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Midlands and Lancashire
Commissioning Support Unit

Vascular Service Provision Changes Manchester University NHSFT – Inequality Impact and Travel Analysis

MLCSU Business Intelligence Project A0044

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Executive Summary

MLCSU Business Intelligence have undertaken an analysis of the impact on travel times and costs to patients in the Manchester University NHSFT catchment area, should Vascular Surgery Services be reconfigured so they are located at different sites.

MLCSU Business Intelligence were commissioned by Manchester University NHSFT (MU NHSFT) to analyse the impact on distance and travel time for residents if Vascular Surgery services were reconfigured to one of four options.

Data from the Office for National Statistics Census 2021 and National Commissioning Data Repository were used to analyse the demographic distribution of catchment area residents and Vascular Surgery Service users at MU NHSFT.

Travel time and distance was calculated for the Population-Weighted Centroid of each Lower Layer Super Output Area (LSOA) in the catchment area using TRACC software.

This analysis compares the distance and travel time for all residents to each site, and assesses whether any demographic groups could be disproportionately affected in each of the following scenarios:

1. The service reverts to the previous three centre configuration including Wythenshawe Hospital (WYTH)
2. The current two centre configuration of Manchester Royal Infirmary (MRI) and Royal Oldham Hospital (ROH) is confirmed
3. The service is further consolidated into a single site:
    a. The service at Manchester Royal Infirmary moves to Royal Oldham Hospital
    b. The service at Royal Oldham Hospital moves to Manchester Royal Infirmary

Table 1: Summary of Scenarios

	Scenarios for Consideration			
	Current Two Site Configuration	**Previous Three Site Configuration**	**Single Site MRI**	**Single Site ROH**
Manchester Royal Infirmary	X	X	X	
Royal Oldham Hospital	X	X		X
Wythenshawe Hospital		X		

Catchment Area:

- The demographics of residents within the catchment vary significantly from the rest of England, with higher levels of ethnic diversity and deprivation than average.
- The population is also younger than average, but the proportion aged 75 and over is projected to increase over the next 10 years.

- The most densely populated parts of the catchment area correlate with the most deprived and ethnically diverse locations. The residents in the south and outskirts of the catchment area are more likely to be older, less deprived and from White ethnic groups.

Service Users:

- Since April 2020, there were almost 26 thousand distinct service users for Vascular Surgery at MU NHSFT.
- Half of all patients were aged between 57 and 78, and almost 60% were from the most deprived four deciles of LSOAs. Patients who were male or from the most deprived two deciles were more likely to have a record of emergency admissions.
- Patients' ethnic group was not recorded for 15.8% of service users, limiting the ability to make any conclusions about ethnic diversity of patients.
- Patients from outside the catchment area account for approximately 6.6% of service users. These are excluded from the inequality impact and travel analysis.
- Analysis of Service Users includes emergency and elective care, inpatient and outpatient. If the potential service reconfiguration will not affect all service types, some of the observations in this section may not apply to the scenarios discussed.
- Figures for other Providers and Sites are provided for context only. It's not within the scope of this analysis to assess whether these sites offer alternative options for treatment for residents and could therefore be an influencing factor on patient travel.

Inequality Impact and Travel Analysis:

- Analysis focusses on car journey times for the AM Peak period (as these are generally the longest), public transport (PT) journeys (including cost) and ambulance journeys (using car journey times during the nighttime period).
- The analysis prioritises the residents experiencing longer journey times in the proposed reconfigurations. It assumes that patients who were already attending their closest available site would not actually receive a positive impact. If it is the case that patients were often travelling past their closest site for treatment, then the shorter journey times presented in the travel analysis sections should be given greater consideration.
- It is acknowledged that some patients are less likely to travel by public transport, for example those who use mobility aids or who are admitted in an emergency. Actual figures on how patients travel to sites for treatment were unavailable for this analysis. Therefore, it's not within scope to recommend which travel method should be prioritised in an assessment of impact on service users.

Impact of Changing from Three to Two Sites:

- The analysis focused on the impact of the service at Wythenshawe Hospital no longer being available, by measuring which residents now travel further to either Manchester Royal Infirmary or Royal Oldham Hospital.
- The areas experiencing the worst impact on journey times for car AM Peak, PT and ambulance journey times are those near to Wythenshawe Hospital or to the west of the site up to the catchment area border.
- These residents are predominantly from White ethnic groups and older age bands, and a mixture of high and low deprivation deciles.
- Manchester Royal Infirmary is within reasonable travel time for these residents, relative to residents elsewhere in the catchment area. However, should the service be further consolidated

into a single site, these residents will potentially be negatively affected again if treatment at MRI is no longer available.

Impact of a Single Site Reconfiguration:

- Consolidating services on a single site will have the greatest impact on people currently living closest to whichever site is no longer available. These areas include a high density of residents from the worst decile deprivation and from Asian ethnic groups, meaning these residents will be the most significantly impacted in terms of journey time increases in the scenario of a single site reconfiguration.
- MRI has a more central location, making it within 30 mins by car, 90 mins by PT and 20 mins by ambulance for a greater proportion of residents than ROH. It is also more accessible for residents who were negatively affected by the interim change from three sites to two.
- The demographic density of the areas around ROH includes a larger number of residents from decile 1 and from Asian ethnic groups than the areas around MRI. This means that more residents will experience an increase 20 mins or more by car, or 10 mins or more than ambulance, if the service is moved to a single site at MRI rather than ROH.

Introduction

MLCSU Business Intelligence were commissioned by Manchester University NHSFT (MU NHSFT) to analyse the impact on distance and travel time for residents if Vascular Surgery services were reconfigured to one of four options. Currently, there are arterial centres at Manchester Royal Infirmary (MRI) and Royal Oldham Hospital (ROH). Previously there was a third centre at Wythenshawe Hospital (WYTH), and the current configuration is formally an interim change.

As outlined in the Case for Change issued by MU NHSFT, a review has recommended the creation of a single hospital service, with the aim to realise a range of improvements including to quality of care and patient experience.

This analysis compares the distance and travel time for all residents to each site, and assesses whether any demographic groups could be disproportionately affected in each of the following scenarios:

1. The service reverts to the previous three centre configuration including Wythenshawe Hospital
2. The current two centre configuration of Manchester Royal Infirmary and Royal Oldham Hospital is confirmed (WYTH to MRI, WYTH to ROH)
3. The service is further consolidated into a single site at either Manchester Royal Infirmary or Royal Oldham Hospital.
    a. The service at Manchester Royal Infirmary moves to Royal Oldham Hospital (MRI to ROH)
    b. The service at Royal Oldham Hospital moves to Manchester Royal Infirmary (ROH to MRI)

The analysis also considers the annual number of service users for Vascular Surgery at MU NHSFT since the beginning of fiscal year 2020/21. The demographic distribution of these service users has been examined, so that the analysis reflects which residents are more likely to visit a site for treatment.

Methodology

The catchment area of MU NHSFT Vascular Service is defined as the LSOAs which are geographically located within the borders of Greater Manchester excluding Wigan, and the areas of Eastern Cheshire that are serviced by Macclesfield Hospital. LSOAs (2021 version) were mapped to the latest Ward boundaries (2023) and agreed with the client. Details of LSOAs and Wards included can be found in the Excel document, “A0044 Data tables and methodology”, on the tab, “Methodology”.

The data source for numbers of residents in the catchment area is the Office for National Statistics (ONS) Census 2021. LSOA 2021 level data was used and aggregated. Residents have been grouped by Gender, five-year Age Band, Ethnicity, Index of Multiple Deprivation (IMD) Decile 2019 and Car Ownership Levels. Ethnic Groups have been summarised using NHS Ethnic Category codes, where Chinese is grouped with "Other Ethnic Groups".

As IMD 2019 uses LSOA 2011, these were mapped to LSOA 2021 using the ONS Open Geography Portal.

For visibility, IMD Deciles were grouped into quintiles in some tables. Following analysis of the age distribution of patients, larger age bands of “Aged 54 years and under”, “Aged 55 to 74 years” and “Aged 75 years and over” were created.

Levels of car ownership were represented using the percentage of households in an LSOA with zero car or van. Low car ownership was flagged for those LSOAs in the worst decile, which was calculated at 45.8% of households with zero car or van.

The demographic distribution across the catchment area was examined for any significant variation from the England resident population.

Numbers of service users were calculated using data from the National Commissioning Data Repository (NCDR). Data was limited using Treatment Function code 107 Vascular Surgery Service. For inpatient, admitted treatment function code was used. As data for 2020/21 was impacted by the Covid Pandemic, and 2023/24 data is not yet complete, figures for the 4 most recent financial years have been supplied. Data was extracted in January 2024, and includes activity up to the middle of January 2024.

Activity was excluded where the NHS Number was not present, due to an ability to assess how many patients contributed to the activity. Patients residing outside the catchment area were also excluded. The impact of these exclusions was tested for evidence of introducing bias into the data (see section Sensitivity Analysis for more information). Additionally, missing data fields are counted to show the number of patients affected.

All Vascular Service activity was searched to complete missing fields where possible. For gender and ethnicity, the latest, most complete record was used. For age, resident LSOA, and registered GP Practice, the earliest, most complete record was used. This resulted in a single record for each distinct patient. This also means that that if a patient was resident in the catchment area for their first appointment, then they remain within the list of service users even if they change their address or their LSOA was missing for some activity.

Activity was extracted for Emergency (NEL) admissions, Elective admissions (EL) and Other admissions, filtered using Admission Method code. Outpatient appointments were split into attended in-person appointments (F2F), attended remote appointments (TELE) and unattended appointments (DNA) using First Attendance code and Attendance Status code. OP appointments include First and Follow-up attendances.

The demographic distribution of the service users was compared to the resident population of the catchment area and tested for evidence of significant variation.

Travel time and distance was calculated for the Population-Weighted Centroid of each LSOA in the catchment area using TRACC software. Car travel times and distance use the fastest journey time. Public transport times use Tuesday's throughout Q4 2023 for journeys between 07:00 and 17:00. Costs for public transport have been calculated using a formula supplied by the client. See “A0044 Data tables and methodology”, tab, “Methodology” for more details.

Abbreviations

Abbreviation	Meaning
DNA	Did Not Attend
EL	Elective
F2F	Face to Face
IP	Inpatient
IQR	Inter-quartile range
LSOA	Lower Layer Super Output Area
MRI	Manchester Royal Infirmary
MU NHSFT	Manchester University NHSFT
NCDR	National Commissioning Data Repository
NEL	Non-elective / Emergency
ONS	Office for National Statistics
OOA	Out of Area
OP	Outpatient
PT	Public Transport
ROH	Royal Oldham Hospital
TELE	Remote / telephone appointments
WYTH	Wythenshawe Hospital

Vascular Catchment Area

Key Points:

The demographics of residents within the catchment vary significantly from the rest of England, with higher levels of ethnic diversity and deprivation than average.

The population is also younger than average, but the proportion aged 75 and over is projected to increase over the next 10 years.

The most densely populated parts of the catchment area correlate with the most deprived and ethnically diverse locations. The South and outskirts of the catchment area have greater proportions of residents who are White, older and less deprived.

Data from the 2021 Census was used to compare the demographic distribution of residents to the rest of England. The total number of residents in the catchment area is estimated at 2,743,499 people. As some residents do not respond to all questions, the total may not sum to the same number for every category. In each case, the figure is the sum of LSOA 2021 resident population in each group.

The data was tested for variation in the distribution across demographic groups. For full data and results, see the Excel file “A0044 Vascular Service Appendices”, tabs “Catchment and Service Users” and “Variation Tests”.

Table 2: Catchment Area Residents, Ethnic Group Category compared to the rest of England

Ethnic Group Category, Census 2021	Total England Residents	Vascular Catchment Area Residents	% of Vascular Catchment Area Residents	England Residents outside Catchment	% of residents in areas outside Catchment
Asian, Asian British or Asian Welsh, excluding Chinese	5,069,916	359,582	13.1%	4,710,334	8.3%
Black, Black British, Black Welsh, Caribbean or African	2,409,211	131,456	4.8%	2,277,755	4.0%
Mixed or Multiple ethnic groups	1,717,884	85,971	3.1%	1,631,913	2.9%
White	48,699,467	2,071,087	75.5%	46,628,380	82.0%
Other inc Chinese	1,701,098	95,511	3.5%	1,605,587	2.8%
Total	**59,597,576**	**2,743,607**	**100.0%**	**56,853,969**	**100.0%**

When comparing the residents of the catchment area to the rest of the England population, the most significant variation is in levels of ethnicity. Residents from Asian ethnic groups account for 13.1% of the

catchment area population, compared to 8.3% for the rest of England. Black, Mixed and Other ethnic groups also make up a larger proportion of residents than elsewhere in England.

Deprivation levels are also significantly different, with the worst deciles for deprivation (deciles 1 to 3), accounting for 50.7% of residents (n = 1.3 million), compared to an estimated 29.0% of residents elsewhere.

The catchment area has a younger population, with the median falling in the 35 to 39 year age band, than the England population which has a median of 40 to 44 years. Those aged 65 and over accounted for 16.0% of residents, compared to 18.7% for the rest of England.

Variation in Car ownership was less significant, though the catchment area does have more LSOAs with low car ownership than average. There was no significant variation in the gender of residents compared to the rest of England.

Table 3: Catchment Area Residents, IMD 2019 Decile compared to the rest of England

IMD2019 Decile	Total England Residents	Vascular Catchment Area Residents	% of Vascular Catchment Area Residents	England Residents outside Catchment	% of residents in areas outside Catchment
1	5,959,760	681,236	24.8%	5,278,524	9.3%
2	5,959,760	389,310	14.2%	5,570,450	9.8%
3	5,959,760	319,242	11.6%	5,640,518	9.9%
4	5,959,760	254,104	9.3%	5,705,656	10.0%
5	5,959,760	190,697	7.0%	5,769,063	10.1%
6	5,959,760	168,697	6.1%	5,791,063	10.2%
7	5,959,760	187,814	6.8%	5,771,946	10.2%
8	5,959,760	187,819	6.8%	5,771,941	10.2%
9	5,959,760	162,950	5.9%	5,796,810	10.2%
10	5,959,760	201,630	7.3%	5,758,130	10.1%
Total	**59,597,601**	**2,743,499**	**100.0%**	**56,854,102**	**100.0%**

Residents in each IMD2019 decile has been estimated at 10% for England due to issues mapping LSOA2011 used for IMD2019 to LSOA2021 for the whole of England.

Population projections from the ONS in 2018 predicted that the total number of residents in the area will grow by 4% in the 10 years between 2025 and 2035. However, the number of residents aged 75 and over is predicted to increase by 15% during the same time period.

