

# Assessing the impact of changes to midwife-led maternity services in Staffordshire on patient access and flow of activity

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# Background

The Strategy Unit have previously conducted travel and access modelling of midwife-led care services across Staffordshire and Stoke-on-Trent prior to and during the COVID-19 pandemic. Post-pandemic, and as a result of wider engagement and ongoing planning work the transformation programme now require updates / additional modelling to move through business case and options development processes.

We will focus on the impacts of the scenario where both County and Samuel Johnson Midwife-Led Units (MLUs) remain closed; specifically focusing on travel time and where births, which would have occurred at either County or Samuel Johnson MLUs, would move to.

Our analysis will also consider the travel time impact of blue-light transfers for birth episodes where transfer/escalation to consultant care would be necessary for a woman using Samuel Johnson or County MLUs.

The aims of this project are to 1) determine the impact on womens travel time and access by locality and 2) demonstrate the potential flow of birth activity for midwife-led births in Staffordshire based on the MLUs at County and Samuel Johnson remaining closed.

Areas where women are most affected by lack of services can inform discussion on potential future sites for midwife-led births.

# Methodology

Journey times are calculated using the TRACC software and OS Highways integrated road networks alongside road speeds data for different days of the week and times of day from TrafficMaster (<https://www.basemap.co.uk/>). All travel times will be based on car travel, as public transport would not be considered a feasible choice for a birth episode. The maternity activity data contains information on the day of week but not arrival times so 30% of journeys were randomly allocated to peak travel times and 70% to off-peak travel times.

Car travel time is calculated for the following journey times:

**Weekday peak** using 07:00-10:00 on a Tuesday

**Weekday off-peak** using 10:00-16:00 on a Tuesday

**Weekend** using 10:00-16:00 on a Saturday

Ambulance speeds are not available so as a proxy for ambulance times we used the following:

**Ambulance weekday peak** - car travel 10:00-16:00 on a Tuesday

**Ambulance weekday off-peak** - car travel 19:00-23:00 on a Tuesday

**Ambulance weekend** using car travel 00:00-04:00 on a Tuesday

Our activity data does not include full postcodes, only the Lower Super Output Area (LSOA: static statistical geography covering an average 1500 people of all ages) of women's home address. Therefore travel time was calculated for each postcode within an LSOA and the travel time weighed by the number of households within a postcode to derived the average LSOA travel time, which was then be matched with the activity data.

We modeled several different scenarios based on travel to the nearest alternative site; some scenarios include use of maternity sites outside of Staffordshire, but within 10 miles of the Staffordshire border.

# Cohort

Birth episodes started at the MLU units at County Hospital (RJE09) and Samuel Johnson Community Hospital (RTG54) between 1st March 2019 and 29th of February 2020 are included within this analysis. This gives the typical baseline activity at Samuel Johnson and County MLUs prior to their closure during the pandemic.

We included any records where:

- a birth or delivery ID was recorded or
- HRG code was NZ25Z or started in 'NZ3', 'NZ4', or 'NZ5' or
- Commissioning Data Set code was 120 or 140.

Our initial search resulted in 356 records but subsequently we excluded:

- 4 records that appeared related to antenatal or postnatal care rather than a birth episode
- 8 records that lacked geographical information or the woman lived more than 5 miles from Staffordshire

HRG codes NZ30B/C are normal births that are expected to remain at the MLU; all other codes indicate more complex births that begun their spell at above sites and are assumed to be escalation/step-up deliveries to obstetric units.

## Final Cohort

**Number attended Samuel Johnson MLU: 257 (with 83 (32.3%) transferred to Queens Hospital, Burton)**

**Number attended County Hospital MLU: 87 (with 9 (10.3%) transferred to Royal Stoke Hospital)**

# Scenarios

**Actual time:** Time that women actually traveled from their home address to either County or Samuel Johnson.

**Baseline:** With County and Samuel Johnson still open and this situation is based on travel time to the nearest maternity site within Staffordshire (i.e. County, Samuel Johnson, Royal Stoke or Burton). This is assuming women travel to their nearest site, which is not actually the case as women have opted to travel further to use County and Samuel Johnson.

**Scenario 1:** All activity that would have happened at County or Samuel Johnson moves to the nearest site within Staffordshire, i.e. Royal Stoke or Burton.

**Scenario 2:** All activity that would have happened at County or Samuel Johnson moves to the nearest site, either within Staffordshire or to an external provider site if nearer.

**Scenario 3:** All activity that would have happened at County or Samuel Johnson moves to the nearest site within Staffordshire (i.e. Royal Stoke or Burton) or to a nearer external provider if the site has a midwife-led unit. In this scenario activity it is assumed that women will only travel outside of Staffordshire to attend an MLU if it is the nearest site, otherwise it is assumed they will travel to Royal Stoke or Burton.

# Scenarios (cont.)

**Scenario 4:** Deliberate reallocation of activity based on historic patient flows, including home births and taking into account travel times.

The home birth rate is 2.4% nationally, but lower within Staffordshire. Women who would have attended County or Samuel Johnson have low risk pregnancies and are more likely to choose a home birth. Between 2019/20-2022/23 3% of midwife-led births at the University Hospitals of North Midlands and Derby and Burton Trusts were home births. Given the home birth service has not been running consistently since the pandemic a home birth rate of 4% appears reasonable for women who may have used County or Samuel Johnson.

Between 2019/2020 and 2022/2023 the birth rate in Staffordshire decreased ~7%, and a similar decrease is seen in births at Royal Stoke (numbers at Burton are not available). While the numbers of Staffordshire women giving birth at sites outside of Staffordshire is relatively small the proportion has increased; most notably at Walsall Manor (43% increase from 169 in 2019/20 to 241 in 2022/23) and Good Hope (11% increase from 543 in 2019/20 to 605 in 2022/23). We have used this information to guide the reallocation of births, taking into account many women would likely opt to stay within area using Royal Stoke or Burton.

Of the activity that would have been conducted at Samuel Johnson 51% is allocated to Burton, 5% to Royal Stoke, 25% to Good Hope, 15% split between Walsall Manor and New Cross and 4% to home births.

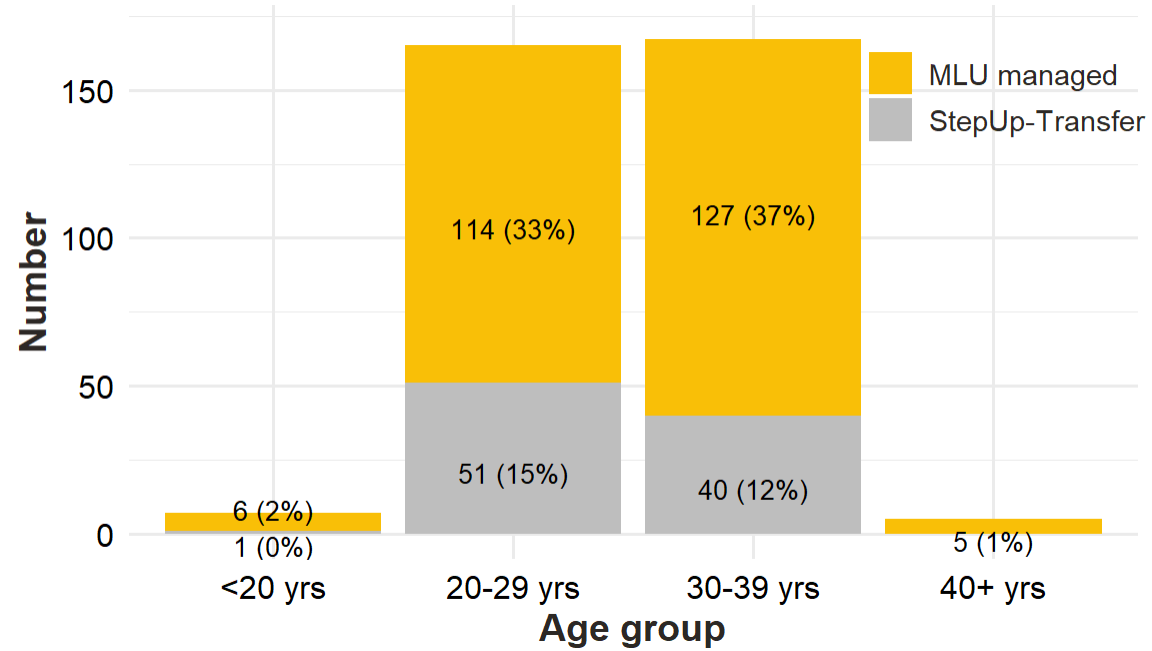
1. 4% were randomly assigned to home birth
2. Travel times to Royal Stoke were fairly high even for the closest women (25-33 min) so the closest ~5% were automatically allocated to Stoke
3. Given the proximity of Walsall Manor and New Cross and similar travel times the same activity was found to be closest to both of these sites, so the 15% closest to Walsall Manor and New Cross were allocated at random across the 2 sites.
4. The closest 25% were then allocated to Good Hope and the remaining 51% allocated to Burton

Of the activity that would have been conducted at County hospital 66% allocated to Royal Stoke, 30% split between Walsall Manor and New Cross and 4% to home birth.

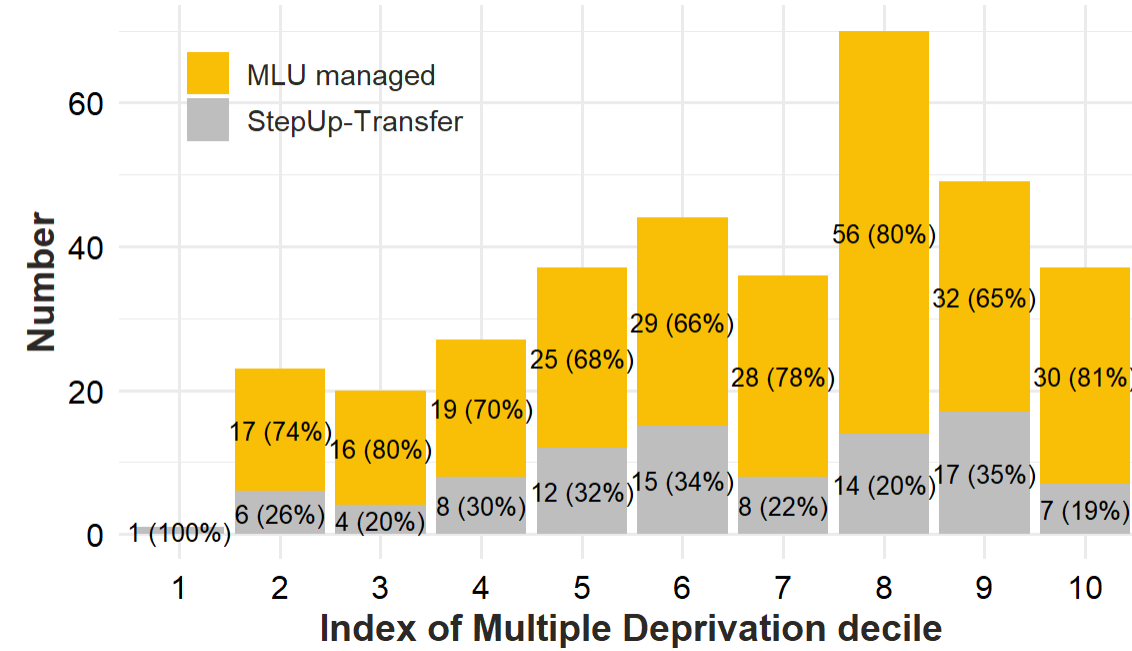
1. 4% were randomly assigned to home birth
2. The 30% of the activity closest to Walsall Manor and New Cross was split randomly between these sites.
3. The remaining 66% of activity was allocated to Royal Stoke.

