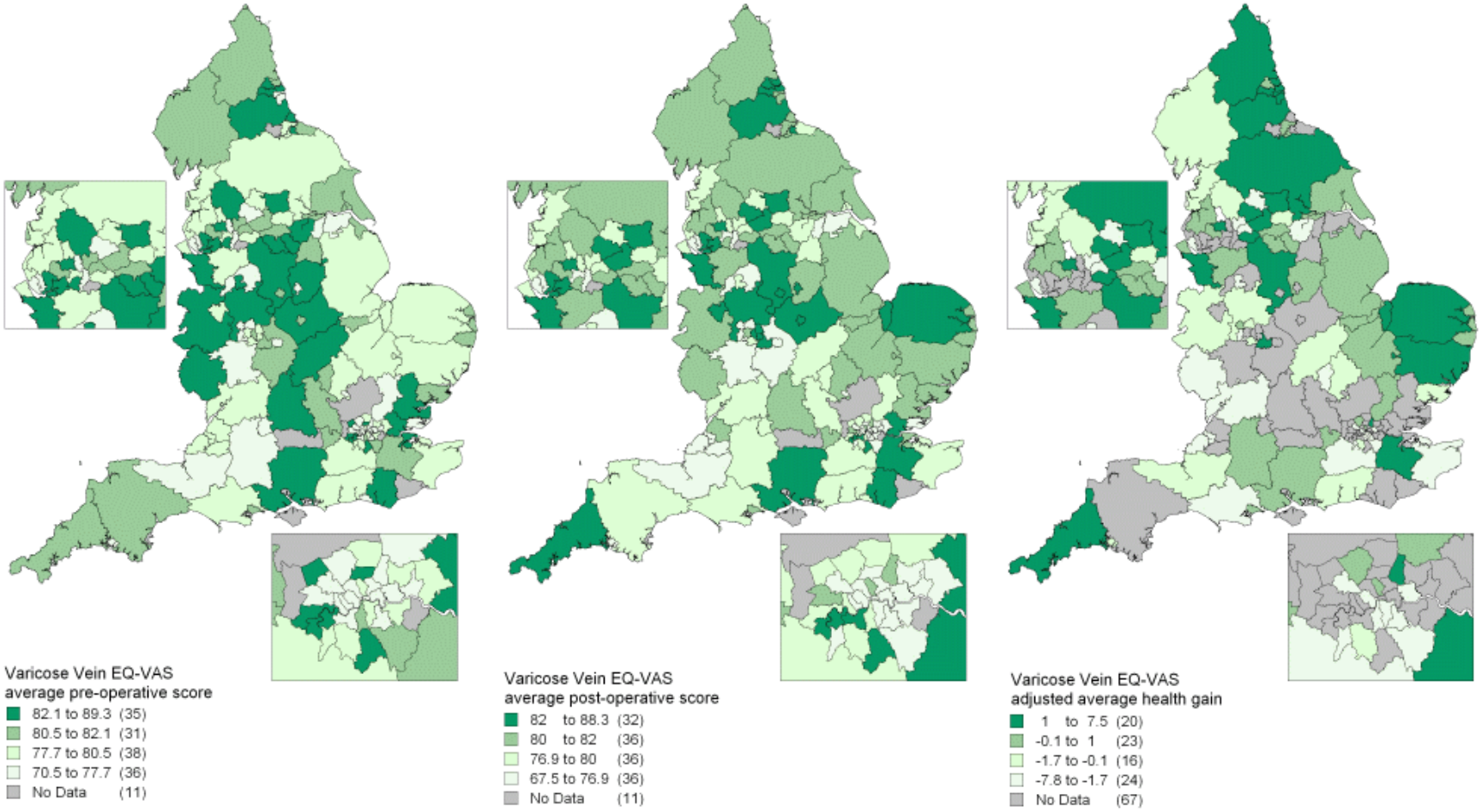
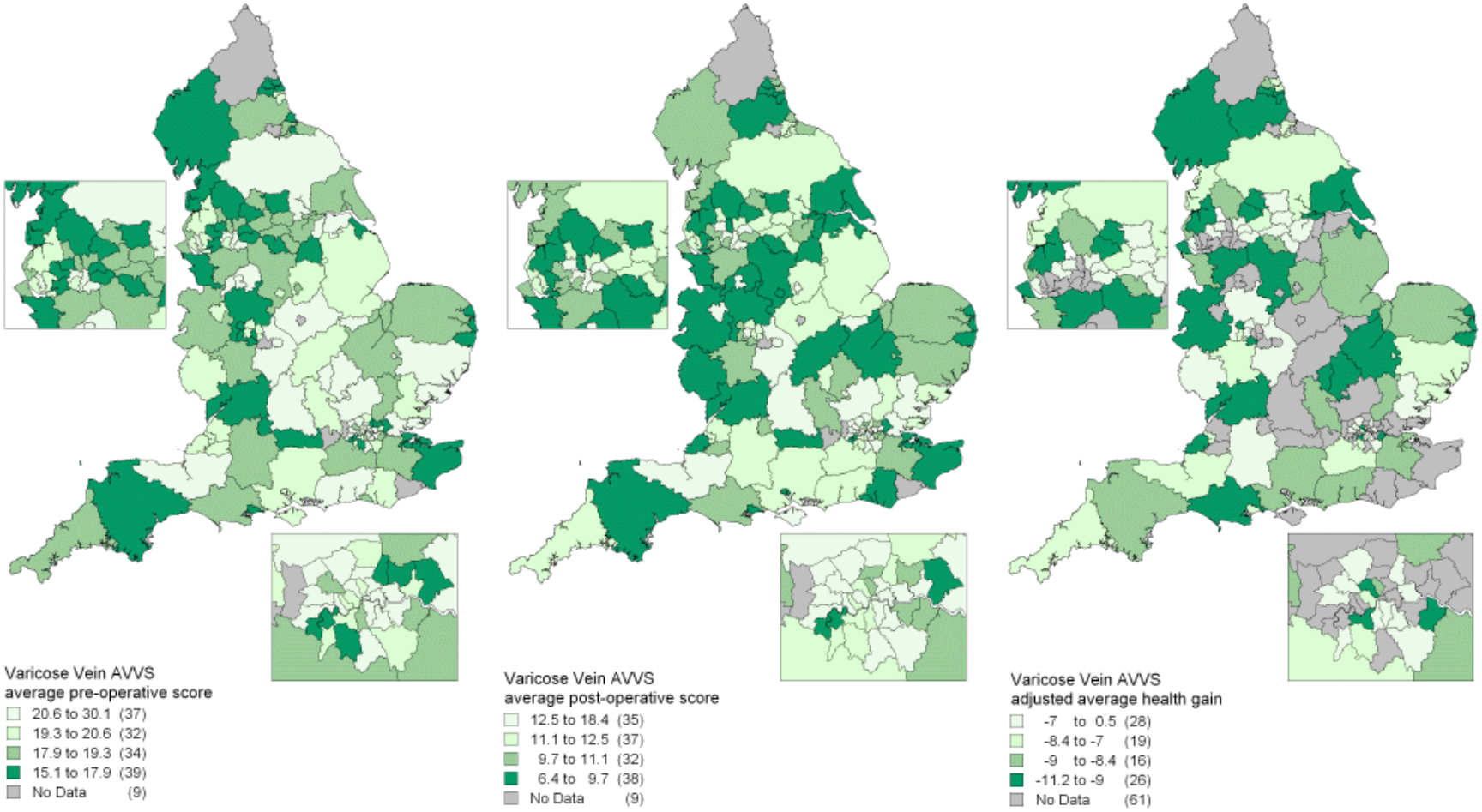
Figure 11: Varicose Vein EQ-VAS Score[15]