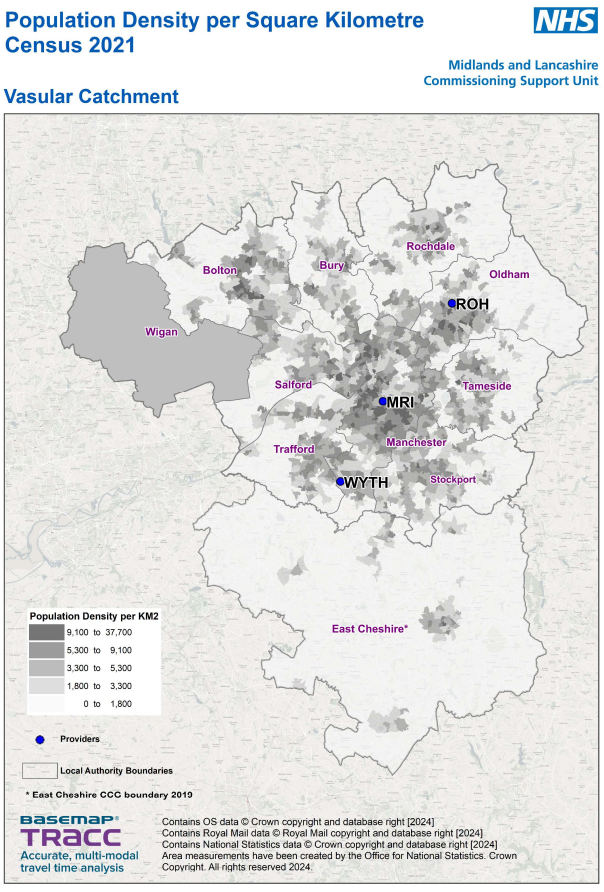
Table 4: Population Projections for Catchment Area, ONS 2018 estimates

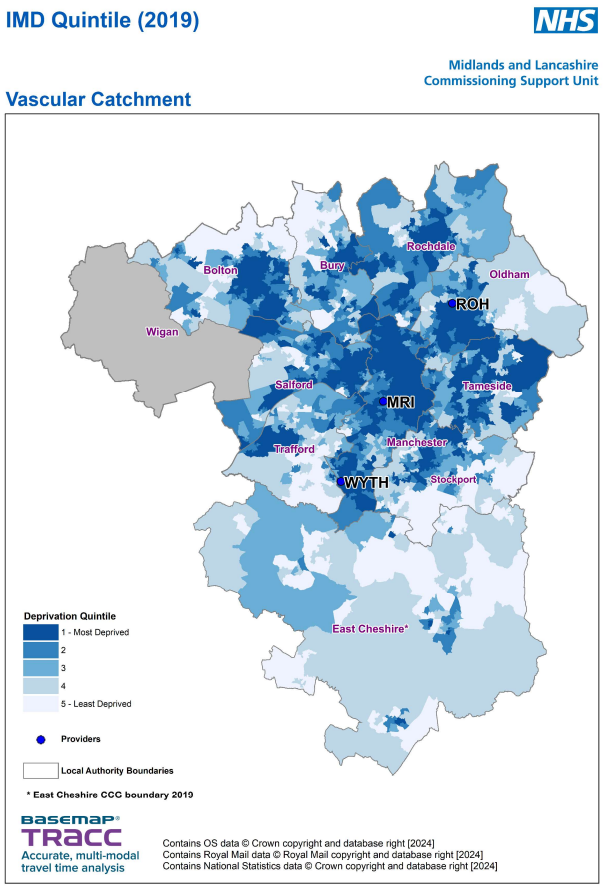
Age Band	2020 Estimate	2025 Estimate	2030 Estimate	2035 Estimate
0 – 54 years	2,083,234	2,091,715	2,110,941	2,142,234
55 – 74 years	596,813	621,419	642,279	643,550
75 years and over	220,676	254,513	270,875	292,682
Grand Total	**2,900,723**	**2,967,647**	**3,024,095**	**3,078,466**

Demographic Maps

Maps were created using demographic data at LSOA level. These maps are available in the appendices, with Vascular Catchment area maps identified using a "V" in the title. For maps showing Ethnic Groups, figures have been summarised at Ward level due to some LSOAs having very small (fewer than 5) numbers.

Figures 1a & 1b: Map of Catchment Area, Population Density and IMD2019 Quintiles





The population density map shows residents are mainly clustered in the centre and north of the catchment area, with East Cheshire less densely populated. The most deprived residents are spread over large areas, and mostly correlate with the most densely populated LSOAs.

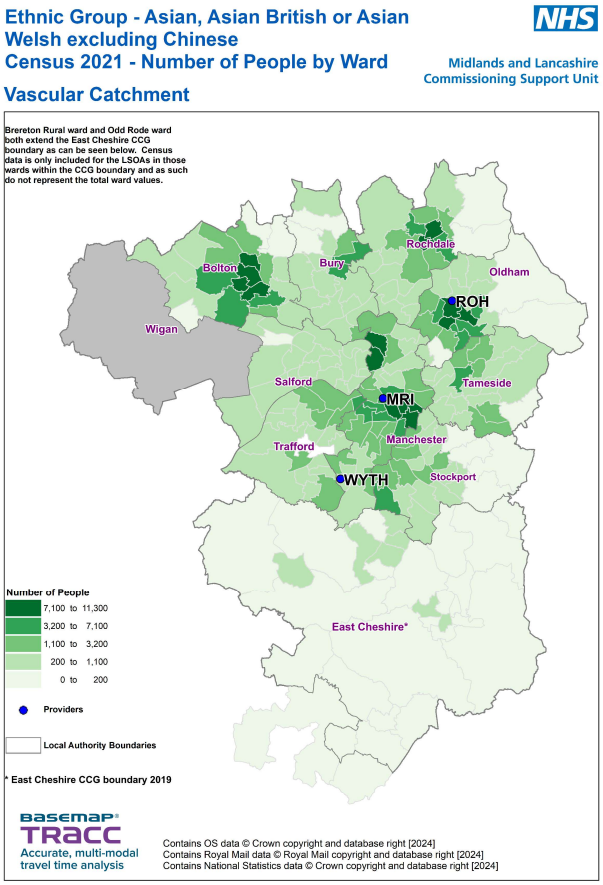
Older residents (aged 55 and over) are more often resident around the edges of the catchment area.

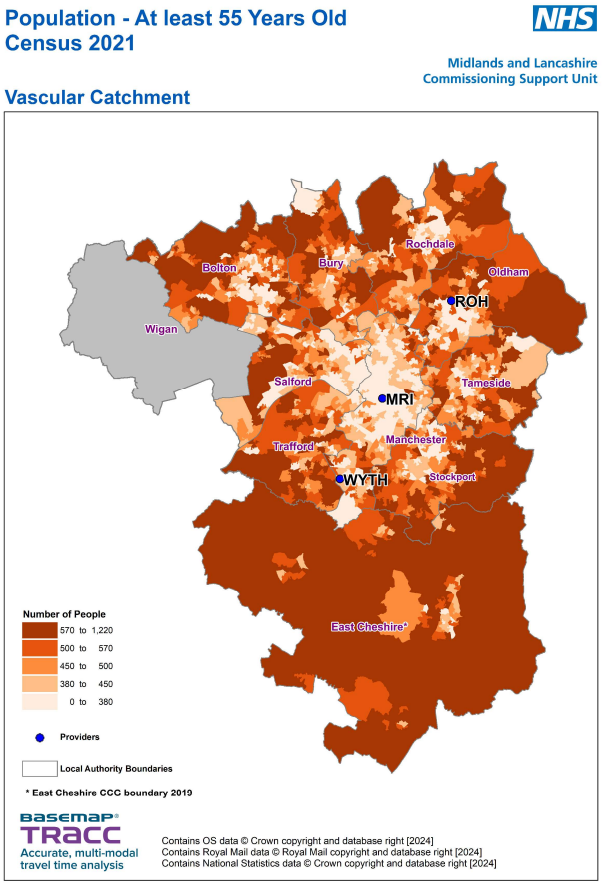
Mixed and Black ethnic groups are more likely to be resident in the centre of the catchment area, while Asian ethnic groups are concentrated around Manchester, Oldham, Rochdale and Bolton.

White ethnic groups had clusters of residents in Cheshire, Wythenshawe, Stockport and in the North West of the catchment area near Bolton.

The LSOAs with lowest levels of car ownership are mostly the large population centres.

Figures 2a & 2b: Map of Catchment Area, Asian Ethnic Groups and Residents aged 55 year and over





Vascular Service Users

Key Points:

Since April 2020, there were almost 26 thousand distinct service users for Vascular Surgery at MU NHSFT.

Half of all patients were aged between 57 and 78, and almost 60% were from the most deprived four deciles of LSOAs. Patients who were male or from the most deprived two deciles were more likely to have a record of emergency admissions.

Patients' ethnic group was not recorded for 15.8% of service users, limiting the ability to make any conclusions about ethnic diversity of patients.

Patients from outside the catchment area account for approximately 6.6% of service users. These are excluded from the inequality impact and travel analysis.

Analysis of Service Users includes emergency and elective care, inpatient and outpatient. If the potential service reconfiguration will not affect all service types, some of the observations in the following section may not apply to the scenarios discussed.

Figures for other Providers and Sites are provided for context only. It's not within the scope of this analysis to assess whether these sites offer alternative options for treatment for residents and could therefore be an influencing factor on patient travel.

Sensitivity Analysis

Activity across Other Providers and Sites

Activity for Vascular Surgery Service was extracted from NCDR for all cases where an LSOA matched that of the catchment area. See "A0044 Vascular Service Appendices", tab "Other Providers". Figures include patients resident in the catchment area only.

Activity for IP admissions since April 2020 is overwhelmingly taking place at MU NHSFT (R0A). There was an annual average of just ten admissions at University Hospitals of North Midlands NHS Trust (RJE), which includes the site of Royal Stoke University Hospital. There were 945 admissions at Pennine Acute Hospitals NHS Trust (RW6), but none of these took place in the most recent two years. It should be noted that coding practices may vary between providers, and this could impact comparisons between them.

Table 5: All IP Vascular Surgery Activity for Catchment Area Residents by Fiscal Year

Provider Name	Code	2020/21	2021/22	2022/23	2023/24	Grand Total
Manchester University NHS Foundation Trust (R0A)	R0A	1,380	2,865	3,215	2,990	10,450
Pennine Acute Hospitals NHS Trust (RW6)	RW6	935	10	-	-	945
Lancashire Teaching Hospitals NHS foundation trust (RXN)	RXN	10	25	15	10	60
Bolton NHS Foundation Trust (RMC)	RMC	-	20	20	10	50
Unrecognised code	RW600	40	-	-	-	40
University Hospitals of North Midlands NHS trust (RJE)	RJE	10	10	10	10	40
Tameside and Glossop Integrated Care NHS Foundation Trust (RMP)	RMP	10	5	10	-	30
35 other providers		30	35	45	25	140
Grand Total		**2,420**	**2,975**	**3,315**	**3,050**	**11,755**

Note: Numbers rounded to nearest 5, so Grand Total may not tally

Since April 2020, there were 11,755 admissions for Vascular surgery (including emergency and elective) for catchment area residents, with 10,450 (89%) at MU NHSFT. In comparison, there were 83,955 attended OP appointments for catchment area residents. Of these, 46,650 (56%) were at MU NHSFT. The other provider sites most often visited by residents were Macclesfield District General Hospital (RJN71), Royal Bolton Hospital (RMC01), and Tameside General Hospital (RMP01). These are all located within the catchment area. See map “OP Alternative Providers” within Service Users appendices.

It's not within the scope of this analysis to assess whether these sites offer alternative options for treatment for residents, and therefore no conclusions have been drawn regarding the potential impact on patient choice of provider.

The Site Level data (see “A0044 Vascular Service Appendices”, tab, “Site Level”), includes non-residents and those with a missing NHS Number. This is to assess the total levels for activity taking place at the sites included in the potential service changes. This increases the total number of treatments recorded at MU NHSFT to 11,393 admissions and 50,692 attended OP appointments.

For elective activity, the site with the largest number of admissions was MRI, followed by WYTH and ROH. There was also roughly 150 elective admissions per year at Rochdale Infirmary (R0A69). As the current configuration of services is across two sites (MRI and ROH, see Introduction), this indicates that the site level activity here includes wider Vascular Surgery than covered by the arterial centres.

Non-elective admissions are split between ROH and MRI. Although there were 203 NELs recorded at WYTH in 2022/23, this fell to just 25 in the most recent year.

Table 6: Elective and NEL Admissions, including non-residents or missing LSOA data

Site Code	Site Name	2020/21	2021/22	2022/23	2023/24	Grand Total
H5L2X	Royal Oldham Hospital	-	339	244	322	905
R0A02	Manchester Royal Infirmary	628	1,107	1,192	888	3,815
R0A03	Royal Manchester Childrens hospital	-	-	43	11	54
R0A04	Manchester Royal Eye Hospital	-	-	1	-	1
R0A05	St Marys Hospital	-	-	2	-	2
R0A06	University Dental Hospital of Manchester	18	10	-	-	28
R0A07	Wythenshawe Hospital	196	125	172	492	985
R0A09	Trafford General Hospital	-	-	1	3	4
R0A66	North Manchester General Hospital	-	6	30	1	37
R0A69	Rochdale Infirmary	-	151	143	161	455
S7B2K	Trafford Hospital elective Surgical Hub	-	-	34	59	93
	Elective Total	**842**	**1,738**	**1,862**	**1,937**	**6,379**
H5L2X	Royal Oldham Hospital	-	588	464	537	1,589
R0A02	Manchester Royal infirmary	427	680	792	686	2,585
R0A03	Royal Manchester Childrens Hospital	-	-	19	2	21
R0A07	Wythenshawe hospital	206	3	203	25	437
R0A66	North Manchester General Hospital	-	7	29	6	42
R0A69	Rochdale Infirmary	-	-	-	1	1
Y9F0I	Fairfield General Hospital	-	3	3	5	11
	NEL Total	**633**	**1,281**	**1,510**	**1,262**	**4,686**

For OP activity, WYTH was the main provider site across the last four years, but activity for both F2F and TELE appointments has steadily fallen at this site. In the current year, there are five sites with over 1,000 F2F OP appointments for Vascular Surgery, as of the latest data (January 2024). These are, MRI, WYTH, North Manchester General Hospital, ROH and Fairfield General Hospital.

Overall, this suggests that treatment types with the greatest proportion of activity concentrated at the current two site configuration (MRI and ROH) are elective and NEL admissions. Of these, the greater proportion takes place at MRI, suggesting that moving the service from MRI to ROH will result in a greater displacement of activity than the alternative scenario. This doesn't necessarily indicate a greater negative impact however, as some patients may be travelling to MRI due to factors such as waiting times rather than MRI being their closest hospital.

For OP activity, this is spread across a greater number of sites, including non-MU NHSFT sites, meaning the impact of changing a service location is more difficult to perform at a Treatment Function level as it includes a wider range of services than are being considered in this analysis. It's also noted that the number of F2F OP appointments has fallen slightly, but the number of TELE OP appointments has increased in the current year.

Patients Excluded from the Analysis

The number of distinct patients using the Vascular Surgery Service was identified in NCDR using the pseudonymised NHS number. Where this field was blank, it was necessary to exclude the activity from the analysis. In most cases, other demographic fields were also blank. It should be acknowledged that a

missing NHS number may indicate that a patient is not registered with a GP. Additionally, some demographic groups are more likely to be unregistered than others. However, figures showed that numbers of activity affected were very small, with the only categories exceeding five cases in a year was elective admissions in 22/23 and 23/24 (0.3% of activity) and NEL admissions for 22/23, equivalent to 1.3% of total activity. See “A0044 Vascular Service Appendices”, tab “Exclusions” for full figures.

The travel time analysis uses LSOA population-weighted centroid to calculate time and distance to each site for the whole catchment area. This means that patients visiting MU NHSFT from outside the area will not be represented in the travel analysis, so they will be removed from the numbers of service users. Additionally, patients with no recorded LSOA are excluded. It is not recorded whether these are patients with no physical address, or where their data is simply incomplete. However, it’s noted that this may result in patients who are unhoused being excluded from the analysis. Additionally, patients’ addresses and GP Practice codes recorded in the data may not always be current.