# Demographics of women using Samuel Johnson and County MLUs

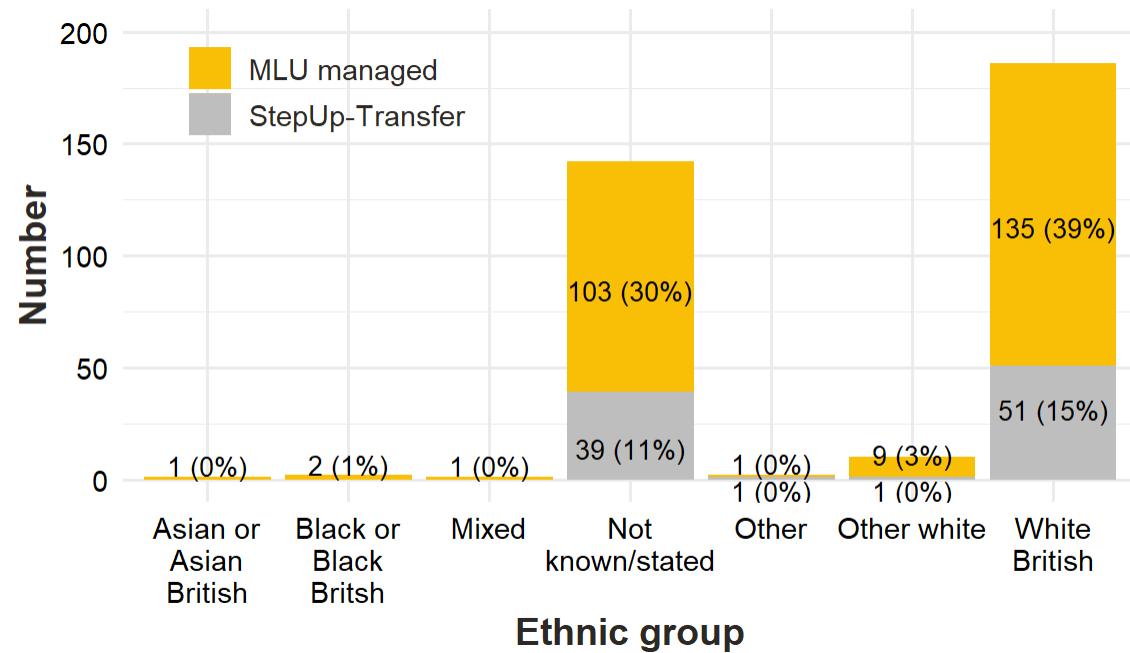
## Age



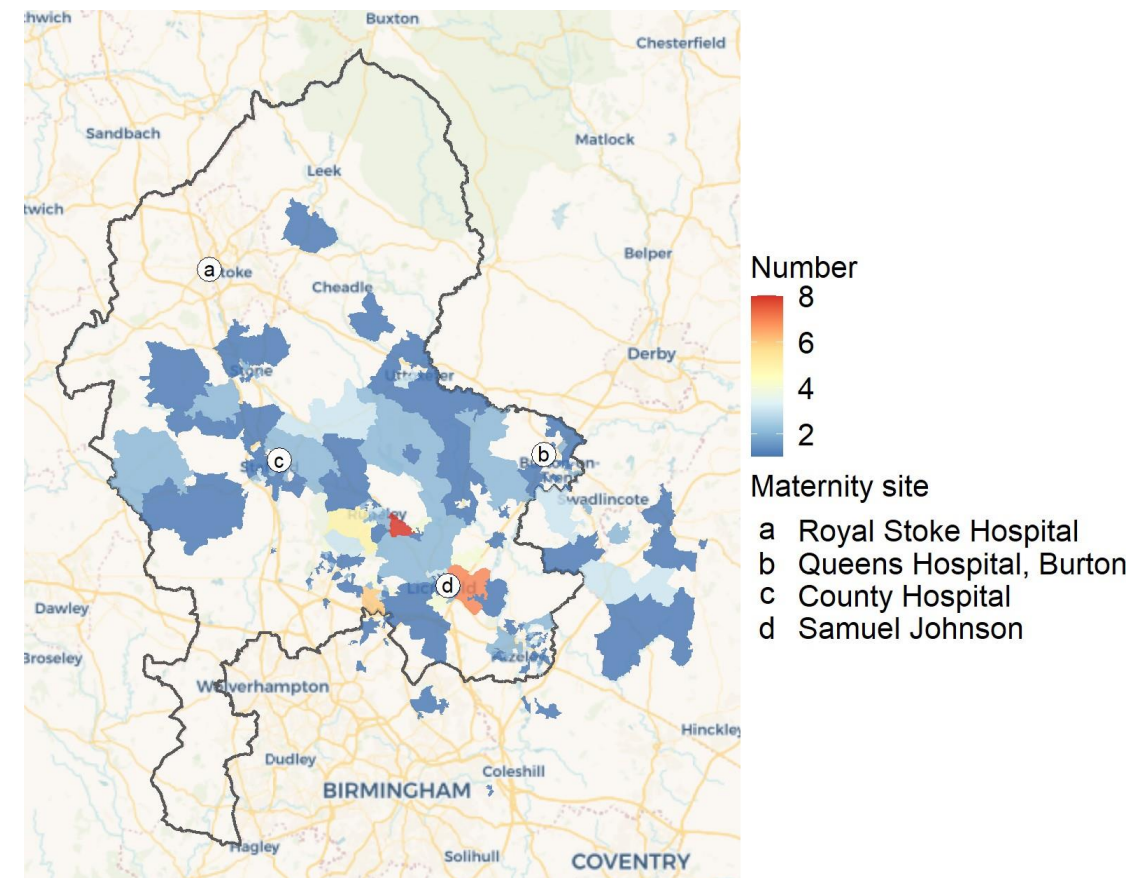
## Deprivation



## Ethnicity

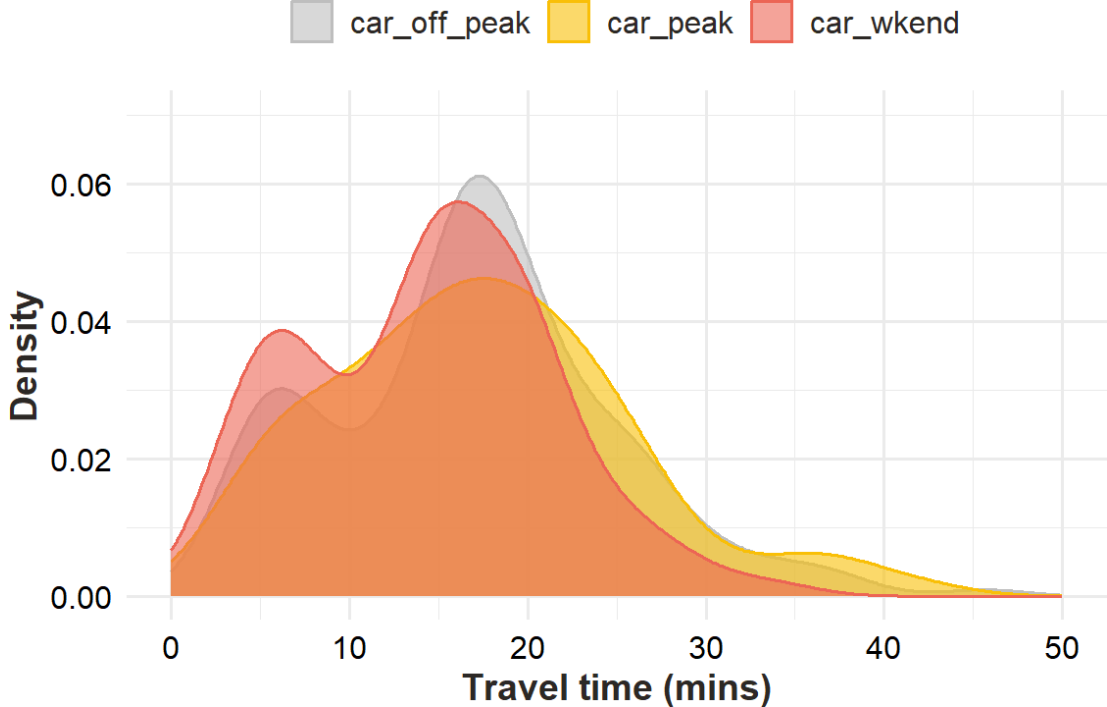


## Births at Samuel Johnson and County MLUs by area



**Considering initial journey time to a maternity unit without blue-light transfers**

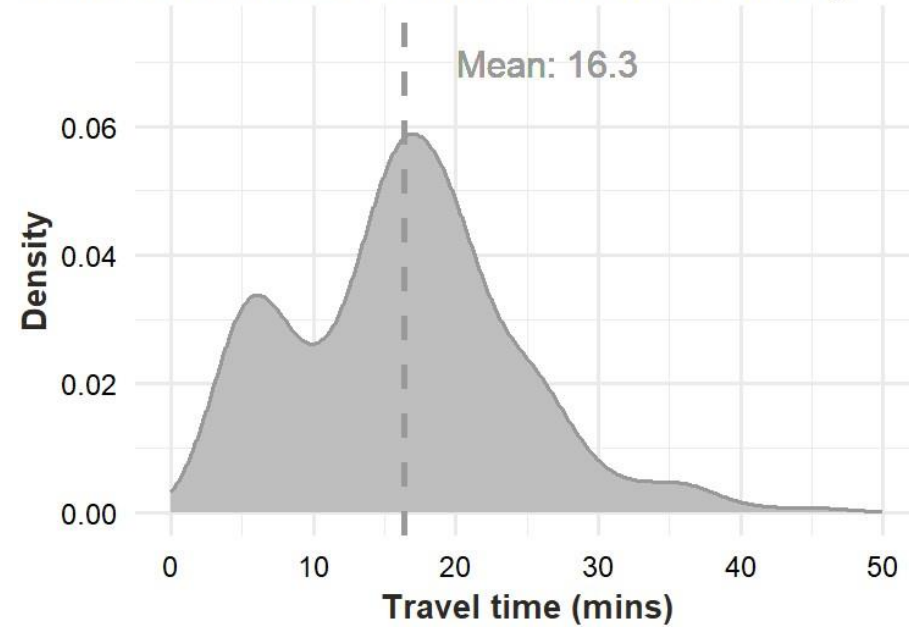
# Comparison of actual travel at Peak, Off-Peak and Weekend times



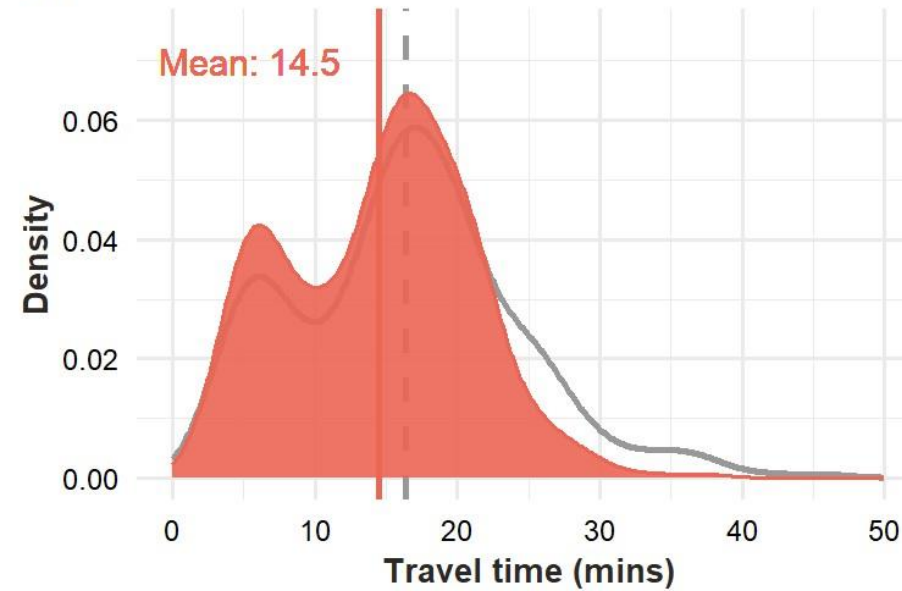
Travel time	Count	Mean	Median
car_off_peak	185	16.9	17.1
car_peak	72	17.3	16.9
car_wkend	87	14.4	15.0

# Distribution of travel times by

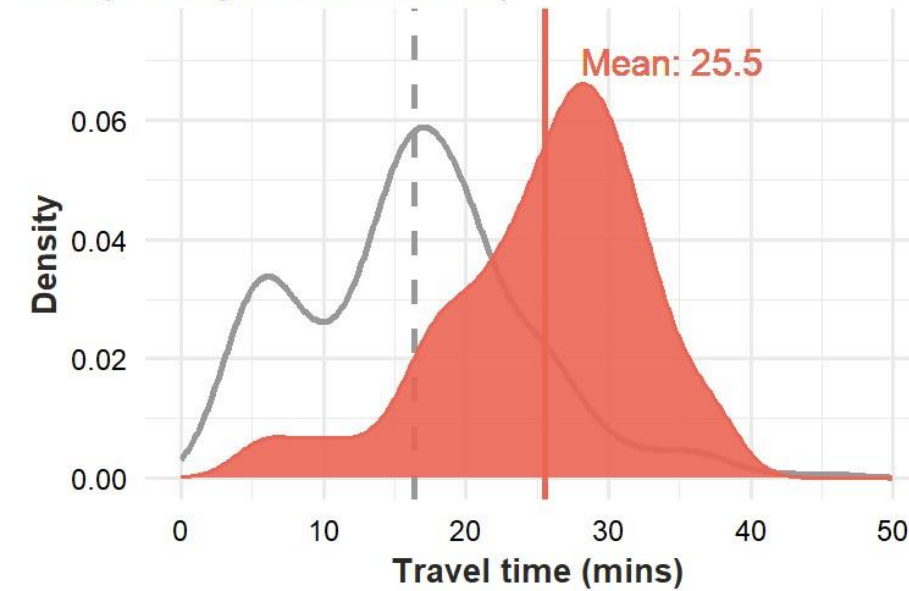
Actual travel times to Samuel Johnson or County