[15] © Crown copyright and database rights 2011 Ordnance Survey 0100044406

Figure 12: Varicose Vein Aberdeen Varicose Vein Score[16]



[16] © Crown copyright and database rights 2011 Ordnance Survey 0100044406

Accessing PROMs

PROMs data will be refreshed on a monthly basis and will initially be made available in the following ways:

1. A high-level summary of the data will be updated on a monthly basis
2. Publicly available aggregated data: Data tables will be made available for download from the HESonline website on a quarterly (three month) basis. This includes tables aggregated to provider and commissioner level, enabling comparative analysis.
3. Extract service: customers can request bespoke cuts of data at row level, including the choice of which data items are selected via the extract service. An administrative fee will be charged for the production of the bespoke request based on time and complexity of the request.
4. HES Interrogation system: Registered users of the HES Interrogation System will be able to run queries against the linked HES/PROMs dataset. There will be two views of the data – a HES-centric view, similar to existing HES datasets, which will show HES plus any linking PROMs questionnaires, and a PROMs-centric view showing all PROMs plus any linking HES episodes. This second view will allow unlinked PROMs data to be viewed.

For further information on accessing the data, please refer to HESonline [http://www.hesonline.nhs.uk/Ease/servlet/ContentServer?siteID=1937&categoryID=245].

Next steps and feedback

The NHS Information Centre welcomes all feedback relating to any aspect of this publication.

Feedback can be provided by going to the Contact us section of HESonline [http://www.hesonline.nhs.uk/Ease/servlet/ContentServer?siteID=1937&categoryID=377].

Following on from this report:

- A high-level summary of the data will be updated on a monthly basis
- Data tables will be made available for download from the HESonline website on a quarterly (three month) basis. This includes tables aggregated to provider and commissioner level, enabling comparative analysis.
- Additional reports on different aspects of the data making the publication more varied and interesting will be produced on a quarterly (three month) basis.
- An annual refresh document will be produced when no further post-operative questionnaires for HES episodes in 2010–11 are being received.

Detailed analysis of the data has been commissioned by the Department of Health from the London School of Hygiene and Tropical Medicine.

Responsible statistician:

Simon Rhea, HES/SUS Development - Section Head

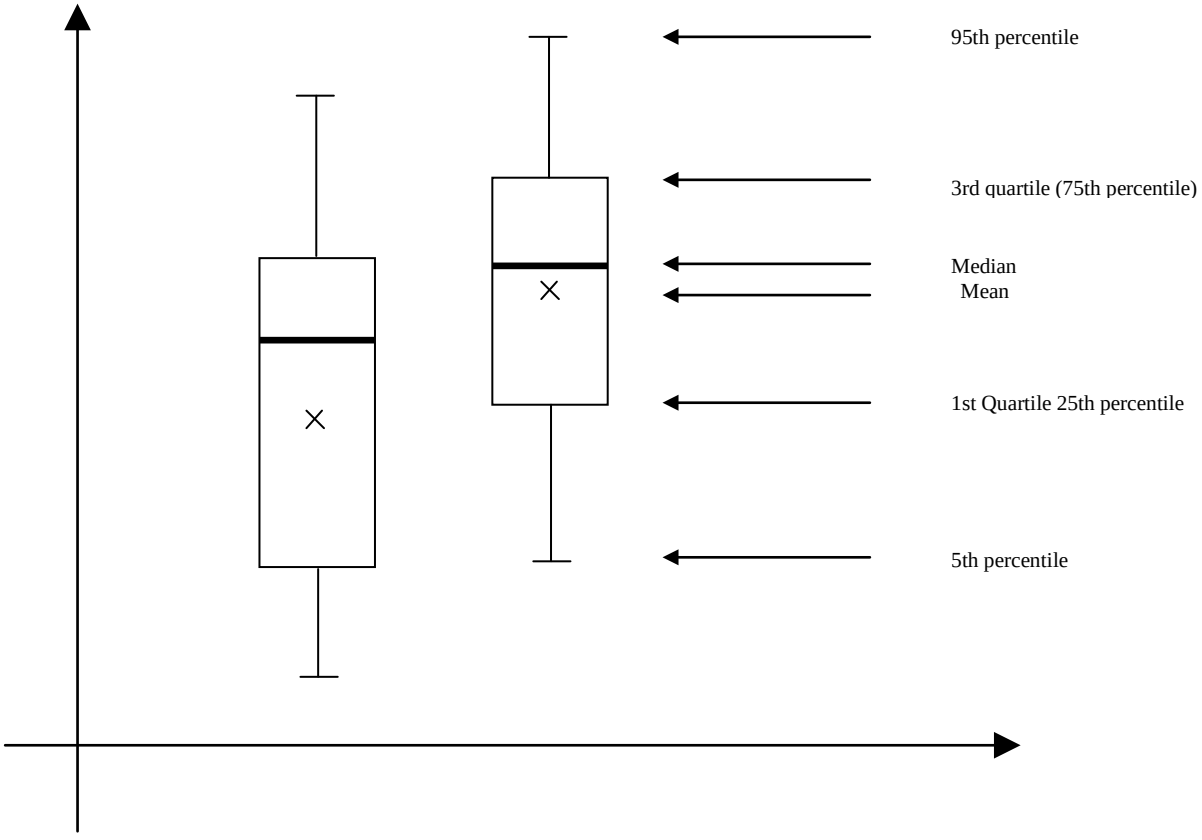
Contact via enquiries@ic.nhs.uk or 0845 300 6016

Annex 1 – Interpreting box plots

Comparing average health scores between categories of patients can be useful. However, often this only provides a small part of the picture. An example of this is where the average score for a group of patients indicates a moderate level of health before an operation. This average could be made up of nearly all of the patients reporting a moderate health before an operation. However, it could also be made up of some patients that reported excellent health and an equal number of patients that reported really bad health.

For this reason, it is also very useful to know how spread out the scores are for patients in a particular group, what this distribution looks like and how this compares between groups. If the patients in a particular group are ordered according to the score that they have given, it is useful to know a score of a patient near the top of the order, one half way between the top and the middle, one in the middle, one half way between the middle and the bottom and one near the bottom.

The box plot presents the information. Each symbol on the box plot indicates the score of a patient at a particular place in the group as shown below.



The 95th percentile represents a patient with one of the highest scores in the group (only 5% of the other patients in the group have a score the same or greater).

The third quartile represents a patient with quite a high score (where a quarter of the patients in the group have a score the same or greater).

The median represents a patient in the middle (half the other patients have a score the same or greater and the other half have a score the same or less).

The first quartile represents a patient with quite a low score (a quarter of the patients in the group have a score the same or less).

The 5th percentile represents a patient with one of the lowest scores in the group (only 5% of the other patients in the group have a score the same or less)

Note that this is a general description of these percentiles and quartiles. Under certain circumstances, such as where there is a small number of scores in the group or multiple values with the same score the description may not quite hold. A small cross, representing the mean has also been added to the charts in this document.

The greater the height of the box plot from top to bottom, the greater the level of variation in patients' scores within the relevant group. Both of the box plots are quite high on the example chart, indicating quite a high level of variation.

The position of the respective symbols on the box plots can be compared to form a comparison between groups of patients. In the example on the previous page, each of the symbols of the box plot on the left is lower than that for the box plot on the right. This indicates that at the key points in the distribution, the patients in the group on the left score lower than those on the right. However, the difference between the two groups is not so big compared to the level of variation within each group. Where two box plots are alongside each other and most of the symbols on the first box plot are higher than all of the symbols on the second box plot it is clear that there is a higher level of variation between groups.