Data for each year and activity type can be found on “A0044 Vascular Service Appendices”, tab “Exclusions”. In the most recent year (23/24), the amount of activity accounted for by patients residing outside the catchment area was: 149 Elective admissions (7.7%), 63 NELs (5.0%), 669 F2F OP appointments (6.5%) and 167 TELE OP appointments (7.7%).

In total, out of 27,561 unique patients since April 2020, 170 had no recorded LSOA and 1,810 had an LSOA which was outside the catchment area, resulting in 6.6% of service users being excluded from the travel analysis. Examination of the data at a patient level found that the most common area that non-residents travelled from was High Peak (n = 629), followed by Wigan (n = 328), Warrington (n = 151) and Rossendale (n = 140). The appendix map, “Catchment Area and adjacent Local Authorities” shows these wards are directly to the East, West and North of the catchment area.

The demographics of these out of area (OOA) patients was compared to those of resident service users. See “A0044 Vascular Service Appendices”, tab “Variation Tests”, Section 2 for full figures. The mean age of OOA patients was 2.8 years younger (63.4 years compared to 66.2 for residents). They were less likely to be from the most deprived three deciles or be from Asian or White ethnic groups, but much more likely to have no recorded ethnicity. Therefore, by excluding non-catchment area residents from the travel analysis, the resulting figures for service users will become slightly older, more deprived and more ethnically diverse.

Missing Data Items

Of the 25,581 remaining patients who are included in the Service User analysis, there were two cases of missing gender and 38 cases of missing age. These patients are excluded from any analysis of data using age or gender (as relevant), but not from other categories such as IMD. Missing or not stated ethnicity affected 4,049 patients (15.8%). This significantly impacts the ability to make any conclusions about the ethnicity of service users. These patients are included in tables using ethnic categories to demonstrate the impact on total figures.

There were 383 patients (1.5%) who were registered at a GP outside the catchment area. As these patients reside at LSOAs included in the travel time analysis, they were not excluded from the following sections.

Demographics of Service Users

Distinct Patients

Since April 2020, there have been 25,581 distinct patients at the Vascular Surgery Service at MU NHSFT. When compared to the resident population of the catchment area, the demographic distribution of these patients indicates that residents were more likely to be Vascular Service Users if they were male and from older age bands. The mean age of patients was 66.2, with a median of 69 and an inter-quartile range (IQR) of 57 to 78. Male patients accounted for 58.6% of all service users, and they were slightly older, with an IQR of 59 to 77 (mean = 67), compared to 54 to 78 for female patients (mean = 65).

There was some variation between deprivation deciles, but this was not all skewed towards one end of the deprivation scale. Residents were more likely to be service users if they were from decile 1, or from the middle deciles (5 to 8). The average age of patients decreased as deprivation increased. Patients from the worst deprivation decile were 62.9 years on average at the time of their first treatment, compared to 70.8 years on average for those from the least deprived decile. Additionally, as so much of the catchment area experiences high levels of deprivation, even though activity rates were high for residents in the middle IMD deciles, the majority of service users continued to be from the most deprived two quintiles of the population (59.9% of service users were from IMD Deciles 1-4, with the same proportion of residents located in these 4 deciles).

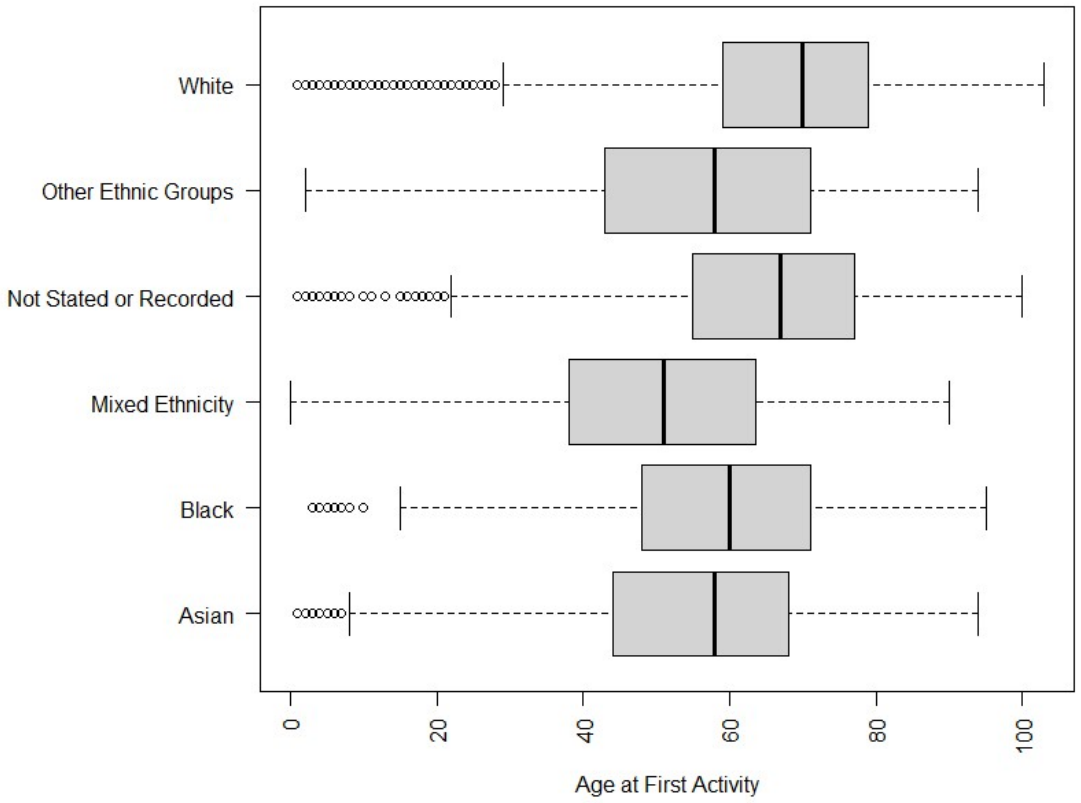
Table 7: Residents and Total Service Users by Deprivation Decile

IMD2019 Decile	Vascular Catchment Area Residents	% of Vascular Catchment Area Residents	Total Distinct Vascular Service users since April 2020	% of Vascular Service Users
1	681,236	24.8%	6,927	27.1%
2	389,310	14.2%	3,326	13.0%
3	319,242	11.6%	2,909	11.4%
4	254,104	9.3%	2,164	8.5%
5	190,697	7.0%	1,840	7.2%
6	168,697	6.1%	1,626	6.4%
7	187,814	6.8%	1,818	7.1%
8	187,819	6.8%	1,876	7.3%
9	162,950	5.9%	1,475	5.8%
10	201,630	7.3%	1,620	6.3%
Total	**2,743,499**	**100.0%**	**25,581**	**100.0%**

For many ethnic groups, the proportion of service users was lower than the proportion of residents. Patients from White ethnic groups were the only group which accounted for a similar proportion of patients (75.2%) as they did the resident population as a whole (75.5%). Patients from Asian ethnic groups represented 4.8% of service users, compared to 13.1% of the resident population. However, as 15.8% of service users have no ethnic group code, the results of analysing the data using this field cannot be relied upon. The age of patients does vary significantly by ethnic group. White patients had a

mean age of 67.7 years at the time of their first recorded appointment, similar to those with a Not Stated ethnicity (mean = 64.7 years). For other ethnic groups, the mean age was much younger: Mixed ethnic groups (mean = 51.0 years), Asian ethnic groups (mean = 55.7 years), Black ethnic groups (mean = 59.3 years) and Other ethnic groups (mean = 56.6 years), the mean was also much younger than for White and Not Stated ethnicity patients.

Figure 3: Age Distribution of Service Users by Ethnic Group



Patients from Black and Mixed ethnic groups were more likely to be female than other ethnic groups, but there was no significant variation in gender between deprivation deciles. Patients from Asian and Black ethnic groups were more likely to reside in the most deprive decile of LSOAs.

Service users were less likely to come from areas of low car ownership (9.5% of service users, compared to 11.5% of total residents). Levels of low car ownership and deprivation are strongly dependant, so patterns for demographics across deprivation deciles are generally repeated for car ownership levels.

See “A0044 Vascular Service Appendices”, tabs “Catchment and Service Users” and “Variation Tests” for full figures.

Analysis of Activity Types

Demographics of service users also varied by activity type. Although 58.6% of total service users were male, they represented over 60% of admitted patients for electives, and over 65% of NEL patients. Patients aged 75 years and over accounted for 34.5% of service users (compared to 7.3% of residents).

On average, just 26% of patients admitted for elective admissions each year were aged 75 plus, compared to 32% of NEL patients and 45% of OP TELE patients.

Patients from the most deprived two deciles represented 40.1% of total service users, but 48% of NELs and 47% of OP DNAs.

See “A0044 Vascular Service Appendices”, tabs “Service Activity Types” for full data.

Comparison of Travel times for Scenarios

With each of the sites involved in this analysis, a summary has been made of the residents who live closest to the site, and how many live within each time band for different travel types. These summaries are available with demographic breakdowns, in the Excel document “A0044 Average Travel Time Summary Tables”. On the tab, “Vascular Hubs”, the filters at the top can be used to select the time of day and the currency (Time or Distance) that the tables should display. For tables summarising the data using time bands, these will be blank if Distance is selected as currency.

The impact of moving activity from one site to the other has been calculated on the tab, “Impact Analysis”. Again, the filters at the top can be used to change time period and currency.

On the “Vascular Hubs” tab, residents in the catchment area have been grouped by which site is closest. For the purposes of this analysis, only MRI, ROH and WYTH are considered. If patients have less than 1 min difference in car journey time, or 5 mins by public transport, they are categorised as “Same”.

Finally, the Excel document, “A0044 Scenario Impact Demographic Tables” shows the impact of each scenario including costs, grouped into currency bands, and split by demographic groups.

Due to the large number of variables in the travel time data, a decision has been made to group the scenarios into two sections; the reconfiguration from three sites to two sites, and the potential additional consolidation of services on a single site. The following impact analysis focuses on Car journey times for the AM Peak period (as these are generally the longest), Public Transport journeys (including cost) and Ambulance journeys (using car journey times during the nighttime period). Although the appendices include other time periods (Evening, Weekend and Off Peak), and also show the impact on distance, the narrative here will not cover these in order to avoid the report becoming overly long and less user-friendly.

In each scenario, the site where the activity is moving “to” already exists, and therefore the assumption has been made that the site is already available as an option to patients. For this reason, the analysis prioritises the residents experiencing longer journey times in each scenario, as patients who were already attending the closer available site would not actually receive a positive impact. If it is the case that patients were often travelling past their closest site for treatment, then the shorter journey times presented here should be given greater consideration.

Impact of Changing from Three to Two Sites

Key Points:

This section focuses on the impact of the service at WYTH no longer being available, by measuring which residents now travel further to either MRI or ROH.

The areas experiencing the worst impact on journey times for Car AM Peak, PT and Ambulance journey times are those near to WYTH or to the west of the site up to the catchment area border.

These residents are predominantly from White ethnic groups and older age bands, and a mixture of high and low deprivation deciles.

MRI is within reasonable travel time for these residents, relative to residents elsewhere in the catchment area. However, should the service be further consolidated into a single site, these residents will potentially be negatively affected again if treatment at MRI is no longer available.

The analysis prioritises the residents experiencing longer journey times in the current two site configuration than they would to WYTH. It assumes that patients who were already attending their closest available site would not actually receive a positive impact. If it is the case that patients were often travelling past their closest site for treatment, then the shorter journey times presented here should be given greater consideration.

It is acknowledged that some patients are less likely to travel by PT, for example those who use mobility aids or who are admitted in an emergency. Actual figures on how patients travel to sites for treatment were unavailable for this analysis. Therefore, it's not within scope to recommend which travel method should be prioritised in an assessment of impact on service users.

This section covers the first two scenarios described in the introduction:

1. The service reverts to the previous three centre configuration including Wythenshawe Hospital
2. The current two centre configuration of Manchester Royal Infirmary and Royal Oldham Hospital is confirmed (WYTH to MRI, WYTH to ROH)

For the scenarios where activity moved from WYTH to MRI and ROH, average change in journey time by IMD Deciles is shown in the following table, taken from the Excel document "A0044 Average Travel Time Summary Tables". For car journeys, AM Peak time period has been selected.

Table 8: Average Change in Travel Time, IMD Decile

	Deprivation Decile									
	1	2	3	4	5	6	7	8	9	10
Vascular Catchment Pop	681,236	389,310	319,242	254,104	190,697	168,697	187,814	187,819	162,950	201,630
Vascular Scenarios										
WYTH to MRI - Car AM Peak	-3.7	-3.2	-3.0	-2.8	0.0	0.0	2.7	2.8	4.3	8.6
WYTH to MRI - PT	-37.8	-39.8	-37.1	-35.9	-34.2	-33.3	-27.9	-28.5	-26.4	-17.0
WYTH to ROH - Car AM Peak	-2.2	-1.7	2.2	4.0	3.0	4.7	7.3	5.1	8.8	20.2
WYTH to ROH - PT	-24.6	-24.4	-14.2	-12.1	-13.8	-10.5	-5.3	-8.1	1.3	20.0

The average change in travel times for the scenarios WYTH to MRI and WYTH to ROH suggests that the impact of moving from three sites to the current two site configuration was more often negative for those residents from less deprived areas. The difference in travel time by car from WYTH to MRI was around 3 mins less on average for the most deprived four deciles, but over 8 minutes longer for the least deprived decile. The increase in time to travel by car to ROH for these residents was even greater. For PT travel times, the average change was positive for all deciles for WYTH to MRI, demonstrating the effect of MRI's central location and transport links. For WYTH to ROH, PT travel times improved on average for all deciles except 9 and 10.

The average change in travel time can hide a wide distribution of change experienced across all residents. The following table shows a breakdown of the change in car AM peak travel time into bands.

Table 9: Impact on Car AM Peak Travel Time, WYTH to MRI

	IMD Decile									
WYTH to MRI Car AM Peak	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
20-30 mins shorter	12,928	7,289	22,061	14,495	2,712	1,821	-	-	-	-
10-20 mins shorter	156,267	62,023	25,441	34,626	13,657	10,241	1,329	-	-	2,533
1-10 mins shorter	280,687	186,083	160,633	104,100	74,600	71,286	75,585	75,288	55,032	33,307
No Change	10,879	5,736	13,500	13,651	8,723	6,364	8,719	4,751	1,482	-
1-10 mins longer	182,139	114,847	77,486	62,301	75,348	57,864	66,542	75,832	59,849	35,199
10-20 mins longer	38,329	13,312	20,151	24,938	15,672	21,150	35,638	31,927	46,558	130,610
Grand Total	**681,229**	**389,290**	**319,272**	**254,111**	**190,712**	**168,726**	**187,813**	**187,798**	**162,921**	**201,649**

Although the car journey time for decile 1 is 3.7 mins shorter on average in this scenario, for 26.7% of these residents (n = 182k), the journey is up to 10 mins longer, while for an additional 38.3k of the most deprived residents, the journey is 10 to 20 mins longer.

In this scenario, no resident has an increased journey of more than 20 mins, while for some residents in deciles 1 to 6 the journey time to MRI is shorter than WYTH by over 20 mins. The change in PT travel times (below) follows a similar pattern.