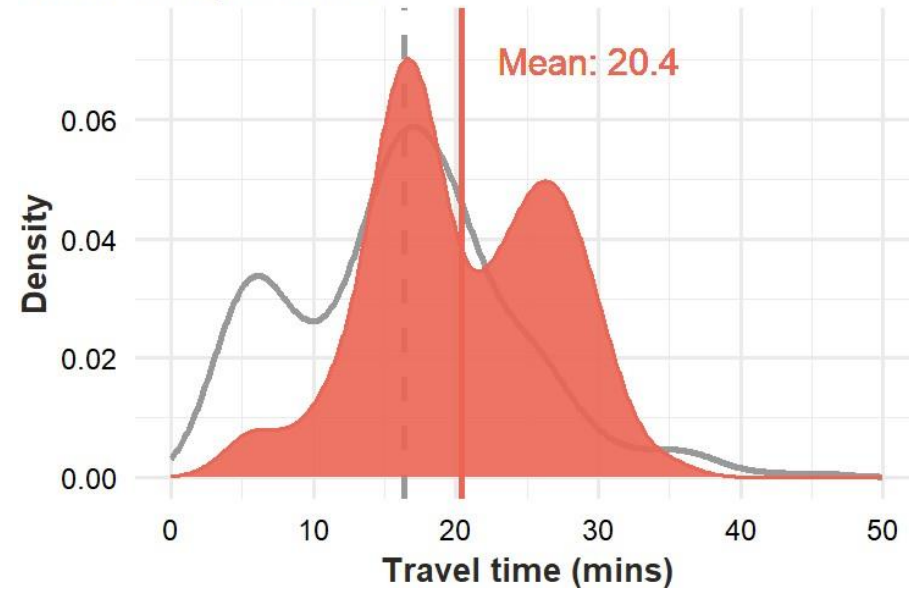
Samuel Johnson & County open travel to nearest site



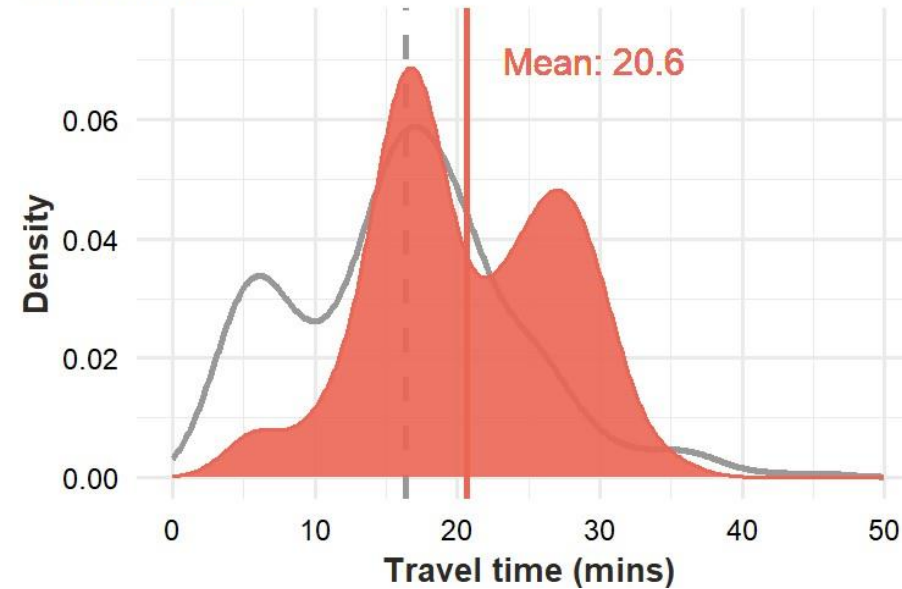
Scenario 1: Activity to nearest Staffordshire site (i.e. Royal Stoke/Burton)



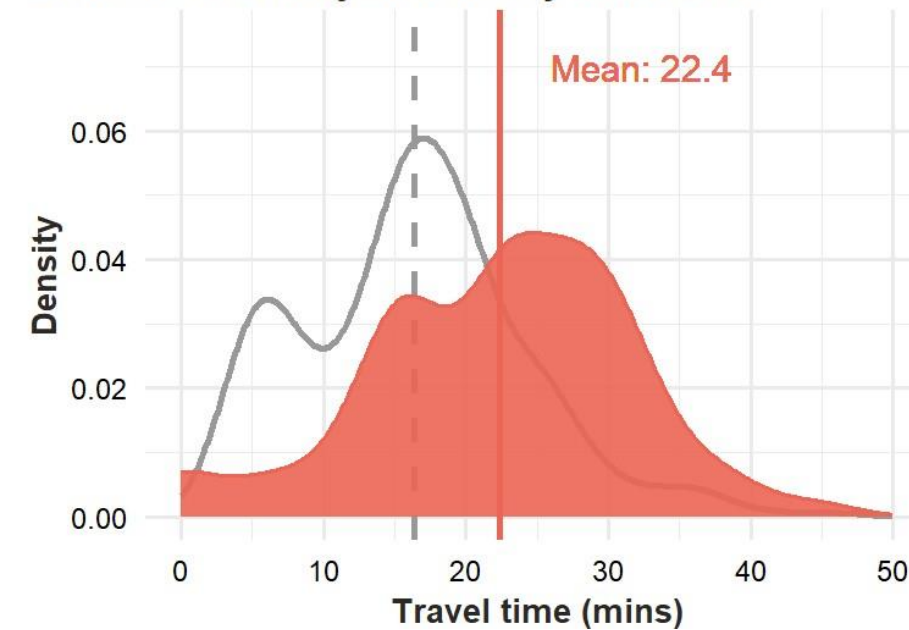
Scenario 2: Activity to nearest site including out of area providers



Scenario 3: Activity to Royal Stoke/Burton or external MLU



Scenario 4: Activity deliberately reallocated

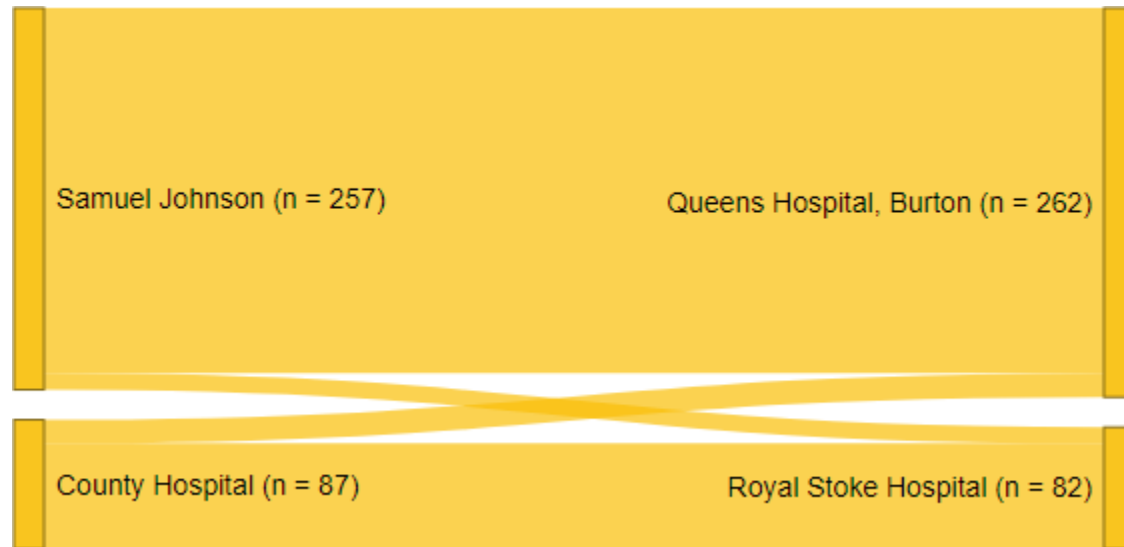


The first figure (in grey and superimposed on each subsequent figure for comparison) shows the actual travel time for those using County or Samuel Johnson.

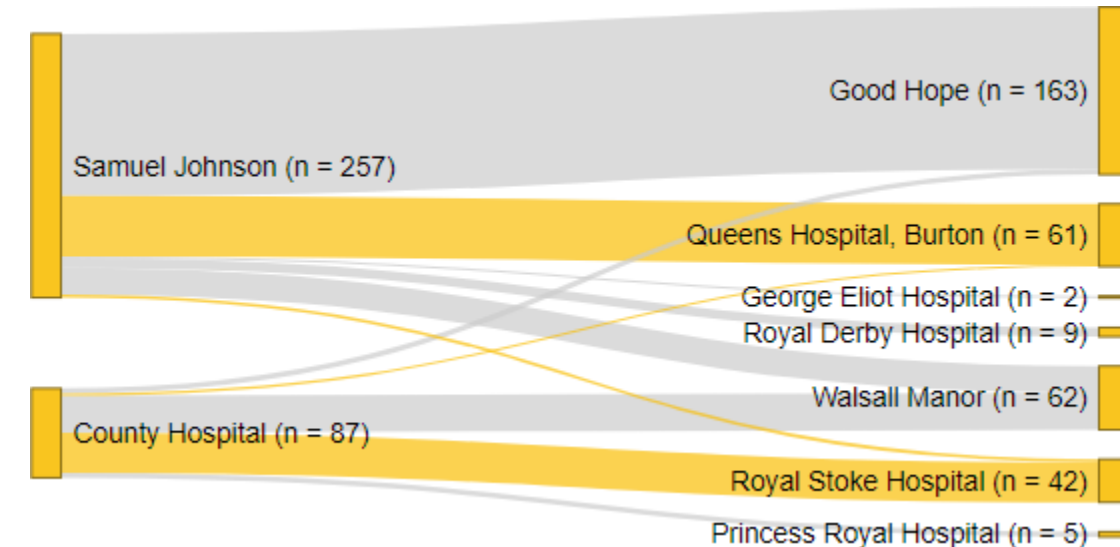
An increase in the height of the filled areas indicates more people and a shift to the right indicates longer travel times. Mean journey times are given and represented by the vertical lines.

# Summary of potential flows of birth activity in different scenarios

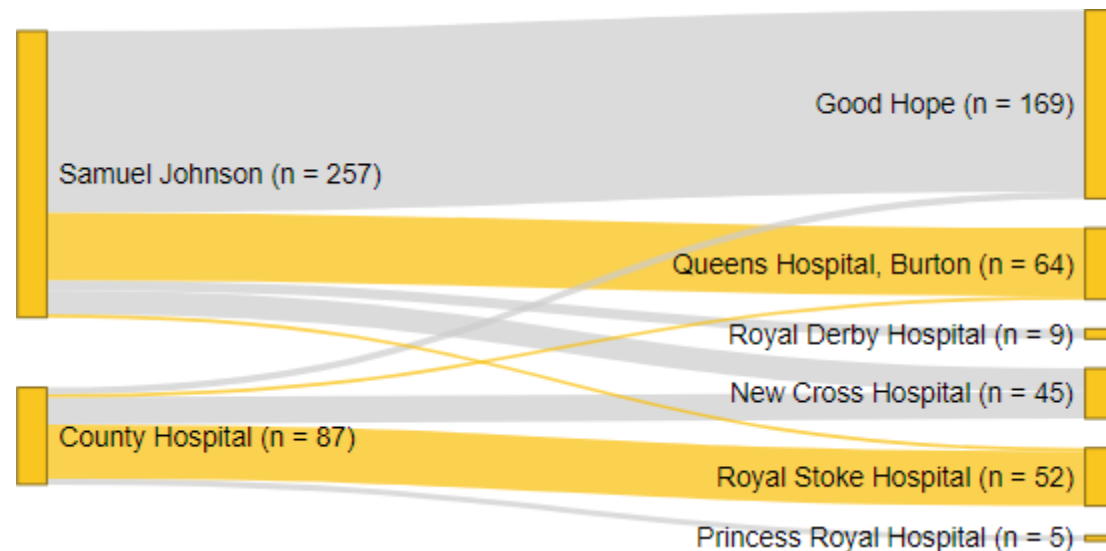
Scenario 1: All activity flows to Burton or Royal Stoke



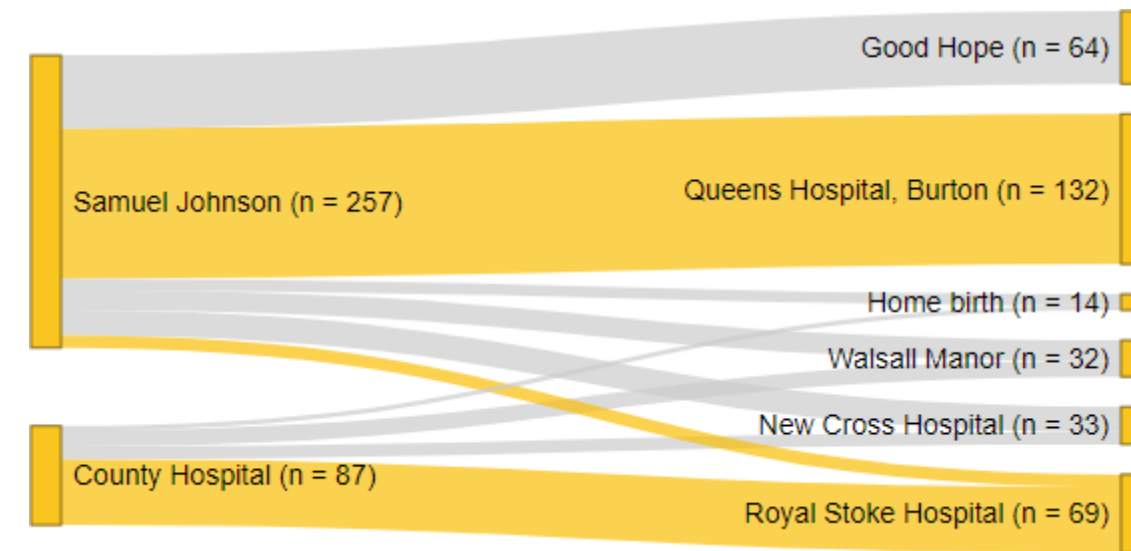
Scenario 2: Activity flows to nearest provider (including external sites)



Scenario 3: Activity flows to Burton, Royal Stoke or external MLU sites



Scenario 4: Deliberate reallocation of activity



Yellow indicates activity moving within Staffordshire, while grey indicates activity moving to external providers.