Table 10: Impact on PT Travel Time, WYTH to MRI

	IMD Decile									
	1	2	3	4	5	6	7	8	9	10
60-75 mins shorter	12,733	1,904	1,555	4,460	3,010	-	2,924	1,760	-	-
45-60 mins shorter	277,615	169,704	104,327	83,931	56,706	51,195	55,416	49,911	45,623	14,174
30-45 mins shorter	276,434	167,633	143,400	97,300	66,292	60,583	39,626	51,959	35,179	39,886
15-30 mins shorter	32,905	18,788	42,353	37,184	39,632	26,307	25,926	25,983	24,120	56,458
5 to 15 mins shorter	18,515	1,730	5,989	14,689	11,325	14,769	21,756	22,745	21,594	29,870
Minimal Change +/- 5 Minutes	16,048	12,666	11,423	10,455	7,920	6,516	18,501	10,655	21,106	25,839
5 to 15 mins longer	6,805	1,776	2,982	1,771	3,449	4,640	8,692	14,246	5,404	14,751
15-30 mins longer	26,370	7,288	5,600	2,782	-	3,161	-	4,628	4,485	9,636
30-45 mins longer	10,865	3,520	1,643	1,539	-	-	-	-	-	-
Inaccessible: No PT Stop	2,939	4,281	-	-	2,378	1,555	14,972	5,911	5,410	11,035
Grand Total	**681,229**	**389,290**	**319,272**	**254,111**	**190,712**	**168,726**	**187,813**	**187,798**	**162,921**	**201,649**

For WYTH to MRI, the average change in travel time for PT was between 17 min and 39.8 mins shorter. There are 17.5k residents who experienced an increase in travel time of 30 to 45 mins however, all of these in deciles 1 to 4. No-one experienced an increase of over 45 mins, but 937k residents had shorter PT journey times of 45 mins to 75 mins. Again, these are predominantly from the most deprived areas.

This is also reflected in the average cost of PT journeys, see Excel document, “A0044 Scenario Impact Demographic Tables”. For the scenario WYTH to MRI, average PT cost is decreased for residents in the most deprived four deciles, while for WYTH to ROH it is decreased for all deciles 1 to 8.

The scenario changes between two and three sites are complex, as returning to three sites wouldn’t necessarily mean that residents could potentially be forced to travel further as they would theoretically have the option to continue going to their existing, closest site. Additionally, for residents attending MRI and ROH before the change, closing the service at WYTH may have had no impact on their travel times. Therefore, it’s easier to visualise the impact of moving from three to two sites, or returning to the three-site configuration, by looking at which residents live closest to WYTH of the three sites.

Two vs Three Site Configuration: Car Journeys at AM Peak

On the “Vascular Hubs” tab of the document “A0044 Average Travel Time Summary Tables”, figures show that WYTH is the closest site of the three for 31.3% of residents (n = 858k). This proportion varies by demographic group, as the table below illustrates. Residents from White ethnic groups (36.0%), Aged 55 to 74 years (36.1%), Aged 75 years and over (40.5%) and residents from deciles 6 to 10 (37.6% to 82.2%) having the largest proportion of residents for whom WYTH is closest. The size of these groups should also be considered. Although only 15.7% of residents in decile 1 live closest to WYTH of the three sites, the large size of this group (n = 681k, 24.8% of all residents and 27.1% of total services users) means that this equates to over 100k residents. The demographic map (IMD V) shows there are many LSOAs located around WYTH from the most deprived quintile.

Table 11: Closest Site by Car AM Peak Travel Time, Ethnic Groups

Closest Hospital (MRI, WYTH or ROH)	Asian, Asian British or Asian Welsh, excluding Chinese	Black, Black British, Black Welsh, Caribbean or African	Mixed or Multiple ethnic groups	White	Other inc Chinese
Manchester Royal Infirmary	166,914	79,352	39,216	684,152	53,896
Wythenshawe Hospital	50,973	15,100	24,042	745,256	22,132
Royal Oldham Hospital	141,695	37,004	22,713	641,679	19,483
MRI is closest - %	46.4%	60.4%	45.6%	33.0%	56.4%
WYTH is closest - %	14.2%	11.5%	28.0%	36.0%	23.2%
ROH is closest - %	39.4%	28.1%	26.4%	31.0%	20.4%

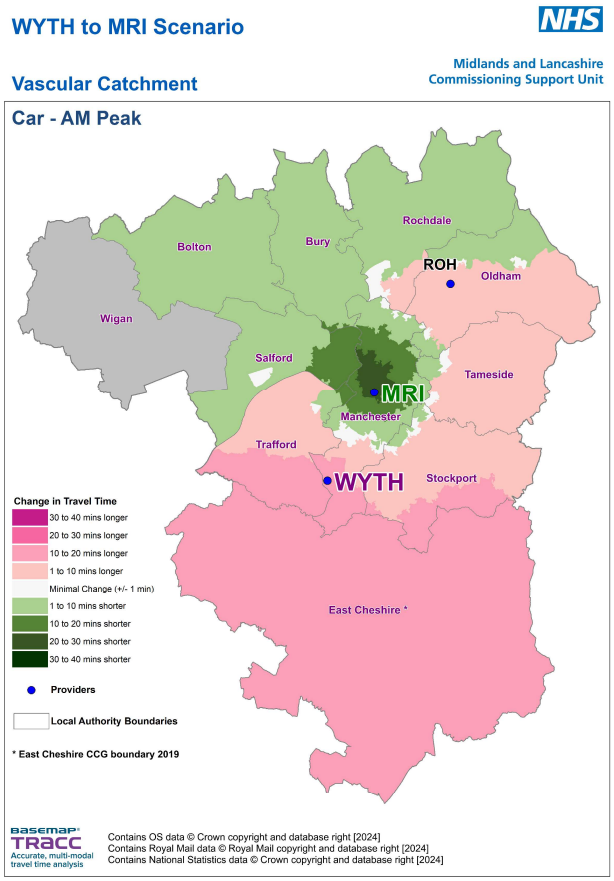
MRI is the closest site by car for 37.3% of residents, which is expected given its central location. ROH is also located close to many densely populated areas, making it the closest site for 31.4% of residents, a similar figure as WYTH. However, ROH is located the furthest from the centre of the catchment area, resulting in some residents in the south living over 60 mins away by car during AM peak periods. In contrast, no residents are over 60 mins from MRI or WYTH, meaning that residents affected by the closing of the WYTH site are still located within an hour's journey of an alternative hub.

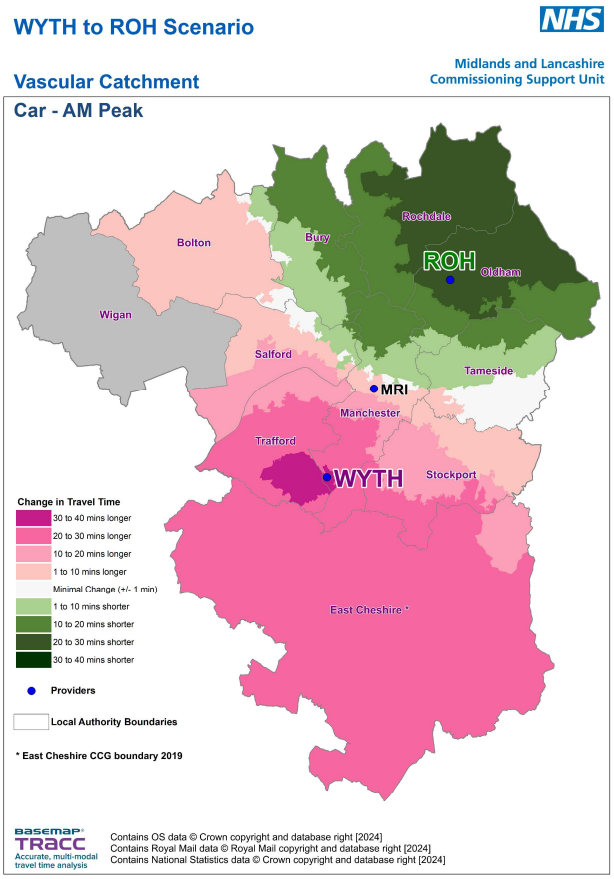
Table 12: Journey Time to Sites, Car AM Peak

Access by Car AM Peak	MRI	WYTH	ROH
Less than 30 mins	1,695,319	1,640,881	1,192,094
30 to 60 mins	1,048,184	1,102,618	1,493,183
60 to 90 mins	-	-	58,226
Less than 30 mins %	61.8%	59.8%	43.5%
30 to 60 mins %	38.2%	40.2%	54.4%
60 to 90 mins %	0.0%	0.0%	2.1%

The scenario maps demonstrate the change in travel time by car for residents travelling to MRI or ROH instead of WYTH. As noted earlier, no residents experience an increase of more than 20 mins difference between WYTH and MRI, but for some residents located close to WYTH, the increased time to ROH is between 30 and 40 mins. The provider map ROH AM Peak V shows that residents in this area are still within 30 to 60 mins of ROH, so those most negatively impacted by having to travel to ROH instead of WYTH will not experience the worst journey times to ROH.

Figures 4a & 4b: Impact on Car Journey Times, AM Peak Period, WYTH to MRI, WYTH to ROH





The scenario maps highlight that the largest negative impact of moving to two sites is concentrated on residents who are closest to WYTH. However, some areas on the WYTH to MRI scenario map are shown as having an increased journey time of 1 to 10 mins, despite being close to the ROH site. If these residents had the option to travel to ROH prior to the reconfiguration to two sites, their journey time would not actually be impacted.

Two vs Three Site Configuration: Public Transport Travel Time and Costs

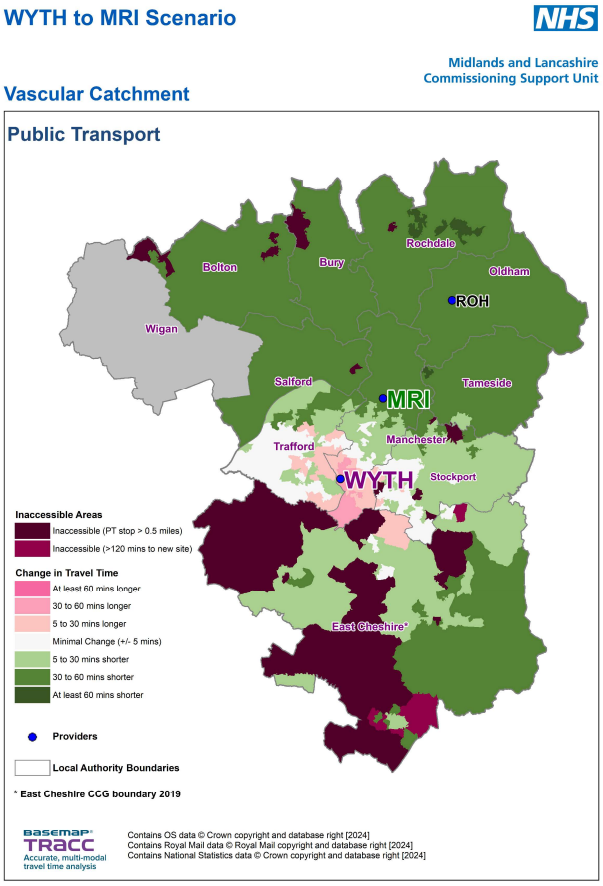
WYTH is the least accessible of the three sites by PT, with just 8.1% of residents (223k) experiencing the lowest PT journey times to WYTH. For 21.2% of residents (n = 581k), the site is inaccessible by PT, including those for whom the journey takes longer than 2 hours. In contrast, ROH is inaccessible for 8.6% of residents, and MRI is inaccessible for just 2.3% of residents.

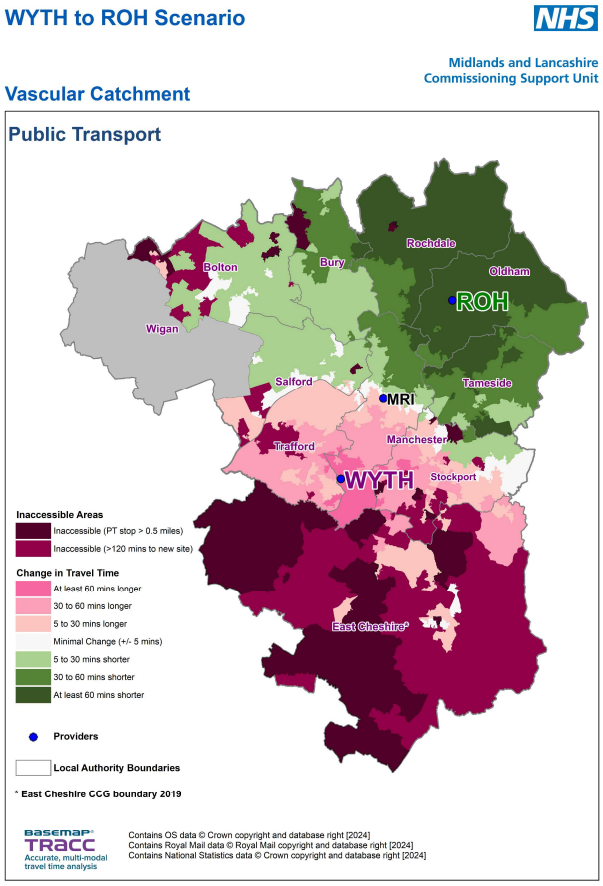
As noted earlier, the residents experiencing the worst impact of moving the service away from WYTH were the 17.5k residents in deciles 1 to 4 whose PT journey to MRI was longer by 30 to 40 mins. The map WYTH_MRI_V (included below) shows these are resident in the areas surrounding the WYTH site. Is also highlights the large areas in the south of the catchment area which have shorter PT journey times to MRI then WYTH.