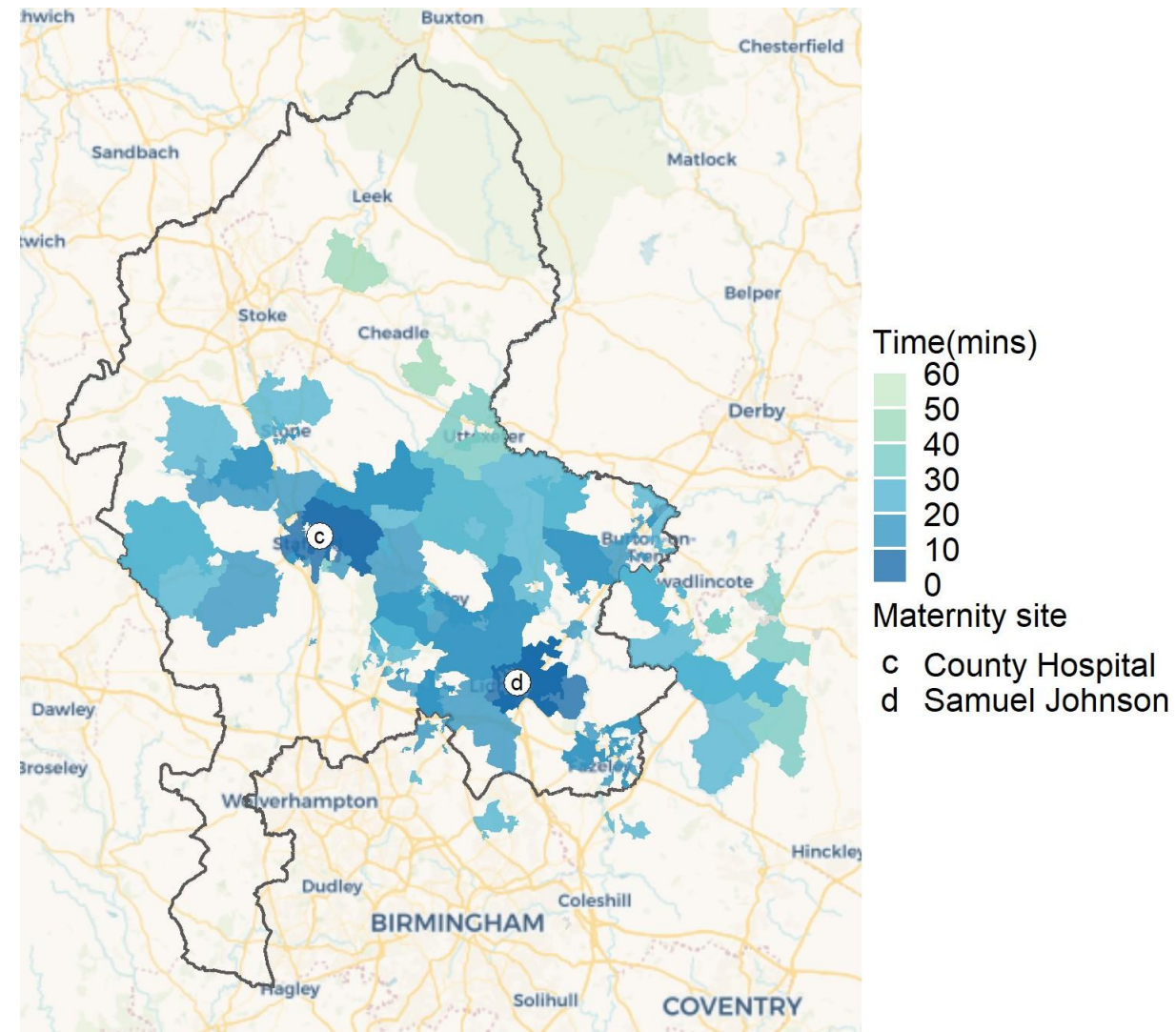
# Format of travel time

The following slides give more detailed information for each scenario including:

1. A map which gives the travel time in 10 minute time bands for the whole population (for peak car travel) to the nearest available maternity unit, demonstrating areas where longer travel times will occur.
2. The travel times for this scenario broken down by time/day of travel and give the number (and %) of women within each 10 minute time band. This can be compared to the baseline or other scenario to see if there are shifts in journey time.
3. The number of births moving to alternative sites in this scenario. This shows which sites may have increased numbers of births based on womens travel time to their nearest site.
4. This shows the mean travel time and potentially the number of births affected from each area to further allow comparisons compared to baseline or other scenarios.

# Actual travel time for those choosing Samuel Johnson and

Actual travel time for only those using County or Samuel Johnson



## Travel time

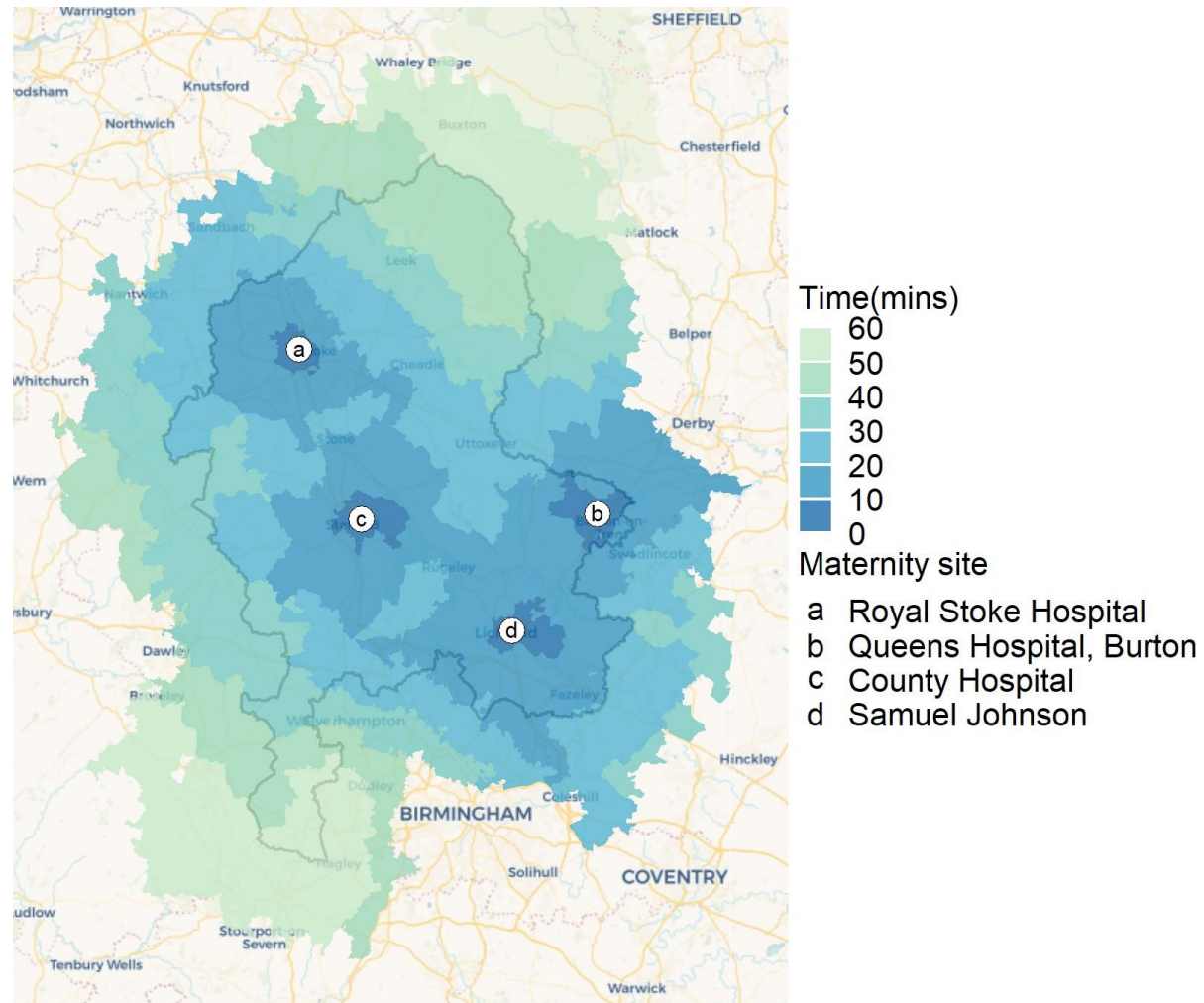
	Travel time (number, %)				
	<10 mins	10-19 mins	20-29 mins	30-39 mins	40-49 mins
car_off_peak	42 (22.7%)	87 (47%)	46 (24.9%)	9 (4.9%)	1 (0.5%)
car_peak	15 (20.8%)	33 (45.8%)	19 (26.4%)	4 (5.6%)	1 (1.4%)
car_wkend	27 (31%)	40 (46%)	19 (21.8%)	1 (1.1%)	0 (0%)
<b>Total</b>	<b>84 (24.4%)</b>	<b>160 (46.5%)</b>	<b>84 (24.4%)</b>	<b>14 (4.1%)</b>	<b>2 (0.6%)</b>

## Access by locality

	Mean travel time (mins)							
	Cannock Chase	East Staffordshire	Lichfield	South Staffordshire	Stafford	Staffordshire Moorlands	Tamworth	Out of Area
number_of_women	58	37	108	2	73	2	38	26
car_off_peak	21.4	24.2	10.2	24.3	13.6	45.7	16.8	24.8
car_peak	22.9	24.9	12.4	17.8	11.2	41.3	17.8	28.7
car_wkend	20.3	23	10.4	-	11.9	-	16.5	19.9
<b>Total</b>	<b>21.5</b>	<b>24</b>	<b>10.7</b>	<b>21</b>	<b>12.7</b>	<b>43.5</b>	<b>16.9</b>	<b>24.4</b>

# Baseline: Activity to nearest site with Samuel Johnson and County

open



## Travel time

	Travel time (number, %)			
	<10 mins	10-19 mins	20-29 mins	30-39 mins
car_off_peak	52 (28.1%)	91 (49.2%)	41 (22.2%)	1 (0.5%)
car_peak	18 (25%)	37 (51.4%)	16 (22.2%)	1 (1.4%)
car_wkend	29 (33.3%)	47 (54%)	11 (12.6%)	0 (0%)
<b>Total</b>	<b>99 (28.8%)</b>	<b>175 (50.9%)</b>	<b>68 (19.8%)</b>	<b>2 (0.6%)</b>