Table 13: Journey Time to Sites, PT

PT Journey Time to Site	MRI	WYTH	ROH
Less than 30 mins	185,516	25,814	145,704
30 to 60 mins	1,005,555	345,339	526,141
60 to 90 mins	1,384,630	651,017	819,448
90 to 120 mins	106,020	1,140,503	1,017,200
Inaccessible More than 120 mins	13,292	532,340	181,260
Inaccessible no PT stop, > 3 interchanges	48,490	48,490	53,750
Less than 30 mins	6.8%	0.9%	5.3%
30 to 60 mins	36.7%	12.6%	19.2%
60 to 90 mins	50.5%	23.7%	29.9%
90 to 120 mins	3.9%	41.6%	37.1%
Inaccessible More than 120 mins	0.5%	19.4%	6.6%
Inaccessible no PT stop, > 3 interchanges	1.8%	1.8%	2.0%

Figures 5a & 5b: Impact on PT Journey Times, WYTH to MRI, WYTH to ROH



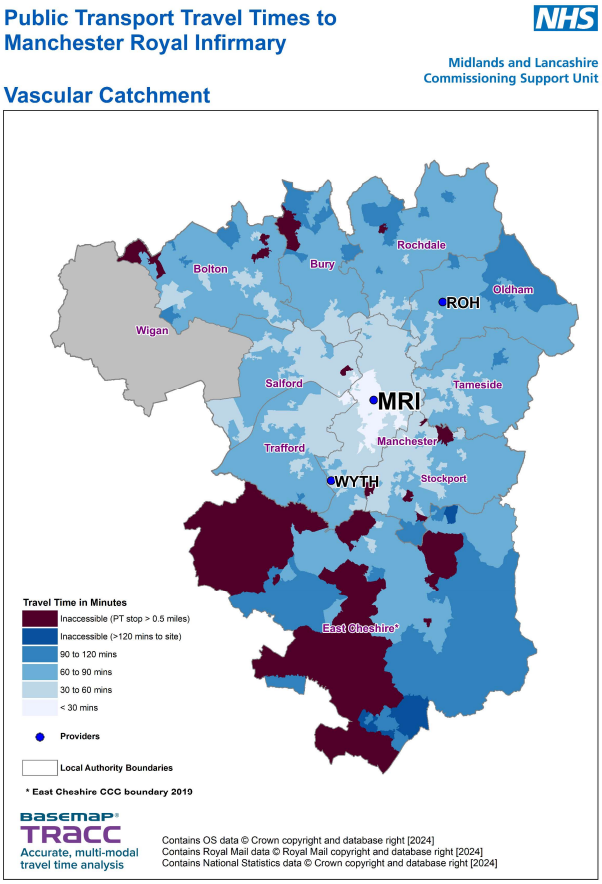


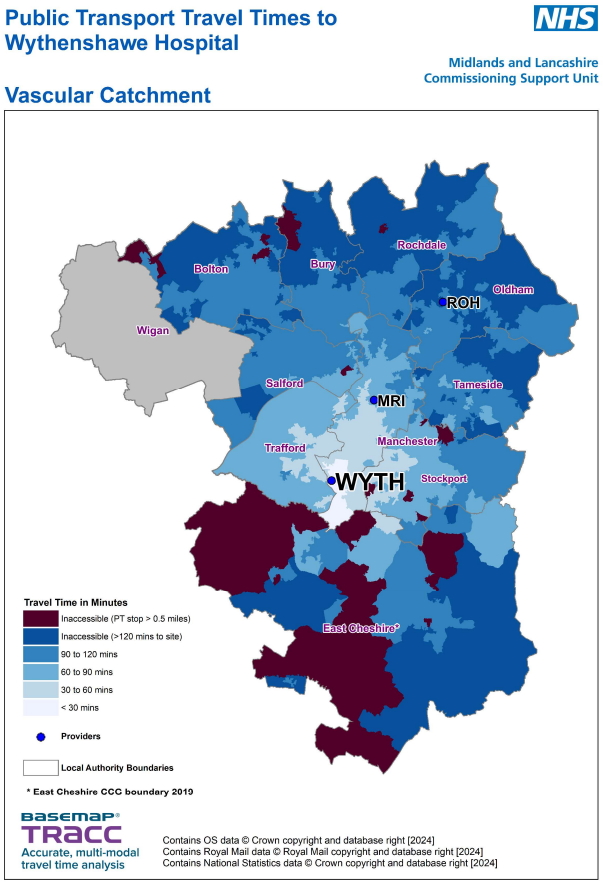
The WYTH to ROH scenario map alongside shows that ROH has longer journey times by PT for residents across the south and centre of the catchment area. Although average PT journey times for most residents in the scenario WYTH to ROH decreased as demonstrated earlier, this is skewed by the residents in the north who experience much shorter PT journeys to ROH than WYTH. There are a total of 510k residents who are between 30 and 75 mins further from ROH than WYTH, and for some of these

in the south the journey increases over 2 hours and is therefore considered inaccessible. However, if MRI is available as a site, those worst impacted by moving from three sites to two remain within 90 mins by PT to an alternative. (See figures 6a and 6b, below). For the small number of residents who are 90 to 120 mins from MRI, their location on the edge of the catchment area means that their journey to WYTH by PT was even longer so they are therefore not negatively affected.

The PT Provider maps for MRI (on the left) and WYTH shows those areas in the south with longest journey times to MRI correspond with areas that are inaccessible to WYTH. The areas worst affected by the move from three to two sites, those closest to WYTH, remain within 90 mins of MRI, but are 90 to 120 mins journey by PT to ROH.

Figures 6a & 6b: Total Travel Time by PT to MRI, WYTH





As noted previously, average PT travel costs are lower to MRI and ROH than to WYTH, especially for residents in more deprived areas. For the most deprived decile of LSOAs, the average PT cost is £8.84 to WYTH, £7.72 to MRI and just £6.72 to ROH. However, these averages may hide a wide distribution of actual costs. For some LSOAs in IMD 1, the PT costs to MRI and ROH are over £10, while the cost to WYTH can be as much as £16 where journeys required using a combination of train, bus and / or tram, and therefore are not covered by a single ticket.

Two vs Three Site Configuration: Ambulance

Although WYTH was closest site for 31.3% of residents during AM Peak period, using the Nighttime period to approximate Ambulance journey times gives a figure of 27.6% who are closest to WYTH. The central location of WYTH means that the fewest number of residents across the catchment are over 40 mins away by ambulance. Just 0.1% of residents for WYTH (n = 2,986) are 40 mins away, compared to 1.1% for MRI (n = 29.6k) and 3.5% for ROH (n = 96.2k). Proportionally, residents aged over 75 years or from the least deprived decile are more likely to be furthest from MRI or ROH. For residents from LSOAs with the worst levels of car ownership, none are more than 40 mins ambulance journey from WYTH, MRI or ROH.

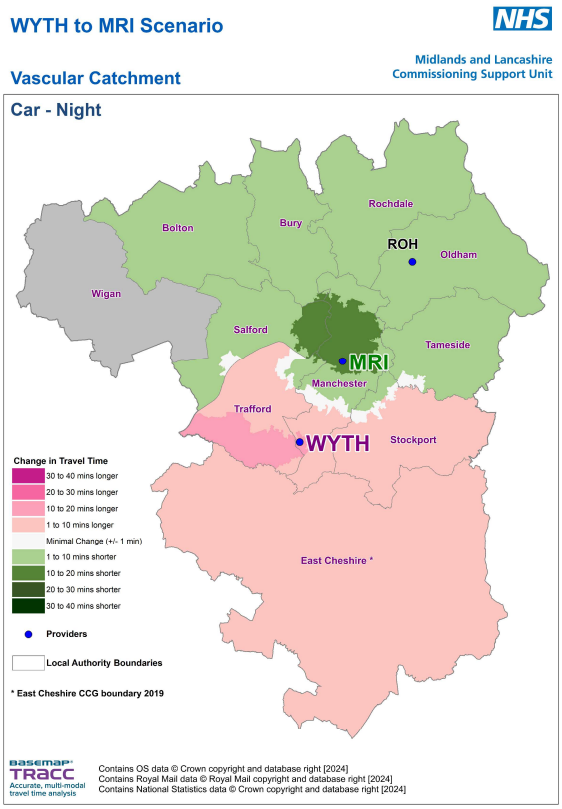
Table 14: Journey Time to Sites, Ambulance

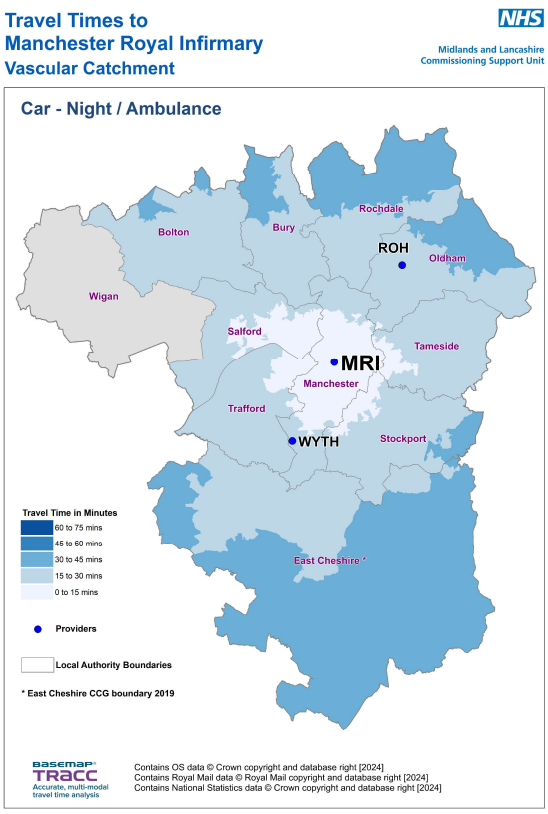
Access by Ambulance	MRI	WYTH	ROH
Less than 10 mins	237,353	108,454	164,580
10 to 20 mins	1,146,880	922,866	873,920
20 to 30 mins	1,075,410	1,307,685	1,402,427
30 to 40 mins	254,197	401,512	206,361
40 to 50 mins	29,663	2,986	88,592
50 to 60 mins	-	-	7,623
More than 60 mins	-	-	-
Less than 10 mins	8.7%	4.0%	6.0%
10 to 20 mins	41.8%	33.6%	31.9%
20 to 30 mins	39.2%	47.7%	51.1%
30 to 40 mins	9.3%	14.6%	7.5%
40 to 50 mins	1.1%	0.1%	3.2%
50 to 60 mins	0.0%	0.0%	0.3%
More than 60 mins	0.0%	0.0%	0.0%

The scenario map for WYTH to MRI and the Provider Map for MRI (shown side by side, below) demonstrate that the residents worst affected by the move from three to two sites are those located to the west of WYTH. These residents experienced a 10 to 20 min increase in ambulance journey time but remain within the 30 min time band of MRI. Large amounts of East Cheshire have up to 10 mins increased ambulance time. These are over 30 mins from MRI. However, much of the south of this area is also over 30 mins from WYTH, so residents furthest from MRI remain within the 30 to 45 mins time band of their nearest site.

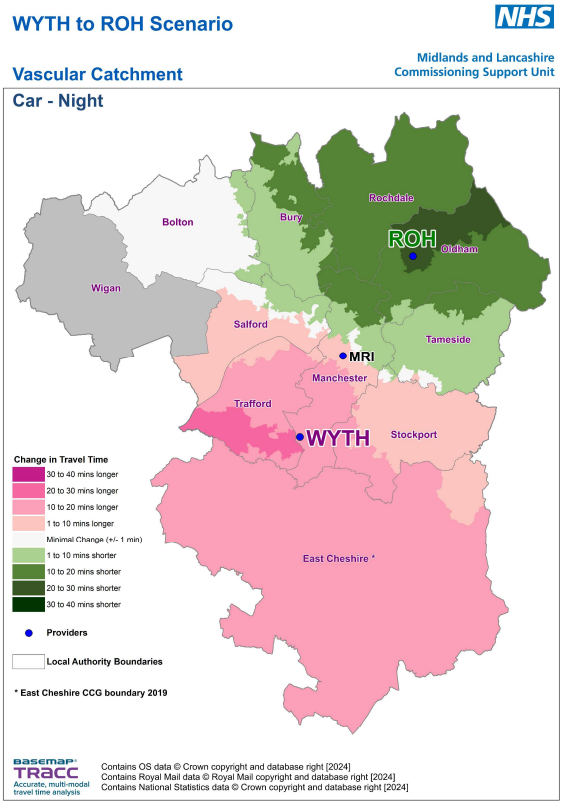
The corresponding maps for the WYTH to ROH scenario show that the worst impact remains in the same area, i.e. those residents around and to the west of WYTH. These residents have an increase of 20 to 30 mins longer to ROH by ambulance than to WYTH, but none have a journey time extending over 45 mins. There are some residents in the south of the catchment area, however, who are within 45 mins of WYTH, but have a journey time of 45 to 60 mins to ROH. Their journey time increased by 10 to 20 mins in the WYTH to ROH scenario.

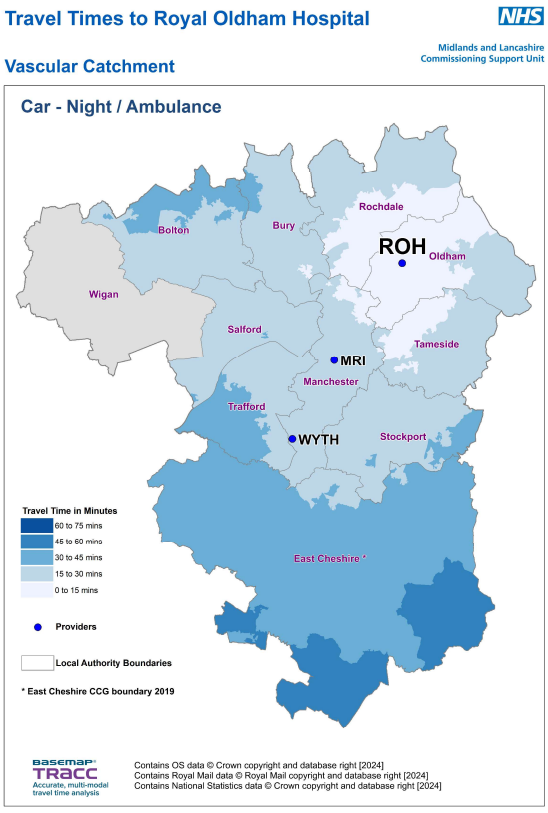
Figures 7a & 7b: Change in Ambulance Travel Times, WYTH to MRI, and Total Ambulance Travel Time to MRI





Figures 8a & 8b: Change in Ambulance Travel Times, WYTH to ROH, and Total Ambulance Travel Time to ROH





Summary: Impact of Changing from Three to Two Sites

The residents experiencing the worst impact on journey times for Car AM Peak, PT and Ambulance journey times are those residents near to WYTH or to the west of the site up to the catchment area border. This area includes a mixture of the most and least deprived deciles. Residents are predominantly from White ethnic groups and older age bands. For these residents, their next nearest site is MRI. Journey times increase by 10 to 20 mins by Car and Ambulance, and up to 60 mins by PT. These residents remain within 45 mins car journey at AM Peak, 30 mins by ambulance and 90 mins by PT.

The residents with the longest journey times to MRI (excluding those closest to ROH) are located in the south of the catchment area. Due to the remote location of these areas, journey times have not increased significantly overall, and residents remain within similar journey time bands of MRI to their WYTH journey times.

The difference in journey times from WYTH to ROH is more significant, with large areas in the south of the catchment outside the 2 hours limit by PT. Car AM Peak journey times exceed 60 mins for some areas, and ambulance times are 45 to 60 mins, though these are not densely populated so the number of residents affected is fewer than 60k. This does highlight however, that the residents worst impacted by the move from three to two sites would be those who experience a heavily negative impact again should services no longer be available at MRI, particularly those residents who rely on PT.

Impact of a Single Site Reconfiguration

Key Points:

Consolidating services on a single site will have the greatest impact on people currently living closest to whichever site is no longer available. These areas include a high density of residents from the worst decile deprivation and from Asian ethnic groups, meaning these residents will be the most significantly impacted in terms of journey time increases in the scenario of a single site reconfiguration.

MRI has a more central location, making it within 30 mins by car, 90 mins by PT and 20 mins by ambulance for a greater proportion of residents than ROH. It is also more accessible for residents who were negatively affected by the interim change from three sites to two.

The demographic density of the areas around ROH includes a larger number of residents from decile 1 and from Asian ethnic groups than the areas around MRI. This means that more residents will experience an increase 20 mins or more by car, or 10 mins or more than ambulance, if the service is moved to a single site at MRI rather than ROH.

The analysis prioritises the residents experiencing longer journey times if the service were reconfigured to a single site. It assumes that patients who were already attending their closest available site would not actually receive a positive impact. If it is the case that patients were often travelling past their closest site for treatment, then the shorter journey times presented here should be given greater consideration.

It is acknowledged that some patients are less likely to travel by PT, for example those who use mobility aids or who are admitted in an emergency. Actual figures on how patients travel to sites for treatment were unavailable for this analysis. Therefore, it's not within scope to recommend which travel method should be prioritised in an assessment of impact on service users.

In this section, the remaining scenarios are considered, where the service is further consolidated into a single site at either Manchester Royal Infirmary or Royal Oldham Hospital.

1. The service at Manchester Royal Infirmary moves to Royal Oldham Hospital (MRI to ROH)
2. The service at Royal Oldham Hospital moves to Manchester Royal Infirmary (ROH to MRI)

In the following tables, the change in average journey times is shown, taken from the Excel document "A0044 Average Travel Time Summary Tables". For car journeys, AM Peak time period has been selected. As there are two sites only involved in these scenarios, the change in travel time from MRI to ROH is mirrored in the opposite scenario, ROH to MRI.

Table 15: Average Change in Travel Time, Age Bands and Ethnic Group

	Aged 54 years and under	Aged 55 to 74 years	Aged 75 years and over	Asian, Asian British or Asian Welsh, excluding Chinese	Black, Black British, Black Welsh, Caribbean or African	Mixed or Multiple ethnic groups	White	Other inc Chinese
Vascular Catchment Pop	1,986,376	557,969	199,176	359,582	131,456	85,971	2,071,087	95,511
Vascular Scenarios								
ROH to MRI - Car AM Peak	-4.3	-2.9	-3.2	-1.3	-7.6	-7.1	-3.7	-10.4
ROH to MRI - PT	-20.7	-19.5	-20.3	-13.8	-22.6	-24.9	-20.8	-29.3
MRI to ROH - Car AM Peak	4.3	2.9	3.2	1.3	7.6	7.1	3.7	10.4
MRI to ROH - PT	20.7	19.5	20.3	13.8	22.6	24.9	20.8	29.3

Table 16: Average Change in Travel Time, IMD Decile

	Deprivation Decile									
	1	2	3	4	5	6	7	8	9	10
Vascular Catchment Pop	681,236	389,310	319,242	254,104	190,697	168,697	187,814	187,819	162,950	201,630
Vascular Scenarios										
ROH to MRI - Car AM Peak	-1.5	-1.5	-5.2	-6.8	-3.0	-4.7	-4.6	-2.3	-4.5	-11.6
ROH to MRI - PT	-13.2	-15.4	-22.9	-23.7	-20.4	-22.7	-22.5	-20.4	-27.7	-36.8
MRI to ROH - Car AM Peak	1.5	1.5	5.2	6.8	3.0	4.7	4.6	2.3	4.5	11.6
MRI to ROH - PT	13.2	15.4	22.9	23.7	20.4	22.7	22.5	20.4	27.7	36.8

When residents are split by age band, Ethnic Group and IMD Decile, all groups have a lower average travel time to MRI by Car at AM Peak and PT, compared to average travel times to ROH. As noted earlier however, average travel times can hide the impact on residents whose journeys are significantly shorter or longer. Therefore, journey times and changes will be split into bands for a more detailed analysis, split by mode of travel.

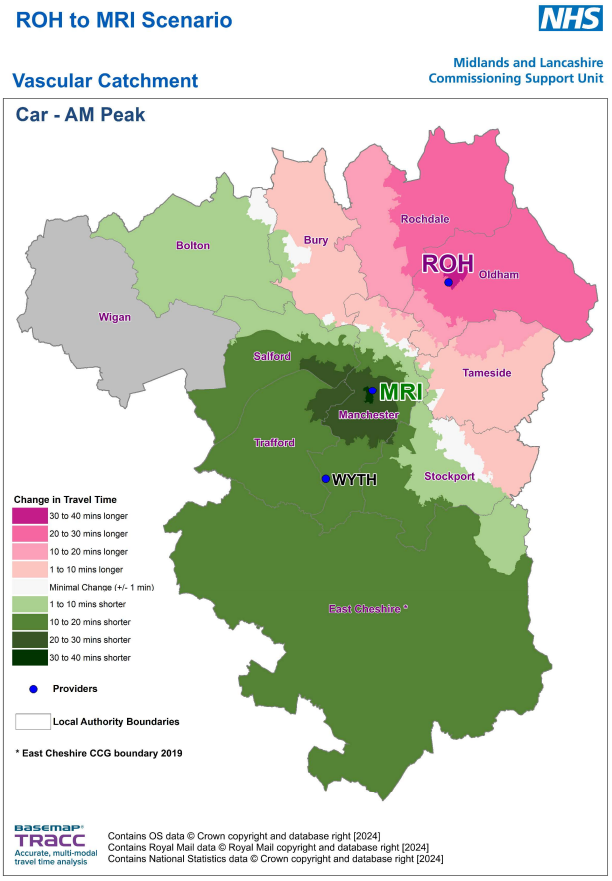
MRI and ROH: Car Travel Time during AM Peak Period

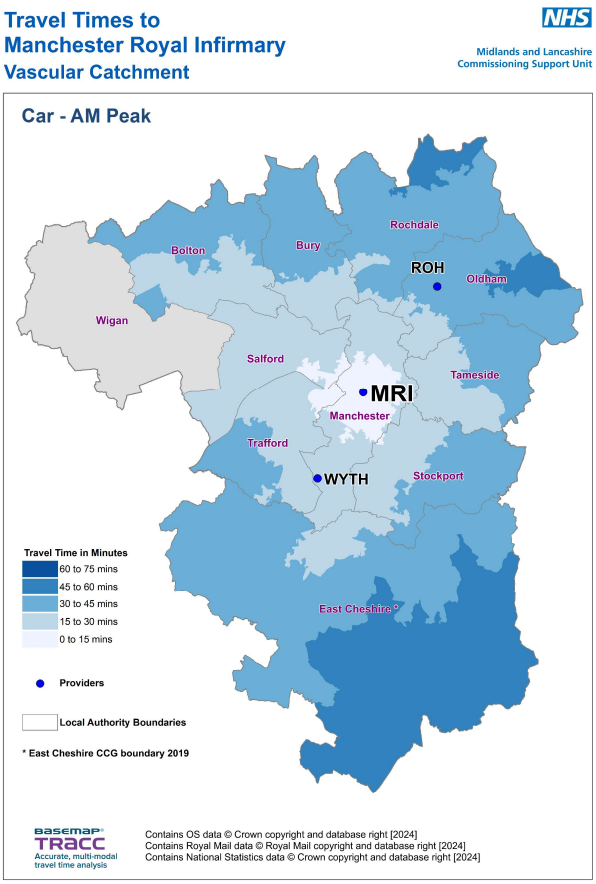
The maps below show the change in travel time for the scenario where services are consolidated on a single site at MRI (ROH to MRI), and the total travel time for all residents to MRI.

The worst affected residents in this scenario are those located close to ROH (30 to 40 mins increase). They remain within 45 mins total travel time of MRI though. There are areas with a 20 to 30 min increase in the northeast who would have a resulting journey time of 45 to 60 mins to MRI.

If MRI were chosen as the single site, 61.8% of residents would live within 30 mins by car of MRI (and none over 60 mins), compared to 43.5% within 30 mins of ROH and 2.1% over 60 mins. This varies by IMD decile. For Decile 1, 69.8% live within 30 mins of MRI and 59.6% within 30 mins of ROH. For decile 10 however, just 3.6% are within 30 mins of ROH and 37.8% for MRI.

Figures 9a & 9b: Change in Car AM Peak Travel Times, ROH to MRI, and Total Car AM Peak Travel Time to MRI





Although the average journey time for residents in decile 1 is 1.5 mins shorter in this scenario, there are 119k residents (17.5%) who would experience longer journey times by 20 mins or more. This scenario would also disproportionately impact residents from Asian ethnic groups, with 25.5% (n = 91.6k) in the 20 to 30 min or 30 to 40 min longer time bands.

As the scenarios mirror each other, this means that the residents in the “shorter” time bands above will experience the equivalent negative impact in the reverse scenario. Therefore, the scenario MRI to ROH impacts residents from Asian, Black, Mixed and Other ethnic groups more severely. Residents from White ethnic groups are mostly within the 20 min shorter to 20 min longer time bands in the table above, meaning a lower proportion experience a more severe impact in either scenario.

In total, 77.1% of residents (n = 2.1 million) have a difference of less than 20 mins journey time between MRI and ROH. For Asian ethnic groups, the figure is just 57.5% (n = 207k). For this group, 17.0% live more than 20 mins closer to MRI, while 25.5% live more than 20 mins closer to ROH.

Table 17: Impact on Travel Time, Car AM Peak, ROH to MRI, Ethnic Group

ROH to MRI Car AM Peak	Asian, Asian British or Asian Welsh, excluding Chinese	Black, Black British, Black Welsh, Caribbean or African	Mixed or Multiple ethnic groups	White	Other inc Chinese	Total
30-40 mins shorter	2,640	2,190	564	2,989	1,474	9,857
20-30 mins shorter	58,652	30,441	16,556	165,571	24,913	296,133
10-20 mins shorter	62,984	27,109	25,715	661,773	29,207	806,788
1-10 mins shorter	85,905	32,103	17,325	467,463	18,637	621,433
No Change	4,379	3,858	2,002	59,597	1,815	71,651
1-10 mins longer	40,454	18,076	11,630	354,594	10,167	434,921
10-20 mins longer	12,970	7,634	4,473	153,223	2,808	181,108
20-30 mins longer	89,995	9,468	7,490	198,373	6,353	311,679
30-40 mins longer	1,603	577	216	7,504	137	10,037
30-40 mins shorter	0.7%	1.7%	0.7%	0.1%	1.5%	0.4%
20-30 mins shorter	16.3%	23.2%	19.3%	8.0%	26.1%	10.8%
10-20 mins shorter	17.5%	20.6%	29.9%	32.0%	30.6%	29.4%
1-10 mins shorter	23.9%	24.4%	20.2%	22.6%	19.5%	22.7%
No Change	1.2%	2.9%	2.3%	2.9%	1.9%	2.6%
1-10 mins longer	11.3%	13.8%	13.5%	17.1%	10.6%	15.9%
10-20 mins longer	3.6%	5.8%	5.2%	7.4%	2.9%	6.6%
20-30 mins longer	25.0%	7.2%	8.7%	9.6%	6.7%	11.4%
30-40 mins longer	0.4%	0.4%	0.3%	0.4%	0.1%	0.4%

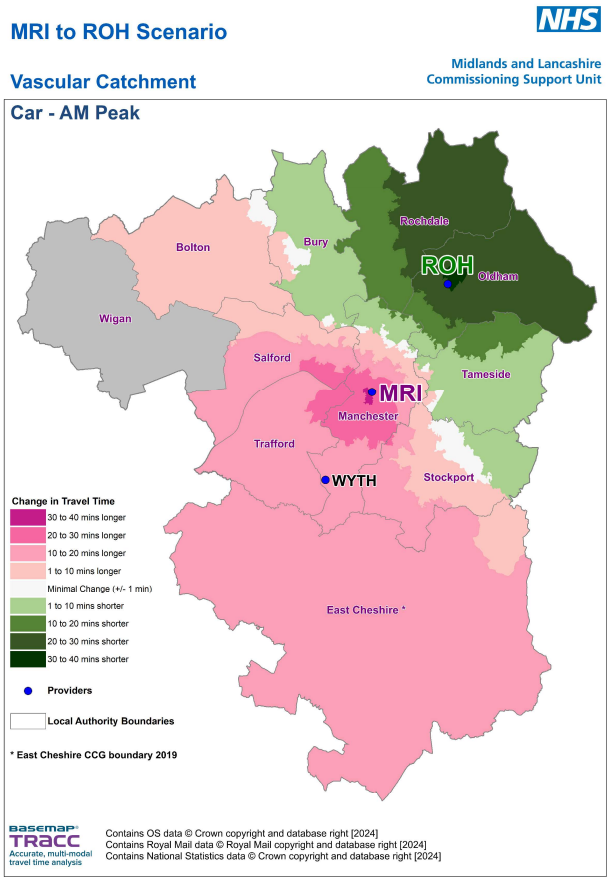
Table 18: Proportion of residents with difference > 20 mins by Car AM Peak between MRI and ROH, Ethnic Group

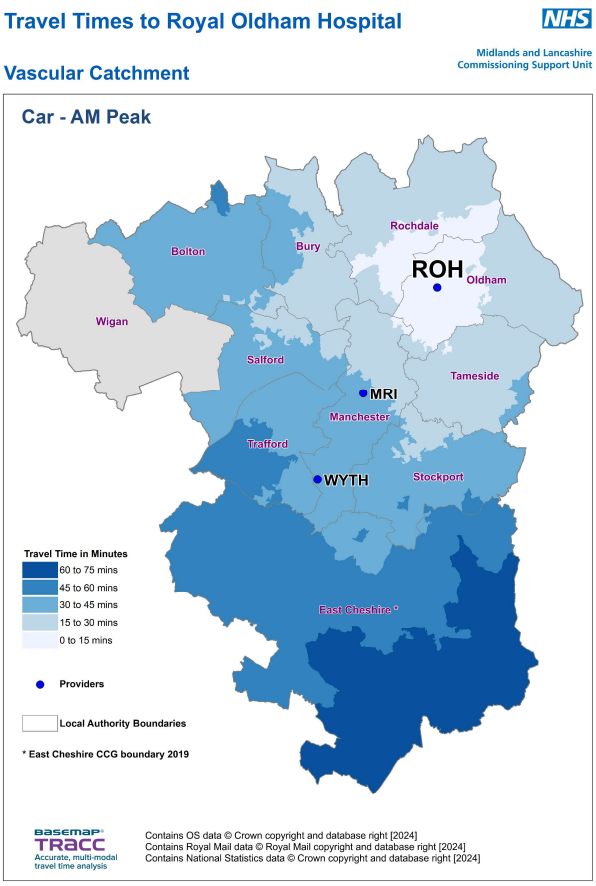
Journey Time Car AM Peak	Asian, Asian British or Asian Welsh, excluding Chinese	Black, Black British, Black Welsh, Caribbean or African	Mixed or Multiple ethnic groups	White	Other inc Chinese	Total
Faster to MRI by 20 mins plus	17.0%	24.8%	19.9%	8.1%	27.6%	11.2%
Difference between sites no more than +/- 20 mins	57.5%	67.5%	71.1%	81.9%	65.6%	77.1%
Faster to ROH by 20 mins plus	25.5%	7.6%	9.0%	9.9%	6.8%	11.7%
Grand Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

For residents in the most deprived decile of LSOAs, 71.0% have a difference of less than 20 mins between the two sites, while 11.5% (n = 78.4k) live more than 20 mins closer to MRI and 17.5% (n = 119k) live more than 20 mins closer to ROH. See table X below for a breakdown of the MRI to ROH scenario by IMD Decile.

The scenario map for MRI to ROH visualises where these residents live, alongside their resulting total journey time to ROH.

Figures 10a & 10b: Change in Car AM Peak Travel Times, MRI to ROH, and Total Car AM Peak Travel Time to ROH





The areas with the longest increased travel times in the scenario MRI to ROH are those closest to the centre of the catchment area around MRI. These locations will have a resulting journey time to ROH of 30 to 45 mins. The areas with the longest journey time of 60 to 75 mins to ROH are in the south, but the change in journey time for these residents is no more than 20 mins longer.