## Flow of activity

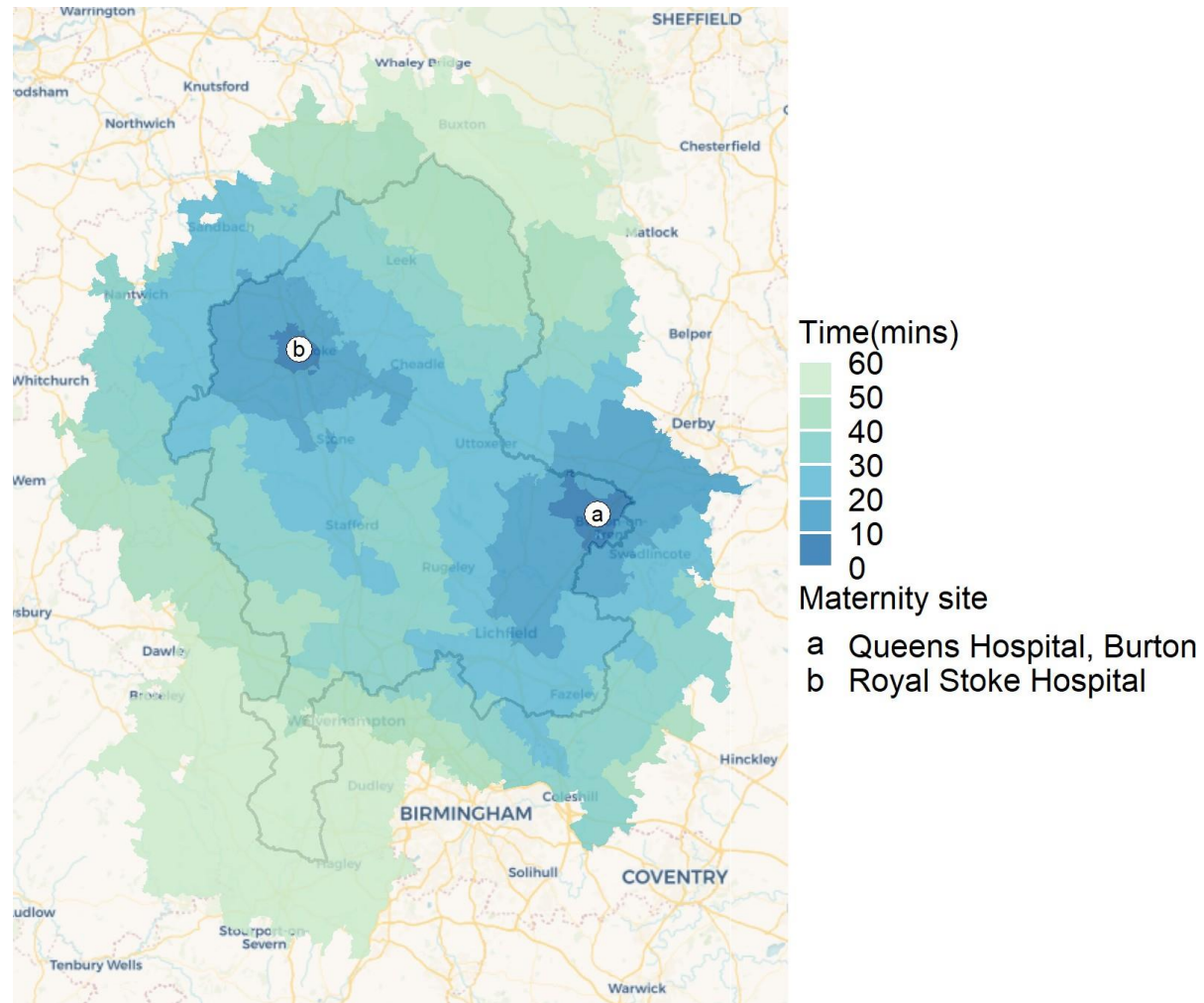
Site	Current number	Activity if using nearest site
County Hospital	87	105 (21%)
Samuel Johnson	257	191 (-26%)
Queens Hospital, Burton		40
Royal Stoke Hospital		8

## Access by locality

	Mean travel time (mins)								
	Cannock Chase	East Staffordshire	Lichfield	South Staffordshire	Stafford	Staffordshire Moorlands	Tamworth	Out of Area	
number_of_women	58	37	108	2	73	2	38	26	
car_off_peak	19.9	12.6	10.2	18.3	12.5	25.1	16.8	23.8	
car_peak	20.5	14.2	12	17.8	11	26.7	17.8	25.9	
car_wkend	19.5	14.7	10.4	-	10.9	-	16.5	18.2	
<b>Total</b>	<b>19.9</b>	<b>13.5</b>	<b>10.6</b>	<b>18.1</b>	<b>11.8</b>	<b>25.9</b>	<b>16.9</b>	<b>22.9</b>	

# Scenario 1: All activity flows to Burton or Royal Stoke

## Overall Population travel time



## Travel time

Travel time (number, %)				
	<10 mins	10-19 mins	20-29 mins	30-39 mins
car_off_peak	10 (5.4%)	26 (14.1%)	88 (47.6%)	61 (33%)
car_peak	3 (4.2%)	8 (11.1%)	36 (50%)	25 (34.7%)
car_wkend	2 (2.3%)	22 (25.3%)	49 (56.3%)	14 (16.1%)
<b>Total</b>	<b>15 (4.4%)</b>	<b>56 (16.3%)</b>	<b>173 (50.3%)</b>	<b>100 (29.1%)</b>

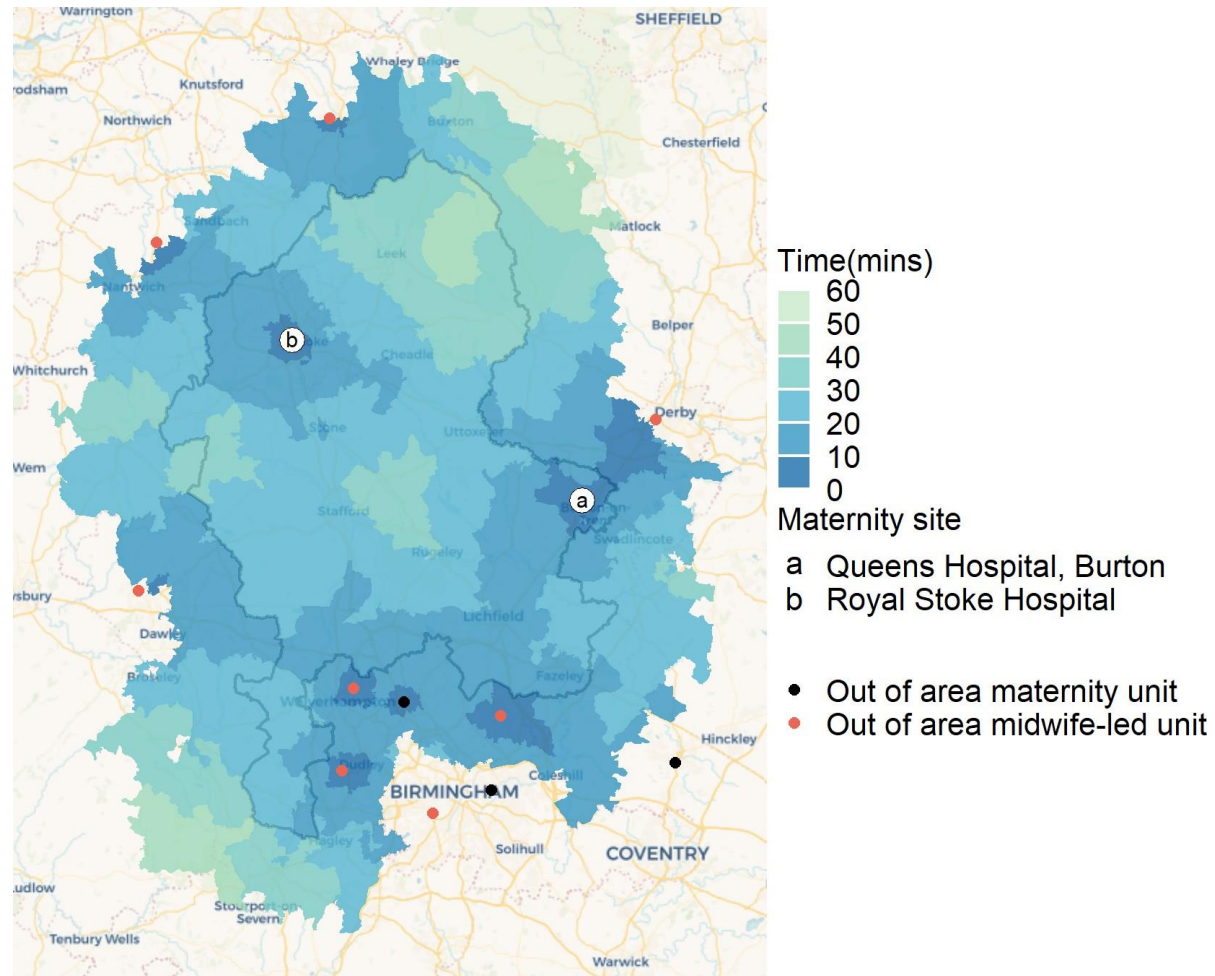
## Flow of activity

Additional activity at sites in this scenario	
Site	Number
Queens Hospital, Burton	262
Royal Stoke Hospital	82

## Access by locality

Mean travel time (mins)								
	Cannock Chase	East Staffordshire	Lichfield	South Staffordshire	Stafford	Staffordshire Moorlands	Tamworth	Out of Area
number_of_women	58	37	108	2	73	2	38	26
car_off_peak	32.6	13.2	22.5	30.2	28.4	25.1	27.6	29.8
car_peak	34.2	14.5	25	30.6	27.8	26.7	29.5	28.8
car_wkend	30.6	15.1	21.5	-	27.3	-	26.3	23.6
<b>Total</b>	<b>32.5</b>	<b>13.9</b>	<b>22.6</b>	<b>30.4</b>	<b>28.1</b>	<b>25.9</b>	<b>27.7</b>	<b>28.2</b>

# Scenario 2: Activity flows to nearest provider, including external sites



## Travel time

	Travel time (number, %)			
	<10 mins	10-19 mins	20-29 mins	30-39 mins
car_off_peak	12 (6.5%)	84 (45.4%)	73 (39.5%)	16 (8.6%)
car_peak	3 (4.2%)	27 (37.5%)	37 (51.4%)	5 (6.9%)
car_wkend	2 (2.3%)	55 (63.2%)	29 (33.3%)	1 (1.1%)
<b>Total</b>	<b>17 (4.9%)</b>	<b>166 (48.3%)</b>	<b>139 (40.4%)</b>	<b>22 (6.4%)</b>

## Flow of activity

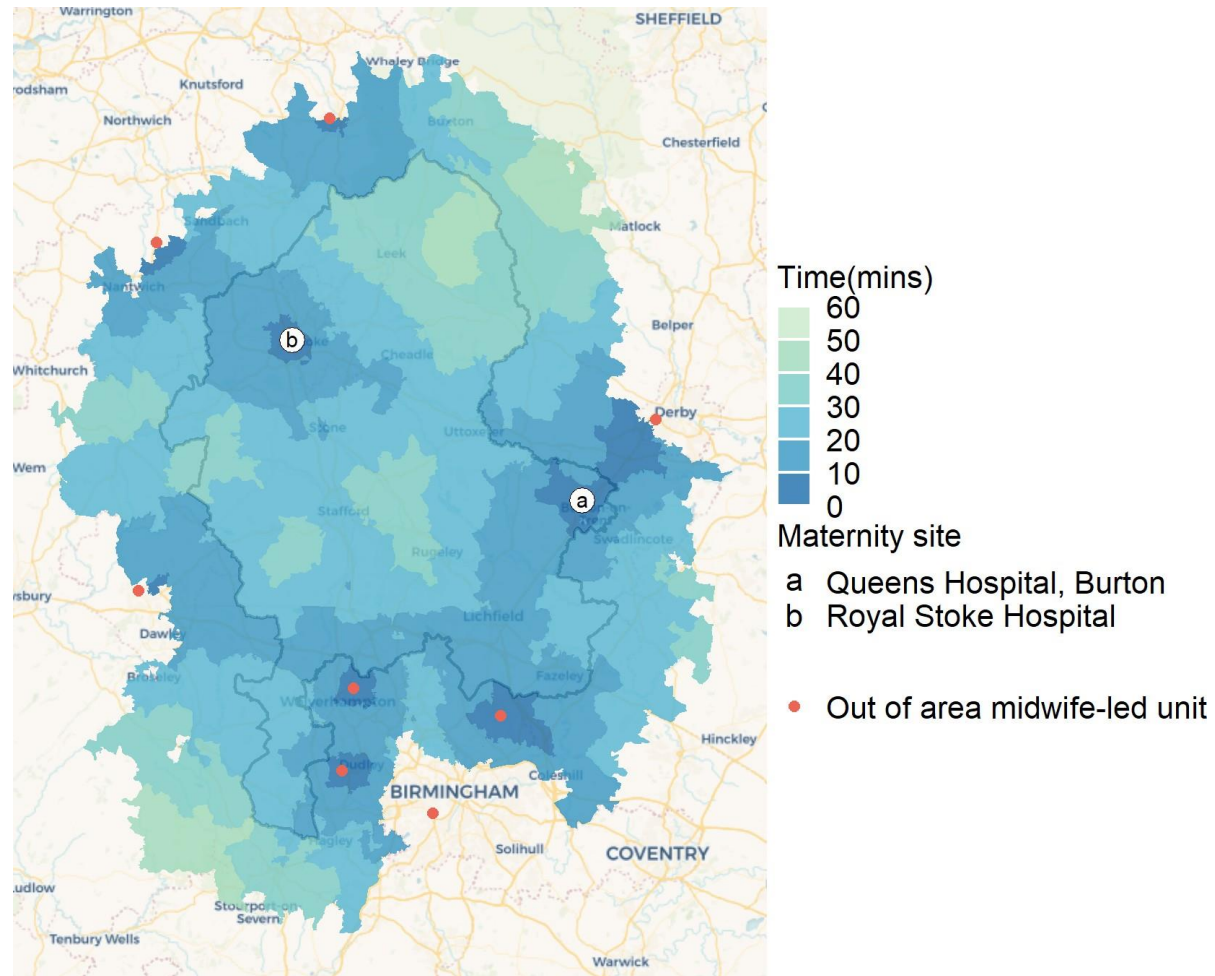
Additional activity at sites in this scenario	
Site	Number
Queens Hospital, Burton	61
Royal Stoke Hospital	42
George Eliot Hospital	2
Good Hope	163
Princess Royal Hospital	5
Royal Derby Hospital	9
Walsall Manor	62

## Access by locality

	Mean travel time (mins)							
	Cannock Chase	East Staffordshire	Lichfield	South Staffordshire	Stafford	Staffordshire Moorlands	Tamworth	Out of Area
number_of_women	58	37	108	2	73	2	38	26
car_off_peak	25.9	12.9	16.8	17.4	27	25.1	17.2	19.7
car_peak	26.8	14.1	18.9	18.4	26.5	26.7	18	22.5
car_wkend	23.7	15	16.2	-	25.5	-	16.3	15.7
<b>Total</b>	<b>25.7</b>	<b>13.7</b>	<b>16.9</b>	<b>17.9</b>	<b>26.6</b>	<b>25.9</b>	<b>17.2</b>	<b>19.3</b>

# Scenario 3: Activity flows to Burton, Royal Stoke or external MLU sites

## Overall Population travel time



## Travel time

Travel time (number, %)				
	<10 mins	10-19 mins	20-29 mins	30-39 mins
car_off_peak	12 (6.5%)	83 (44.9%)	72 (38.9%)	18 (9.7%)
car_peak	3 (4.2%)	27 (37.5%)	34 (47.2%)	8 (11.1%)
car_wkend	2 (2.3%)	53 (60.9%)	31 (35.6%)	1 (1.1%)
<b>Total</b>	<b>17 (4.9%)</b>	<b>163 (47.4%)</b>	<b>137 (39.8%)</b>	<b>27 (7.8%)</b>

## Flow of activity

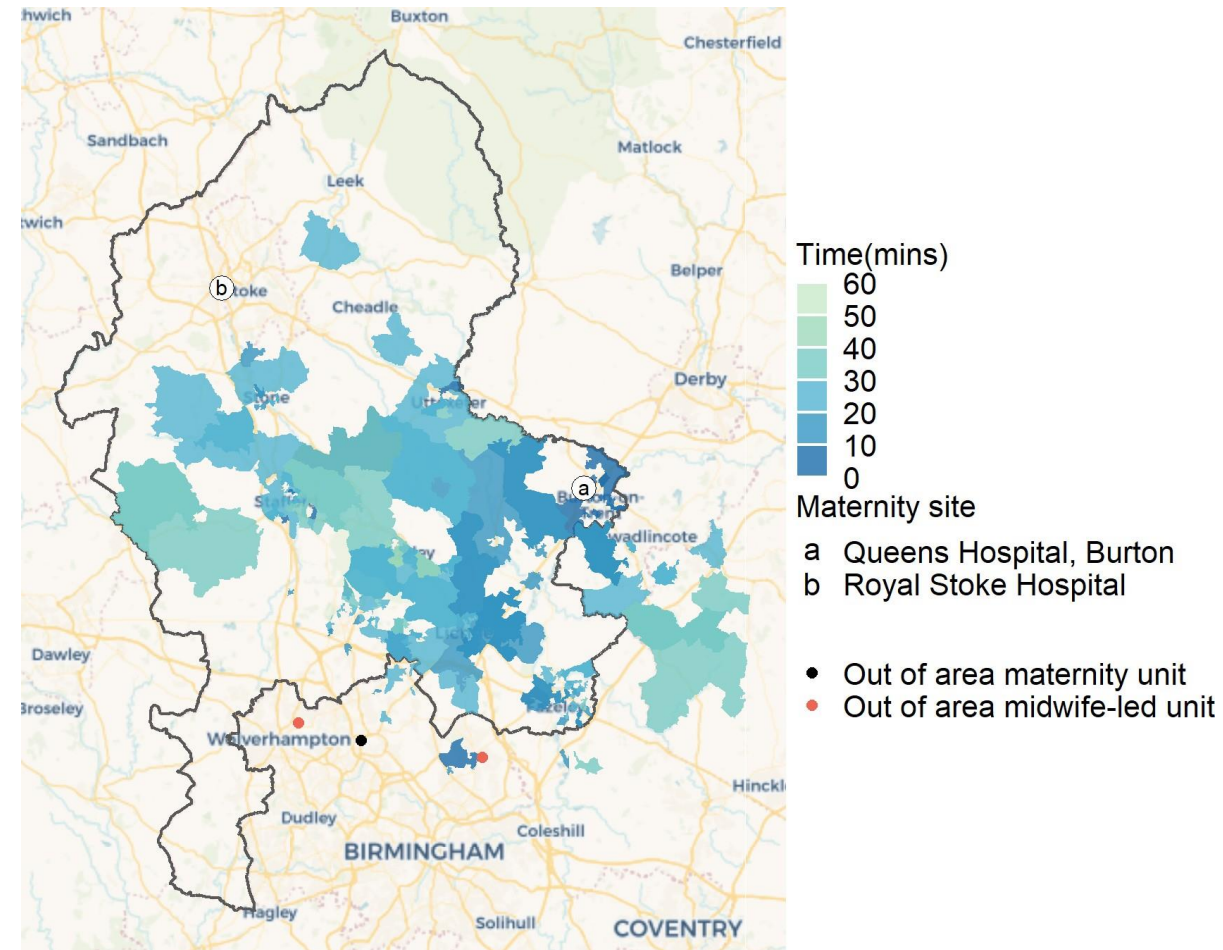
Additional activity at sites in this scenario	
Site	Number
Queens Hospital, Burton	64
Royal Stoke Hospital	52
Good Hope	169
New Cross Hospital	45
Princess Royal Hospital	5
Royal Derby Hospital	9

## Access by locality

Mean travel time (mins)								
	Cannock Chase	East Staffordshire	Lichfield	South Staffordshire	Stafford	Staffordshire Moorlands	Tamworth	Out of Area
number_of_women	58	37	108	2	73	2	38	26
car_off_peak	26.3	12.9	16.8	18.6	27.3	25.1	17.2	19.8
car_peak	27.8	14.1	18.9	19.7	27.1	26.7	18	23.6
car_wkend	24.6	15	16.2	-	25.8	-	16.3	18.3
<b>Total</b>	<b>26.3</b>	<b>13.7</b>	<b>16.9</b>	<b>19.2</b>	<b>27</b>	<b>25.9</b>	<b>17.2</b>	<b>20.2</b>

# Scenario 4: Deliberate reallocation of activity

## Travel time for those using County or Samuel Johnson



## Travel time

	Travel time (number, %)				
	<10 mins	10-19 mins	20-29 mins	30-39 mins	40-49 mins
car_off_peak	20 (10.8%)	45 (24.3%)	79 (42.7%)	36 (19.5%)	5 (2.7%)
car_peak	5 (6.9%)	12 (16.7%)	33 (45.8%)	21 (29.2%)	1 (1.4%)
car_wkend	5 (5.7%)	34 (39.1%)	41 (47.1%)	7 (8%)	0 (0%)
<b>Total</b>	<b>30 (8.7%)</b>	<b>91 (26.5%)</b>	<b>153 (44.5%)</b>	<b>64 (18.6%)</b>	<b>6 (1.7%)</b>

## Flow of activity

Additional activity at sites in this scenario	
Site	Number
Queens Hospital, Burton	132
Royal Stoke Hospital	69
Home birth	14
Good Hope	64
New Cross Hospital	33
Walsall Manor	32

## Access by locality

	Mean travel time (mins)							
	Cannock Chase	East Staffordshire	Lichfield	South Staffordshire	Stafford	Staffordshire Moorlands	Tamworth	Out of Area
number_of_women	58	37	108	2	73	2	38	26
car_off_peak	30.5	11.3	18.7	17.4	26.9	25.1	21.5	22
car_peak	31.3	14	24	18.4	26	26.7	24.5	28.8
car_wkend	24.7	17.4	18.1	-	24.8	-	16.3	19.3
<b>Total</b>	<b>29.5</b>	<b>13.4</b>	<b>19.4</b>	<b>17.9</b>	<b>26.3</b>	<b>25.9</b>	<b>21</b>	<b>22.7</b>

**Considering initial journey to a maternity unit and blue-light transfer time were necessary**

# Considering the impact of blue light transfer on total travel

Around 27% of birth episodes at the MLUs require escalation/transfer to a consultant unit due to complications during labour or surgical/anaesthetic requirements. Our analysis so far is based only on the first journey to MLU.

In the final section of the analysis we consider the impact of blue light transfers where they occur on total travel time. Travel time from a women's home address to the MLU is used and where transfer was necessary the blue light transfer time has been added to give the total journey time.

For transfers we are only considering the actual travel time by ambulance from County to Royal Stoke or from Samuel Johnson to Burton. However, the overall extra time involved, and potential impact, for women that require transfer will be greater. In addition to the travel between sites there will be extra time associated with assessments, decision making and waiting for an ambulance to arrive at the MLU, transferring between wards and an ambulance etc. Women may be transferred at different stages (immediately on arrival at an MLU, later in labour or post-birth) and the additional times associated with transfer will vary depending on the urgency of the transfer.

In Scenario 1 where Royal Stoke and Burton are the only options there would be no need for blue light transfers as consultant-led maternity services are based on these sites. In Scenarios 2-4 it is not possible to account for any blue light transfers as if the MLU is not co-located with a consultant-led unit, a transfer is likely to be another site out of area and we do not have travel time information for these potential out of area transfer scenarios.

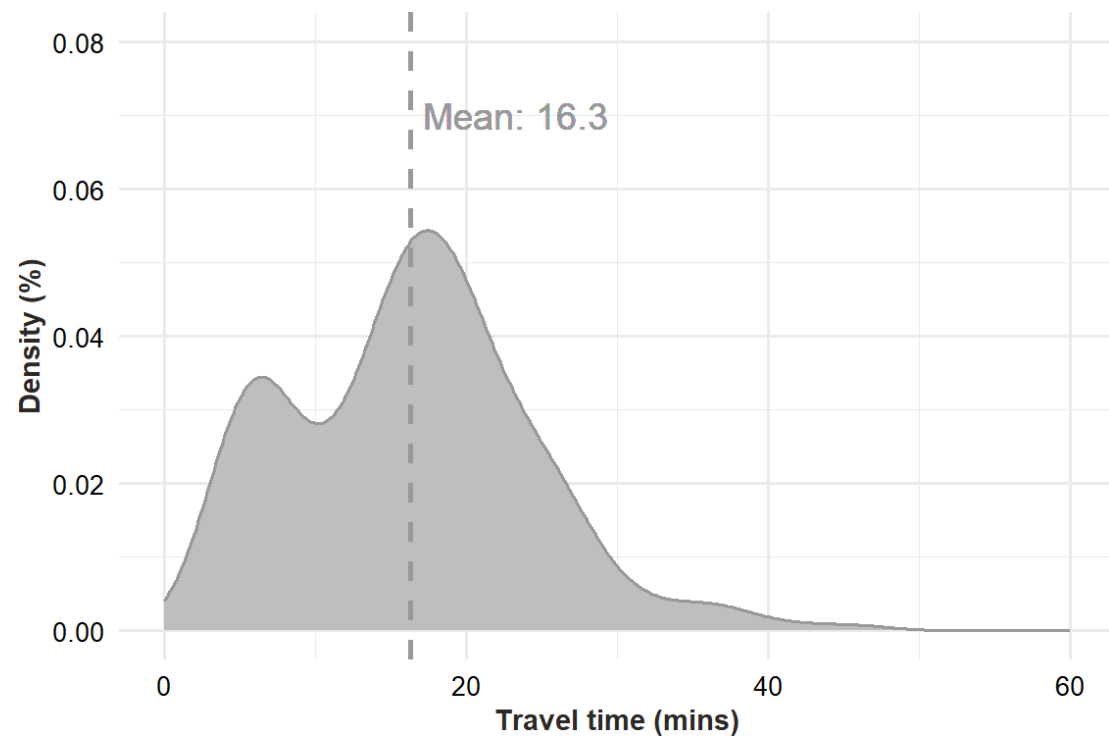
Therefore in the subsequent analysis we have only considered the impact of blue light transfer on actual and baseline travel times, and then compared this to the baseline travel time without transfers and Scenario 1 above where all activity flows to Royal Stoke or Burton.