In summary, if MRI was chosen as a single site, there are 10k residents whose journey will be increased by more than 30 mins (2.4k of whom are from IMD decile 1), and 312k with an increase of 20 to 30 mins (116k from decile 1). If ROH were chosen as a single site, 9.8k residents must travel an extra 30 mins or more (4.7k of whom are from the most deprived decile), and 296k with an increased journey of 20 to 30 mins (73.8k from decile 1). For Black, Mixed and Other ethnic groups, a greater proportion than average live 20 mins or more closer to MRI than to ROH. Residents from Asian ethnic groups will be most impacted by a move to a single site, with 17.0% living 20 mins or more closer to MRI, but 25.5% favouring ROH by 20 mins or more.

Table 19: Impact on Travel Time, Car AM Peak, MRI to ROH, IMD Decile

	IMD Decile									
MRI to ROH Car AM Peak	1	2	3	4	5	6	7	8	9	10
30-40 mins shorter	2,424	1,526	-	1,333	3,173	1,586	-	-	-	-
20-30 mins shorter	116,532	46,136	31,676	20,269	21,081	13,552	18,118	28,835	15,515	-
10-20 mins shorter	46,161	35,328	28,706	21,769	6,482	9,983	10,574	12,857	9,189	-
1-10 mins shorter	97,439	80,137	58,656	33,055	38,713	31,401	25,789	30,527	20,570	18,510
No Change	25,845	6,131	6,059	6,643	8,044	9,073	2,988	-	5,455	1,435
1-10 mins longer	175,890	116,805	69,135	55,796	42,025	28,845	43,642	25,762	37,111	26,450
10-20 mins longer	138,439	63,075	59,476	51,494	53,982	54,528	75,621	85,151	73,556	151,504
20-30 mins longer	73,842	37,951	62,571	63,752	17,212	19,758	11,081	4,666	1,525	3,750
30-40 mins longer	4,657	2,201	2,993	-	-	-	-	-	-	-
30-40 mins shorter	0.4%	0.4%	0.0%	0.5%	1.7%	0.9%	0.0%	0.0%	0.0%	0.0%
20-30 mins shorter	17.1%	11.9%	9.9%	8.0%	11.1%	8.0%	9.6%	15.4%	9.5%	0.0%
10-20 mins shorter	6.8%	9.1%	9.0%	8.6%	3.4%	5.9%	5.6%	6.8%	5.6%	0.0%
1-10 mins shorter	14.3%	20.6%	18.4%	13.0%	20.3%	18.6%	13.7%	16.3%	12.6%	9.2%
No Change	3.8%	1.6%	1.9%	2.6%	4.2%	5.4%	1.6%	0.0%	3.3%	0.7%
1-10 mins longer	25.8%	30.0%	21.7%	22.0%	22.0%	17.1%	23.2%	13.7%	22.8%	13.1%
10-20 mins longer	20.3%	16.2%	18.6%	20.3%	28.3%	32.3%	40.3%	45.3%	45.1%	75.1%
20-30 mins longer	10.8%	9.7%	19.6%	25.1%	9.0%	11.7%	5.9%	2.5%	0.9%	1.9%
30-40 mins longer	0.7%	0.6%	0.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

MRI and ROH: Public Transport Travel Time and Costs

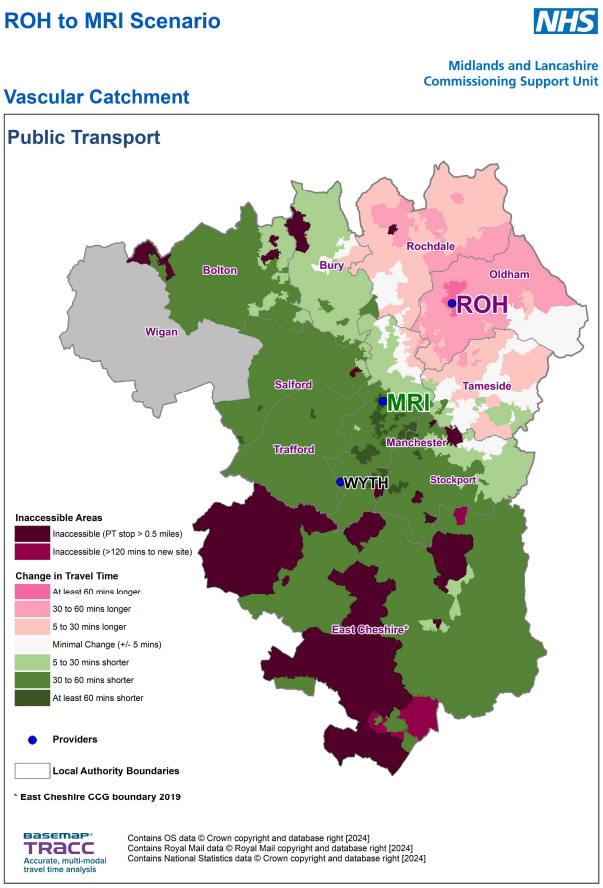
As previously shown, the average PT journey time for all demographic groups was shorter to MRI than ROH. However, the maps below show the distribution of change in travel time across the catchment area. The scenario ROH to MRI and resulting total travel time to MRI is shown first.

Although the average time across the catchment is shorter to MRI, there are areas in the northeast with increased PT journey times to ROH by 30 to 60 mins, and the area closest to the ROH site has an increase of over 60 mins. For areas around Oldham, the journey to MRI by PT would be 90 to 120 mins, but residents around ROH would still be able to access MRI within 90 mins.

The area on the map shaded for the worst impact (30 to 60 mins longer, at least 60 mins longer) are areas with high levels of deprivation and a high density of residents from Asian ethnic groups. In total, 281k residents (10.2%) would have an increased PT journey by 30 mins or more, and 108k of these are from LSOAs with the worst levels of deprivation. Proportionally, 21.1% (n = 75.9k) of residents from Asian ethnic groups would have a longer PT journey of 30 mins or greater, compared to fewer than 9.0% of residents in each other ethnic group.

Average PT travel costs for residents in the most deprived decile of LSOAs are £7.72 to MRI and £6.72 to ROH. PT Costs are cheaper on average for all IMD deciles except decile 10. As noted in the previous section however, these are average costs across all residents in each decile, and therefore covers a potentially wide distribution of higher and lower costs. The Excel document, “A0044 Data Tables and Methodology V2” includes full details at LSOA level on the tab, “Public Transport Data”.

Figures 11a & 11b: Change in PT Travel Times, ROH to MRI, and Total PT Travel Time to MRI



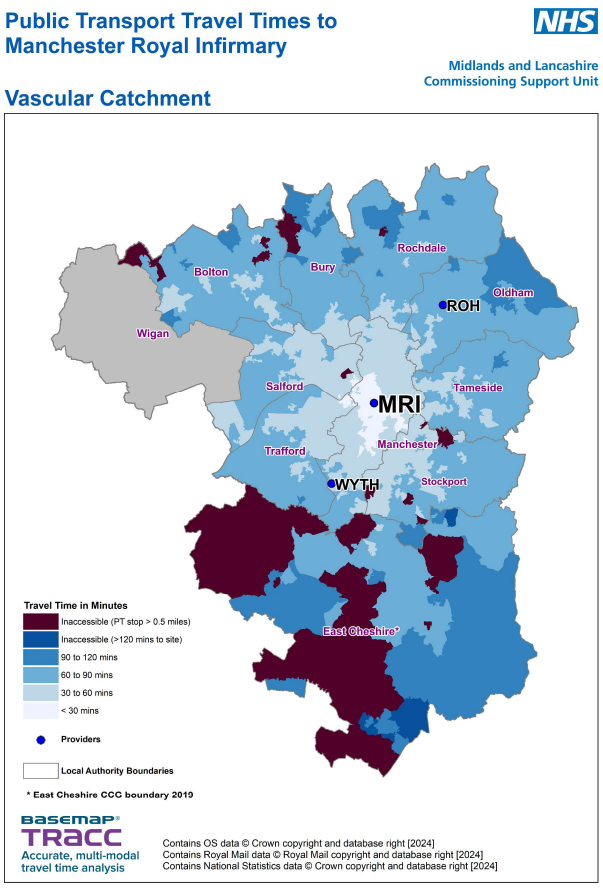


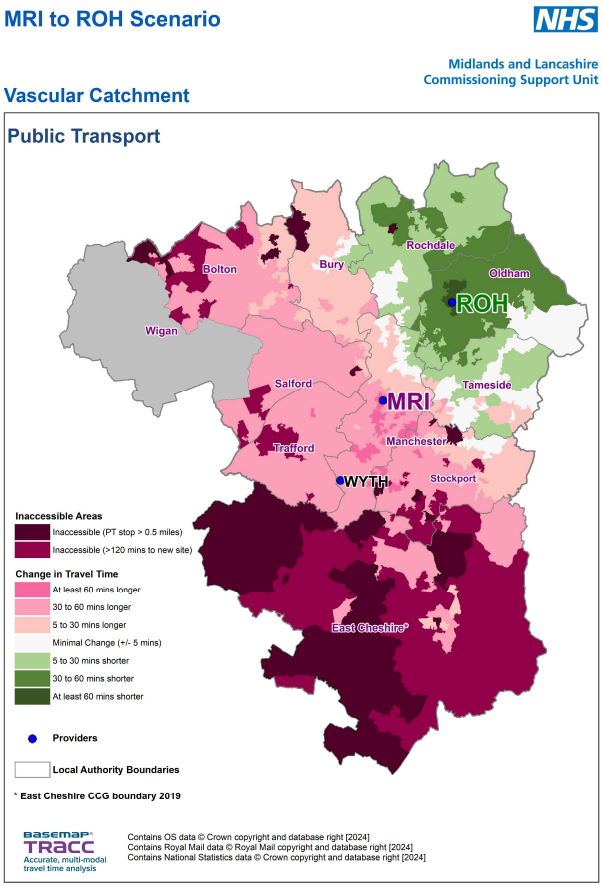
Table 20: Impact on Travel Time, PT, ROH to MRI, Ethnic Group

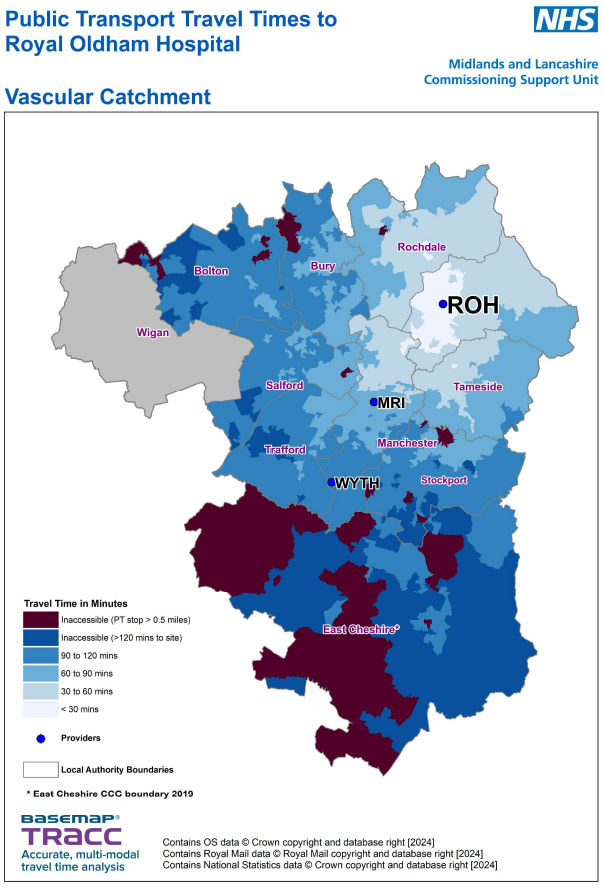
ROH to MRI PT	Asian, Asian British or Asian Welsh, excluding Chinese	Black, Black British, Black Welsh, Caribbean or African	Mixed or Multiple ethnic groups	White	Other inc Chinese	Total
At least 75 mins shorter	7	74	45	1,378	12	1,516
60-75 mins shorter	18,500	6,963	4,356	50,054	6,723	86,596
45-60 mins shorter	56,359	23,162	19,512	415,452	22,111	536,596
30-45 mins shorter	108,297	40,552	27,410	652,758	33,052	862,069
15-30 mins shorter	26,798	13,223	8,588	213,433	10,900	272,942
5 to 15 mins shorter	17,915	11,373	5,078	117,456	6,130	157,952
Minimal Change +/- 5 Minutes	11,396	12,671	5,166	143,471	4,080	176,784
5 to 15 mins longer	15,143	6,782	3,634	121,689	2,674	149,922
15-30 mins longer	26,917	6,622	4,148	123,518	3,685	164,890
30-45 mins longer	46,685	5,716	4,635	119,360	3,540	179,936
45-60 mins longer	25,146	2,559	1,876	47,704	1,475	78,760
60-75 mins longer	4,045	1,105	508	15,915	324	21,897
Inaccessible no PT stop, > 3 interchanges	2,374	654	1,015	48,899	805	53,747
Total Residents	**359,582**	**131,456**	**85,971**	**2,071,087**	**95,511**	**2,743,607**

As these scenarios mirror one another, the figures in the table for shorter journeys highlight which residents will experience longer journeys for the opposite scenario of MRI to ROH. With a high number of residents in the 30-45 mins shorter and 45-60 mins shorter above, this means those residents will experience equivalent increases in journey time to ROH.

The scenario map for MRI to ROH and resulting total travel time to ROH demonstrates how the impact is reversed if ROH is chosen as a single site.

Figures 12a & 12b: Change in PT Travel Times, MRI to ROH, and Total PT Travel Time to ROH





As shown in the previous section (see Table 13), 93.9% of residents live within 90 mins journey by PT to MRI, compared to just 54.4% within 90 mins of ROH. In the scenario MRI to ROH, large areas of the centre of the catchment area would experience an increased journey of 30 to 60 mins. The provider map on the right visualises how this results in 37.1% of residents (n = 1 million) with a journey time of over 90 mins to ROH, and 6.6% (n = 181k) for whom the journey is inaccessible due to the journey exceeding 2 hours. Patients from White ethnic groups, those aged 75 years or older, and from less deprived areas were more likely to experience journey times of 90 mins or more. However, all demographic groups would have large proportions of residents impacted significantly. For example, 50.9% of residents from Asian ethnic groups (n = 183k) would experience an increase of 30 mins or more (compared to 21.1% in the reverse scenario) and 44.0% of residents from the most deprived LSOAs would have a 30 min or greater increase (compared to 15.9% in the scenario ROH to MRI).

MRI and ROH: Ambulance

Using the tables in the document, “A0044 Average Travel Time Summary Tables”, the average travel time change in a single site scenario is shown using the tab, “Impact Analysis”, selecting Night travel time to estimate Ambulance journeys. Average times are shorter to MRI than ROH for all demographic groups.