# Transfer time

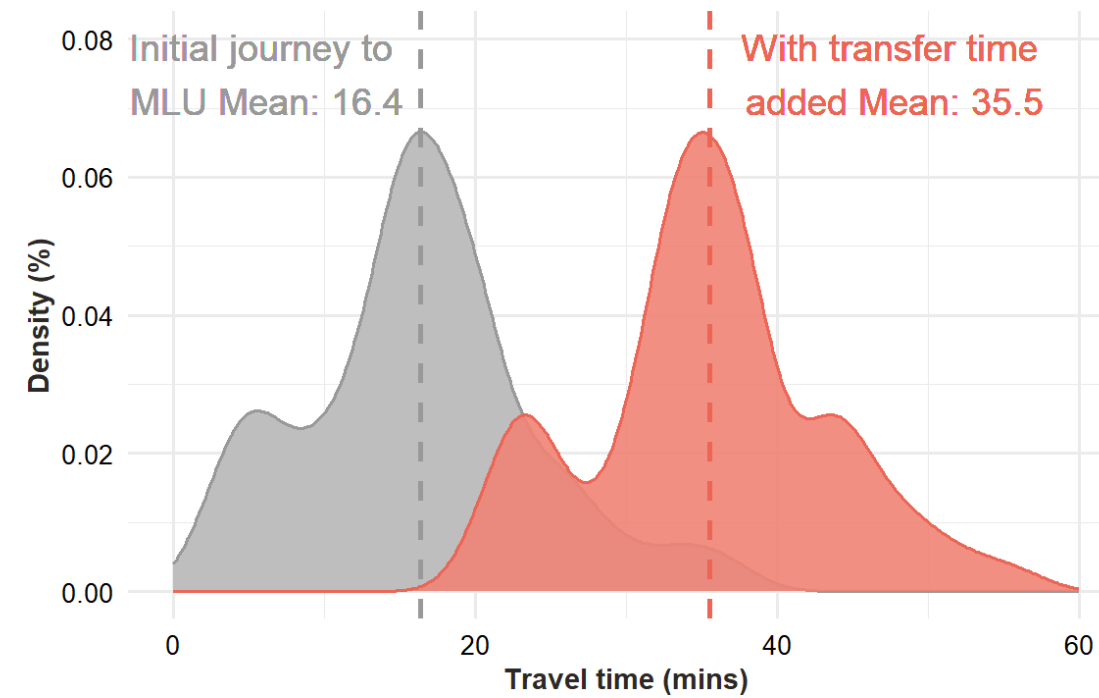
## Ambulance transfer times (in mins) used

	Ambulance transfer weekend	Ambulance transfer peak	Ambulance transfer off-peak
County to Royal Stoke	27.2	32.2	28.8
Samuel Johnson to Queens Hospital, Burton	17.1	19.0	18.1

## Travel time for those not transferred

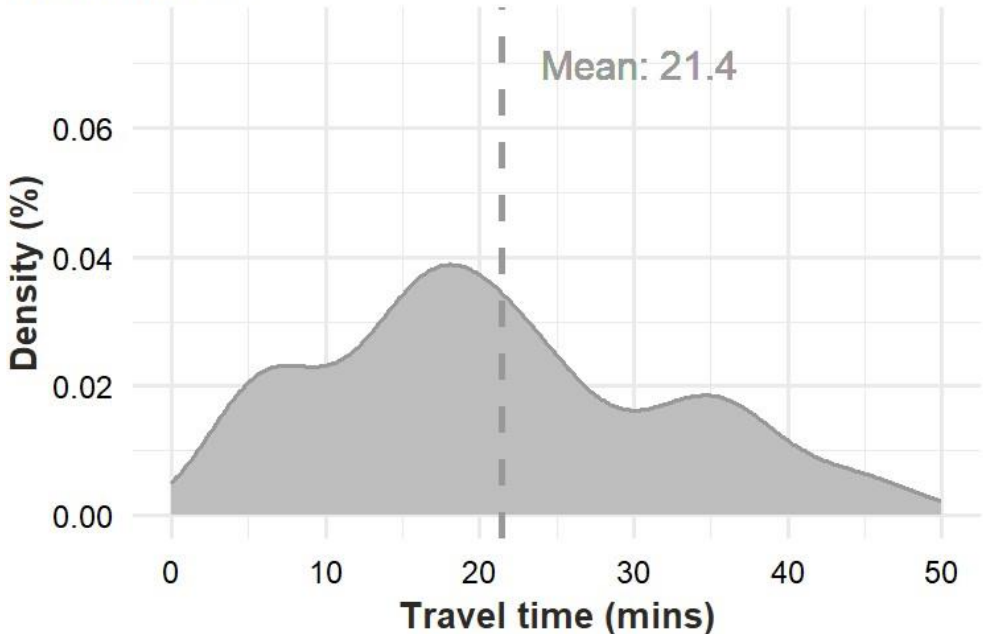


## Travel times for those who were transferred

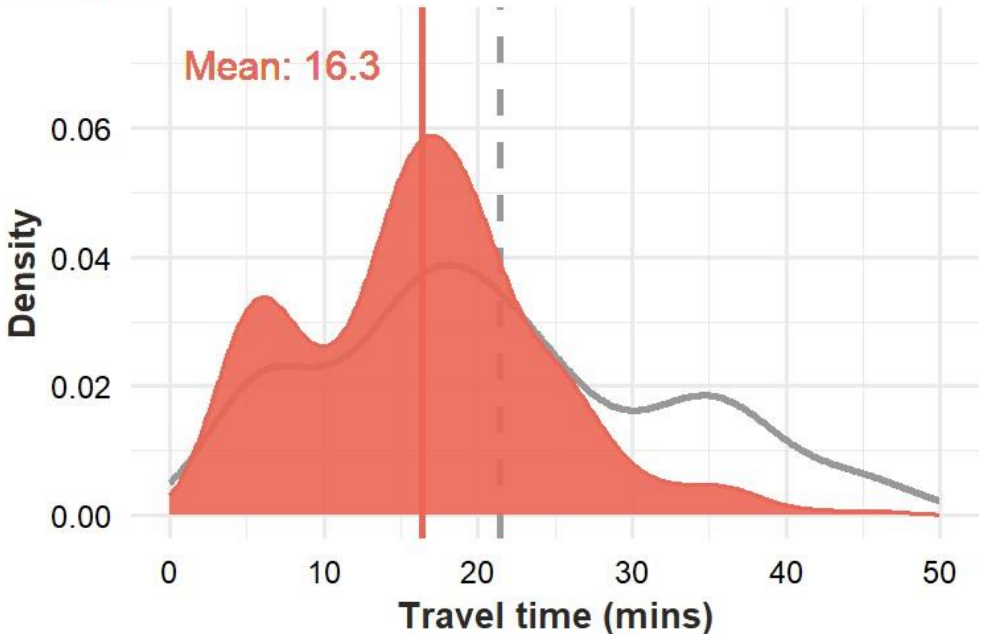


# Distribution of travel times by scenario with blue light transfer time where necessary

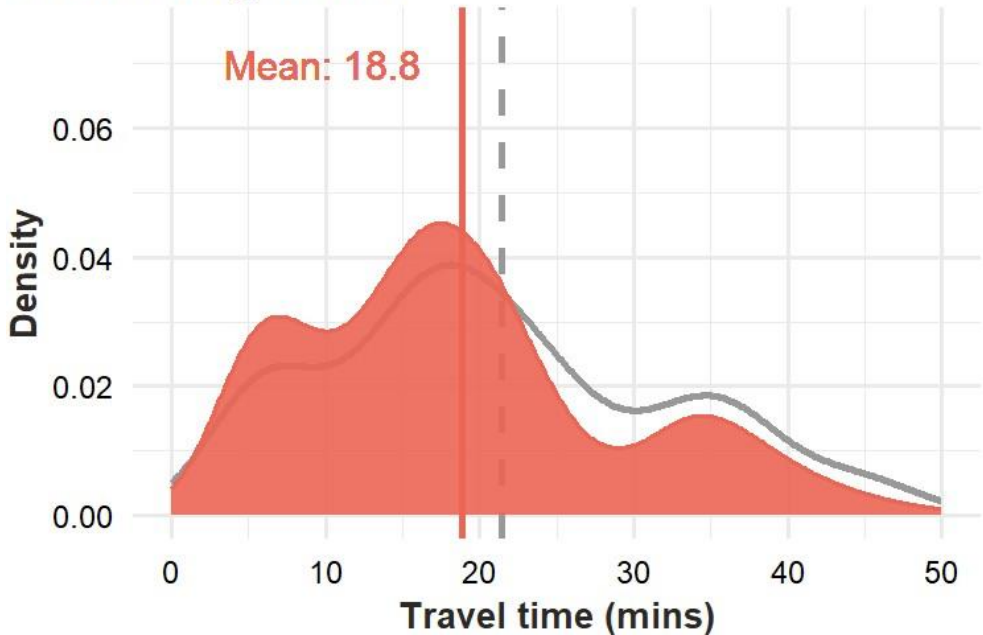
Actual travel times to Samuel Johnson or County with transfers



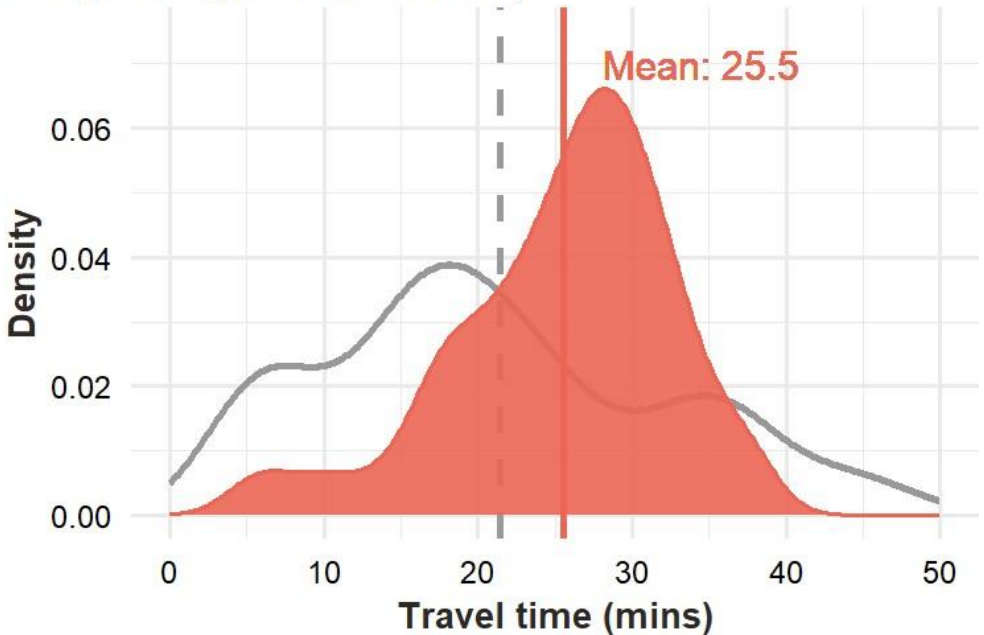
Actual time to Samuel Johnson or County without transfer



Samuel Johnson & County open travel to nearest site including transfer

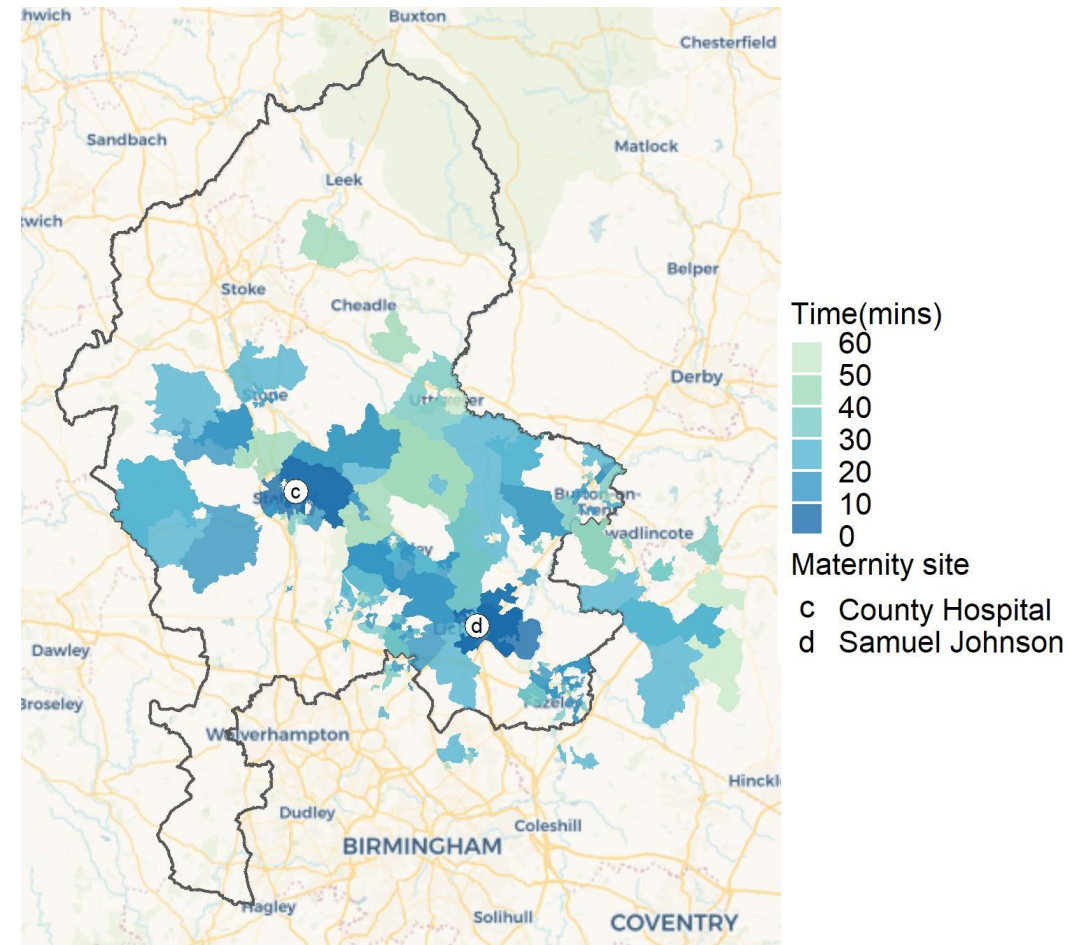


Scenario 1: Activity to nearest Staffordshire site (i.e. Royal Stoke/Burton)