Table 21: Average Change in Travel Time, IMD Decile

	Deprivation Decile									
	1	2	3	4	5	6	7	8	9	10
Vascular Catchment Pop	681,236	389,310	319,242	254,104	190,697	168,697	187,814	187,819	162,950	201,630
Vascular Scenarios										
ROH to MRI - Car Night / Ambulance	-0.6	-0.6	-2.7	-3.9	-1.3	-2.4	-1.8	-0.3	-1.8	-6.0
MRI to ROH - Car Night / Ambulance	0.6	0.6	2.7	3.9	1.3	2.4	1.8	0.3	1.8	6.0

Table 22: Average Change in Travel Time, Age Band and Ethnicity

	Aged 54 years and under	Aged 55 to 74 years	Aged 75 years and over	Asian, Asian British or Asian Welsh, excluding Chinese	Black, Black British, Black Welsh, Caribbean or African	Mixed or Multiple ethnic groups	White	Other inc Chinese
Vascular Catchment Pop	1,986,376	557,969	199,176	359,582	131,456	85,971	2,071,087	95,511
Vascular Scenarios								
ROH to MRI - Car Night / Ambulance	-2.1	-1.0	-1.1	-0.2	-4.9	-4.2	-1.6	-6.6
MRI to ROH - Car Night / Ambulance	2.1	1.0	1.1	0.2	4.9	4.2	1.6	6.6

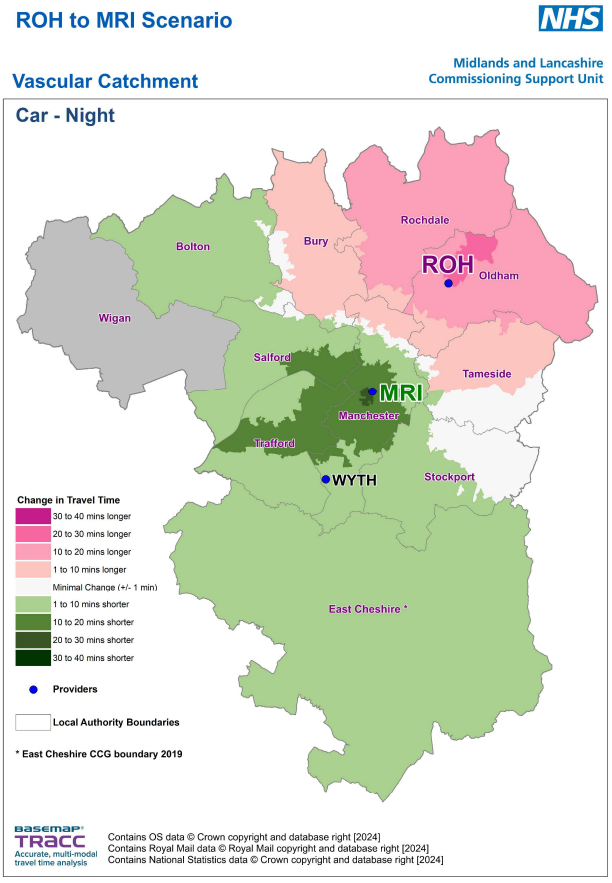
The largest difference in average ambulance travel time between the sites is for average for residents from Other ethnic groups (6.6 mins difference on average) and residents in the least deprived decile of LSOAs (6 mins difference on average). However, splitting the change by time bands shows that for 1.4% of residents (n = 39.0k) the difference in travel time is greater than 20 mins (either longer or shorter to MRI). A quarter of these residents are from the most deprived decile of LSOAs.

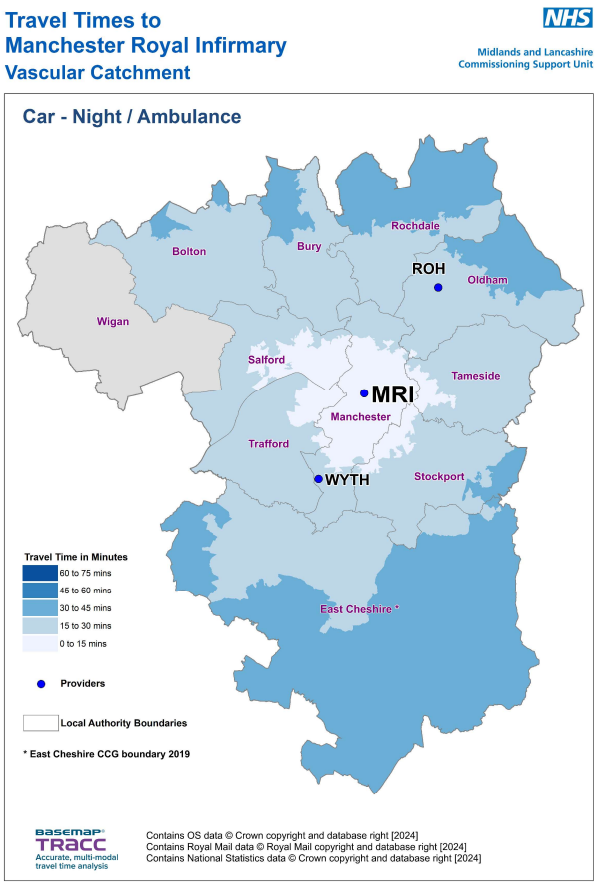
Table 23: Impact on Travel Time, Ambulance, ROH to MRI, IMD Decile

ROH to MRI, Ambulance	IMD Decile									
	1	2	3	4	5	6	7	8	9	10
20-30 mins shorter	7,509	3,224	4,652	-	-	-	-	-	-	-
10-20 mins shorter	117,115	65,421	84,406	79,577	29,590	36,284	23,980	18,483	11,646	17,890
1-10 mins shorter	263,127	149,798	105,044	89,888	82,786	68,403	99,052	93,023	104,722	161,110
No Change	53,780	30,039	25,385	16,590	17,790	16,685	19,417	12,272	7,492	8,331
1-10 mins longer	95,408	78,625	53,848	36,918	32,525	30,948	21,104	23,960	20,615	14,318
10-20 mins longer	142,642	59,131	41,487	26,997	24,848	13,565	22,585	37,419	18,446	-
20-30 mins longer	1,648	3,052	4,450	4,141	3,173	2,841	1,675	2,641	-	-
Grand Total	**681,229**	**389,290**	**319,272**	**254,111**	**190,712**	**168,726**	**187,813**	**187,798**	**162,921**	**201,649**

The scenario map for ROH to MRI and resulting total travel time to MRI highlights those areas experiencing the worst impact on ambulance travel times in the single site scenarios.

Figures 13a & 13b: Change in Car Night / Ambulance Travel Times, ROH to MRI, Total Ambulance Travel Time to MRI





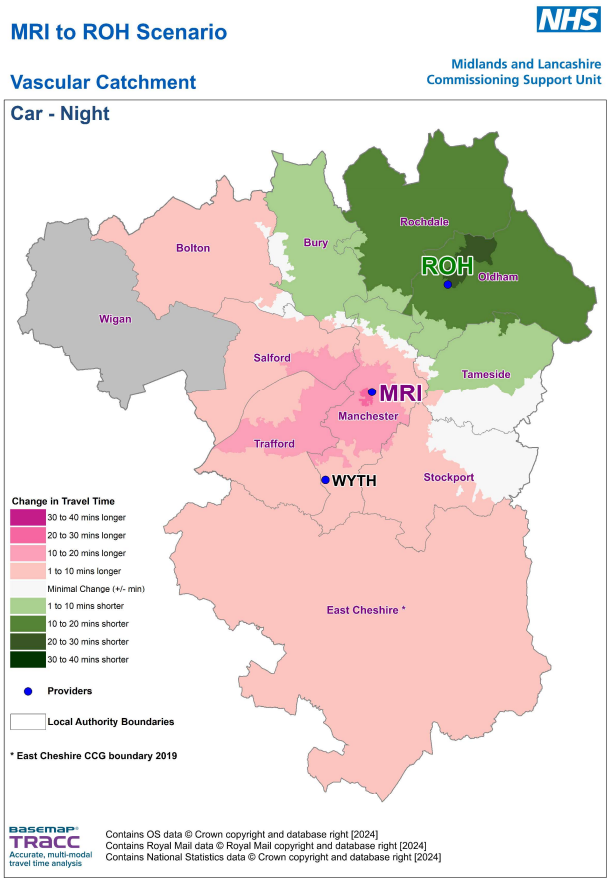
Again, the areas with the worst increase in journey time in the ROH to MRI scenario are those close to the ROH site. Some of these areas have a journey time to MRI of over 30 mins. As discussed in the previous section, 50.5% of residents in the catchment area are within 20 mins ambulance journey to MRI, and 89.7% are within 30 mins. For ROH, figures are 37.9% and 89.0% respectively. These figures

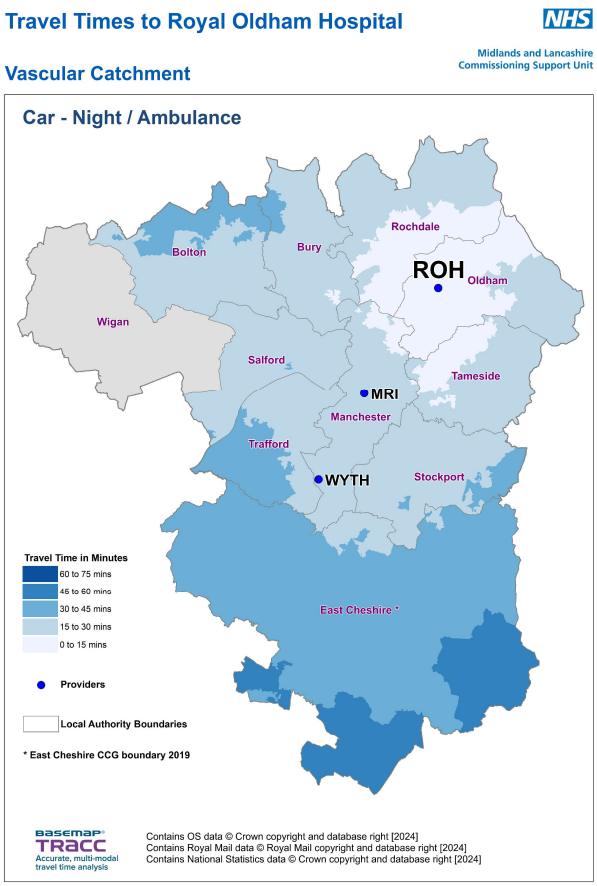
are shown in Table 24, taken from the document, “A0044 Average Travel Time Summary Tables”, tab, “Vascular Hubs”.

Table 24: Journey Time to Sites, Ambulance

Access by Ambulance	MRI	ROH
Less than 10 mins	237,353	164,580
10 to 20 mins	1,146,880	873,920
20 to 30 mins	1,075,410	1,402,427
30 to 40 mins	254,197	206,361
40 to 50 mins	29,663	88,592
50 to 60 mins	-	7,623
Less than 10 mins	8.7%	6.0%
10 to 20 mins	41.8%	31.9%
20 to 30 mins	39.2%	51.1%
30 to 40 mins	9.3%	7.5%
40 to 50 mins	1.1%	3.2%
50 to 60 mins	0.0%	0.3%

Figures 14a & 14b: Change in Car Night / Ambulance Travel Times, MRI to ROH, Total Ambulance Travel Time to ROH





As with other modes of transport, the change in journey time from ROH to MRI is mirrored in the opposite scenario (see Figure 14a, above). Although the areas with the longest journey times to ROH of

45 to 60 mins are in the south of the catchment area, it is the areas closest to MRI and the west which experience the most significant change in journey times. Again, these areas are ethnically diverse and include many LSOAs with high levels of deprivation.

For much of the catchment area, the increased journey time to ROH is just 1 to 10 mins longer. However, the area impacted by the closure of WYTH (see previous section) overlaps with the 1 to 10 mins longer band shown in the map on the left above. This means that, for the residents who experienced an increase in ambulance journey time of up to 20 mins in the WYTH to MRI scenario, they would potentially experience an additional 10 min increase if ROH was chosen as the location of a single site service.

Table 25: Impact on Travel Time, Ambulance, MRI to ROH, Ethnic Group

MRI to ROH, Ambulance	Asian, Asian British or Asian Welsh, excluding Chinese	Black, Black British, Black Welsh, Caribbean or African	Mixed or Multiple ethnic groups	White	Other inc Chinese	Total
20-30 mins shorter	1,347	204	449	21,421	176	23,597
10-20 mins shorter	96,047	13,780	9,505	260,217	7,605	387,154
1-10 mins shorter	38,052	18,057	11,059	332,087	9,127	408,382
No Change	14,763	7,862	5,067	175,634	4,455	207,781
1-10 mins longer	123,139	48,843	34,808	973,767	36,309	1,216,866
10-20 mins longer	82,695	37,924	24,204	304,004	35,622	484,449
20-30 mins longer	3,539	4,786	879	3,957	2,217	15,378
Grand Total	**359,582**	**131,456**	**85,971**	**2,071,087**	**95,511**	**2,743,607**

The above table shows that there are almost 500k residents (18.2%) who experience an increased ambulance journey of 10 to 20 mins or 20 to 30 mins in the scenario MRI to ROH. In comparison, there are 411k (15.0%) who are more than 10 mins closer to ROH than MRI, meaning a greater proportion of residents have a 10 min or greater increase if ROH was chosen as a single site. Residents from Asian ethnic groups are the only group who have a larger proportion who are 10 mins further from MRI (27.1%, n = 97.4k) than are 10 mins further from ROH (24.0%, 86.2k). For residents impacted by 20 – 30 mins increase, there are 23.6k who are impacted negatively by a move to MRI, compared to 15.4k impacted negatively by 20-30 mins in a move to ROH.

When split by IMD Decile (see table below), for residents in decile 1, 144k (21.2%) are 10 mins or more closer to ROH by ambulance, and 125k (18.3%) are closer to MRI by 10 mins or more. As residents from the most deprived deciles are more likely to be clustered in locations closer to MRI or ROH, they are those who experience the greatest impact of a reconfiguration to a single site. For residents in decile 9, 81.5% have a difference of less than 10 mins between MRI and ROH, and for decile 10 the figure is just 91.1%.

Table 26: Proportion of residents with difference > 10 mins by Ambulance between MRI and ROH, IMD Decile

Journey Time Ambulance	IMD Decile 1	2	3	4	5	6	7	8	9	10
Faster to MRI by 10 mins plus	124,624	68,645	89,058	79,577	29,590	36,284	23,980	18,483	11,646	17,890
Difference between sites no more than +/- 10 mins	412,315	258,462	184,277	143,396	133,101	116,036	139,573	129,255	132,829	183,759
Faster to ROH by 10 mins plus	144,290	62,183	45,937	31,138	28,021	16,406	24,260	40,060	18,446	-
Total Residents	**681,229**	**389,290**	**319,272**	**254,111**	**190,712**	**168,726**	**187,813**	**187,798**	**162,921**	**201,649**
Faster to MRI by 10 mins plus	18.3%	17.6%	27.9%	31.3%	15.5%	21.5%	12.8%	9.8%	7.1%	8.9%
Difference between sites no more than +/- 10 mins	60.5%	66.4%	57.7%	56.4%	69.8%	68.8%	74.3%	68.8%	81.5%	91.1%
Faster to ROH by 10 mins plus	21.2%	16.0%	14.4%	12.3%	14.7%	9.7%	12.9%	21.3%	11.3%	0.0%

In summary, MRI is more accessible by ambulance for residents as a whole, with a greater proportion within 30 mins travel time. However, moving the service to a single site configuration at MRI would impact a greater proportion of residents from Asian ethnic groups and from the most deprived decile, than a single site at ROH.

Summary: Impact of Changing to a Single Site Configuration

Consolidating services on a single site will have the greatest impact on people currently living closest to whichever site is closed. Given MRI's more central location, average journey times to this site are shorter, and it's accessible within 30 mins for a greater proportion of residents by car, within 90 mins by PT, and within 20 mins by ambulance, than equivalent journeys to ROH. Additionally, MRI is more accessible to residents who experienced the worst impact of the reconfiguration from three sites to two. However, moving to a single site at MRI would increase journey times the most from locations close to ROH, an area with many residents from Asian ethnic groups and the most deprived LSOAs.

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