# Actual travel time for those choosing Samuel Johnson and County blue light transfer time

## Actual travel time with transfers where necessary



## Travel Time

	Travel time (number, %)					
	<10 mins	10-19 mins	20-29 mins	30-39 mins	40-49 mins	50-59 mins
car_off_peak	31 (16.8%)	59 (31.9%)	49 (26.5%)	36 (19.5%)	8 (4.3%)	2 (1.1%)
car_peak	13 (18.1%)	25 (34.7%)	14 (19.4%)	11 (15.3%)	8 (11.1%)	1 (1.4%)
car_wkend	21 (24.1%)	28 (32.2%)	19 (21.8%)	15 (17.2%)	3 (3.4%)	1 (1.1%)
<b>Total</b>	<b>65 (18.9%)</b>	<b>112 (32.6%)</b>	<b>82 (23.8%)</b>	<b>62 (18%)</b>	<b>19 (5.5%)</b>	<b>4 (1.2%)</b>

## Flow of activity

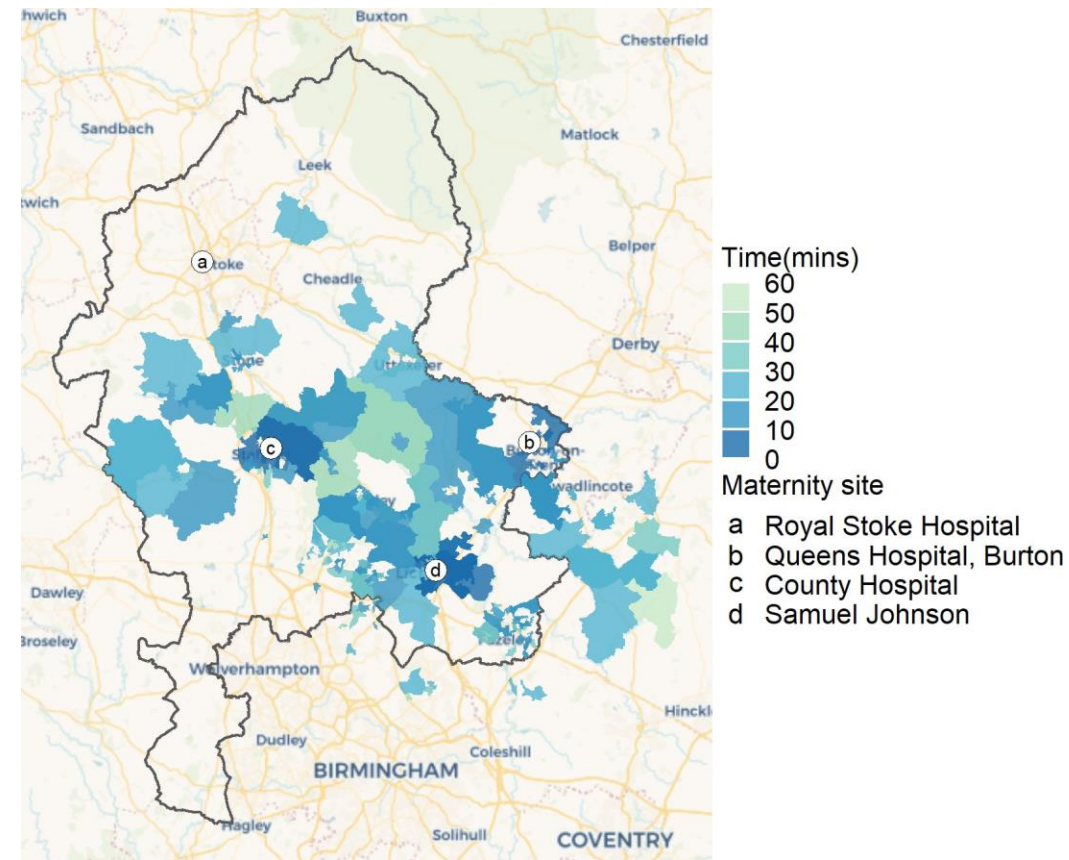
Site	Total	Number transferred
County Hospital	87	9 (10.3%)
Samuel Johnson	257	83 (32.3%)

## Access by locality

	Mean travel time (mins)							
	Cannock Chase	East Staffordshire	Lichfield	South Staffordshire	Stafford	Staffordshire Moorlands	Tamworth	Out of Area
number_of_women	58	37	108	2	73	2	38	26
car_off_peak	26.2	29.6	17.2	24.3	16.4	45.7	22.5	29.6
car_peak	26.4	32	17.4	17.8	16.3	41.3	20.2	40.1
car_wkend	27.4	32.5	15.5	-	11.9	-	20.8	28.4
<b>Total</b>	<b>26.5</b>	<b>30.8</b>	<b>16.6</b>	<b>21</b>	<b>15.6</b>	<b>43.5</b>	<b>21.7</b>	<b>31.4</b>

# Baseline: Activity to nearest site with Samuel Johnson and County including blue light transfer time

Baseline travel time with transfers where necessary for those using County/Samuel Johnson



## Travel time

	Travel time (number, %)					
	<10 mins	10-19 mins	20-29 mins	30-39 mins	40-49 mins	50-59 mins
car_off_peak	41 (22.2%)	66 (35.7%)	43 (23.2%)	28 (15.1%)	7 (3.8%)	0 (0%)
car_peak	16 (22.2%)	29 (40.3%)	16 (22.2%)	7 (9.7%)	3 (4.2%)	1 (1.4%)
car_wkend	23 (26.4%)	36 (41.4%)	14 (16.1%)	12 (13.8%)	2 (2.3%)	0 (0%)
<b>Total</b>	<b>80 (23.3%)</b>	<b>131 (38.1%)</b>	<b>73 (21.2%)</b>	<b>47 (13.7%)</b>	<b>12 (3.5%)</b>	<b>1 (0.3%)</b>

## Flow of activity

Site	Activity if using nearest site	Number transferred
County Hospital	105	19 (18%)
Samuel Johnson	191	58 (30%)
Queens Hospital, Burton	40	
Royal Stoke Hospital	8	

## Access by locality

	Mean travel time (mins)							
	Cannock Chase	East Staffordshire	Lichfield	South Staffordshire	Stafford	Staffordshire Moorlands	Tamworth	Out of Area
number_of_women	58	37	108	2	73	2	38	26
car_off_peak	24.7	14.4	17.2	18.3	15.3	25.1	22.5	27.4
car_peak	24	14.2	17	17.8	16	26.7	20.2	29.7
car_wkend	26.6	16.6	15.5	-	10.9	-	20.8	23.9
<b>Total</b>	<b>25</b>	<b>14.9</b>	<b>16.6</b>	<b>18.1</b>	<b>14.7</b>	<b>25.9</b>	<b>21.7</b>	<b>27.1</b>

# Summary of travel time and patient flows

- County and Samuel Johnson had relatively low numbers of births, so only around 344 births per year would be affected by the closure of these MLUs.
- With County and Samuel Johnson MLUs open the mean journey time to the nearest site would be 15 mins. However the mean actual journey time was 16, as 89 (26%) women chose to travel further to use a specific MLU site.
- In **Scenario 1** where all birth activity flowed to the nearest site within Staffordshire (i.e. Royal Stoke or Burton) the average travel time would increase by around 11 minutes compared to Baseline or by 9 minutes compared to the actual travel time. In this scenario Burton could be expect an additional 262 births and Royal Stoke an additional 82 births.
- In both **Scenario 2** where all birth activity flows to the nearest site including out of area providers and **Scenario 3** where all birth activity flows to Royal Stoke or Burton or a closer out of area MLU we see similar changes in travel time and flows of activity. Average travel time would increase by around 6 mins compared to baseline, or by around 4 mins compared to actual travel time.
- In **Scenario 2** Royal Stoke would see an additional 42 births and Burton an additional 61, the vast majority would travel out of area with 163 going to Good Hope, 62 Walsall Manor and a few (n=16) traveling to Derby, George Eliot or Princess Royal. A similar pattern is seen in **Scenario 3** except the majority of births that would have gone to Walsall Manor in Scenario 2, which does not have an MLU, would instead move to New Cross (n=45).
- In **Scenario 4** with deliberate reallocation the average travel time would increase by around 8 minutes compared to Baseline or by 6 minutes compared to the actual travel time. In this case it would be predicted the Royal Stoke would get an additional 69 births and Burton 132, with 129 births going out of area and 14 additional home births.
- Around 10% of births at County and 30% of births at Samuel Johnson result in a **blue-light transfer** to a consultant-led unit at Royal Stoke or Burton. When this is accounted for in the actual travel time data there is a wider range of journey times with the mean increasing by around 5 mins from around 16 mins to 21 mins.
- In Scenario 1 with all birth activity occurring at Royal Stoke or Burton there would be no need for blue-light transfers so in this scenario the mean journey time would only be around 4 mins more than the actual time traveled when transfer time is included. Although in Scenario 1, 79% of women have a journey of over 20 mins, while even including transfer times 49% of women actually had a total travel time of over 20 mins when using County or Samuel Johnson.

# Areas most impacted by the closure of the

- Average journey times for women in Lichfield and Stafford to their nearest maternity unit within Staffordshire (i.e. Royal Stoke or Burton) will more than double, from 11 min to 23 min in Lichfield and from 12 mins to 28 mins in Stafford.
- For those in Cannock Chase (n=58) the average journey time will increase by around 63% giving women in this area the longest overall travel time of over 33 minutes to Royal Stoke or Burton. Travel time also increases to 30 mins for South Staffordshire, although only 2 women in this area used one of the MLU sites.
- Women in these areas will be more reliant on out of area providers in order to access maternity services closer to home, but even accounting for external sites travel time remains higher (around 26/27 mins) for those in Cannock Chase and Stafford.

# Additional discussion

Based on actual travel times it appears that women are choosing travel further and not necessarily opting for their nearest site. Therefore access doesn't appear to be the primary driver for choice of MLU sites, but birthing preferences are likely to play a larger role.

This analysis needs to be considered alongside women's preferences, quality of care, economic and environmental factors associated with the potential provision of services into the future.

Provision of community services for both antenatal and postnatal care appointments are beyond the scope of this analysis and are expected to continue at County and Samuel Johnson sites, however it cannot be ruled out that closure of the birthing unit would have an impact the level/availability of antenatal and postnatal care available at the sites.

The analysis is based on the current provision of maternity and midwife-led services out of the county. These external services are considered alternative site choices for a number of women 'displaced' by the proposed permanent closure of County and Samuel Johnson MLUs, and any future changes to these external providers could have a significant impact on access/choices for women within Staffordshire.

Since 2019/2020, the birth rate in Staffordshire, and nationally, has fallen and the proportion of pregnancies that are deemed low risk and so suitable for a MLU has also decreased. Therefore the number of women that would likely choose one of the MLUs and would be impacted by the changes is now likely to be fewer than in 2019/2020.

# Appendix: Maternity Units

The following maternity units within Staffordshire or within 5 miles of the Staffordshire border are included within the analysis

Area	Site	Midwife_led
Internal	Royal Stoke Hospital	No
Internal	County Hospital	Yes
Internal	Queens Hospital, Burton	No
Internal	Samuel Johnson	Yes
External	Macclesfield DGH	Yes
External	Walsall Manor	No
External	New Cross Hospital	Yes
External	Russells Hall Hospital	Yes
External	Heartlands Hospital	No
External	George Eliot Hospital	No
External	Royal Derby Hospital	Yes
External	Leighton Hospital	Yes
External	Good Hope	Yes
External	Princess Royal Hospital	Yes
External	Birmingham Womens Hospital	Yes

