

NCAP

NATIONAL CARDIAC AUDIT PROGRAMME

NICOR

Management of heart attack: Myocardial Ischaemia National Audit Project (MINAP)

with reference to the National
Audit of Percutaneous
Coronary Intervention (NAPCI)



2024 Summary Report

(2022/23 data)



Heart attack (MINAP) - Report at a glance

2022/23 data unless otherwise stated.



81,735 confirmed heart attacks in 2022/23,
4% fewer than previous year



4-fold difference in number of heart attacks per
100,000 population between Integrated Care Boards
(ICBs) in England and Health Boards in Wales with
the lowest rates and those with the highest



10% fewer higher-risk ST-elevation myocardial
infarction (STEMI) heart attacks compared with
five years ago



17% fewer lower-risk non-STEMI (NSTEMI)
heart attacks since 2018/18 in patients aged 75
years or more



32-minute deterioration in the median Call-To-
Balloon (CTB) time for higher-risk STEMI heart attack
patients over the last decade



21 out of **66** hospitals achieved Door-To-Balloon
(DTB) target time (<60 minutes for more than
70% of patients)



8-10% of higher-risk STEMI heart attack patients now
'self-present' themselves to hospital, up from **5%** in
2019/20



86% of lower-risk NSTEMI heart attack patients
undergo angiography prior to discharge



58% of lower-risk NSTEMI heart attack patients
undergo angiography within the target time of
72 hours



73% of higher-risk STEMI heart attack patients
undergo pre-discharge echocardiography, but many
patients are not investigated



<60% of patients with NSTEMI are cared
for on a cardiac ward though 98% are seen
by specialist teams



81% of patients received all appropriate secondary
preventive medication, a fall on the previous year



83% of patients discharged or transferred
to another hospital were referred for cardiac
rehabilitation prior to discharge.



Timeliness of PPCI treatment for higher-risk STEMI heart attack patients

1. Hospital emergency department's, PCI centres, neighbouring non-PCI hospitals and Ambulance Trusts should work together to reduce delays in the provision of primary percutaneous coronary intervention (PPCI) to higher-risk STEMI heart attack patients. This may include:
 - rapid offloading from ambulances directly into PCI facilities
 - rapid triage of patients who self-present with symptoms of heart attack
 - reviewing ambulance service responses to patients calling for help with symptoms of heart attack, especially the advice to patients if an ambulance is not immediately available
 - non-PPCI hospitals (particularly those remote from such services) considering immediate administration of intravenous thrombolytic drugs if it is anticipated that the Door-To-Balloon (DTB) target treatment time cannot be met (note: the latest audit data do not support the re-introduction of pre-hospital thrombolysis).

Angiography for lower-risk NSTEMI heart attack patients

2. Hospitals and commissioners should ensure angiography following admission for NSTEMI patients does not take more than 72 hours to perform by:
 - identifying suitable patients
 - streamlining referrals and reliable transfer arrangements between (and within) hospitals
 - implementing weekend angiography lists for NSTEMI patients.

Provision of specialist cardiac care

3. Hospitals with lower rates of heart attack patients admitted to cardiac wards should review their systems and bed allocations to maximise access to cardiac care and consider cardiac outreach services to those cared for elsewhere.
4. Hospitals with lower rates of cardiology involvement in heart attack care should ensure their data reflects their practice. If the data are accurate, provision of cardiac care during admissions should be improved (e.g. by increased staffing or more flexible use of members of the cardiology team, including skilled nursing staff and physician specialists).
5. Hospitals providing echocardiograms to lower rates of heart attack patients should ensure the accuracy and completeness of their data. If the data are accurate, use of limited 'bedside' targeted echocardiographic assessments should be considered if there are difficulties obtaining timely tests.

Prescribing of recommended medication

6. Hospitals not meeting the standard for prescribing secondary prevention medication prior to discharge following heart attack should assess the quality of their data and, if sub-optimal performance is confirmed, consider the use of discharge pro-forma or checklists, direct involvement of specialist cardiac pharmacists and 'ACS' nurse specialists.

Referral to rehabilitation

7. Hospitals not meeting the standard for referral to cardiac rehabilitation following heart attack should ensure early identification of suitable patients (e.g. through routine distribution of information about cardiac rehabilitation within discharge leaflets given to all patients).



This report summarises the care provided within hospitals in England, Wales and Northern Ireland to over 82,000 people who suffered a heart attack between April 2022 and March 2023. The data used are drawn from two audits within the National Cardiac Audit Programme (NCAP) run by the National Institute for Cardiovascular Outcomes Research (NICOR):

- the main source is the Myocardial Ischaemia National Audit Project ([MINAP](#))
- cross-reference is made to the National Audit of Percutaneous Coronary Intervention ([NAPCI](#)).

A key focus of these audits is to support quality assurance and the improvement of services for people suffering a heart attack. The quality of care received by those patients is assessed against a set of quality improvement (QI) [metrics](#) derived from national and/or international standards and guidelines. These cover patients diagnosed with two types of heart attacks:

- higher-risk ST-segment elevation myocardial infarction (STEMI)
- non-ST-segment elevation myocardial infarction (NSTEMI).

This report is designed to be of value to a wide range of stakeholders. Importantly, it allows patients and their relatives to better understand the care and outcomes of heart attack patients in the UK. **The slides in the report are interactive so you can select and explore the data that interest you.**

Additional information is available from the National Institute for Cardiovascular Research ([NICOR](#)) website on:

- The description, derivation and validity of each metric used in the audits
- Individual hospital performance
- Data submission by hospitals (case ascertainment in the MINAP compared with reported admissions)
- The running of MINAP and NAPCI audits, including contact details of the NICOR project team, and the datasets.

The audits rely on the active contribution of participating hospitals. Detailed information on almost 82,000 cases has been diligently entered by local clinical and audit teams before analysis is undertaken by the NICOR team. We are very grateful to all these staff for their contributions. We will continue to work closely with hospitals, patients and other stakeholders to improve the quality of audit data and how these are used to improve the delivery of high quality care for heart attack patients in the UK.

The NICOR MINAP and NAPCI audit teams



Number of cases

- Total cases - STEMI and NSTEMI
- Total cases - STEMI and NSTEMI by age group
- Rates of cases by ICB/HB
- Rates of cases by Cardiac Networks
- Reperfusion rates for STEMI patients
- Reperfusion rates by age and gender

Timeliness of treatment

- Definition of emergency timelines for treating STEMI patients
- Breakdown of times to treat STEMI patients
- Overall times to treat STEMI patients
- Rates of self-presentation by hospital
- Achievement of target treatment times - CTB
- Achievement of target treatment times - DTB
- Call-to-balloon times by ICB/HB
- Door-to-balloon times by ICB/HB
- Call-to-door times by Ambulance Trust
- DTB times by ICB/HB
- DTB times by hospital
- CTB times by ICB/HB
- CTB times by hospital
- CTB and DTB times by ethnicity

Quality of treatment

- In-hospital angiography for STEMI
- NSTEMI angiography by age and gender
- NSTEMI angiography by ICB/HB
- NSTEMI angiography within 72hrs by ICB/HB
- NSTEMI angiography by hospital
- Echocardiography rates
- Echocardiography rates by hospital
- NSTEMI specialist care
- NSTEMI specialist care by hospital
- Secondary prevention medication prescription rates
- Secondary prevention medication prescription rates by hospital
- Cardiac rehabilitation by hospital

There were just under 82,000 heart attack cases in 2022/23, a drop of 4%

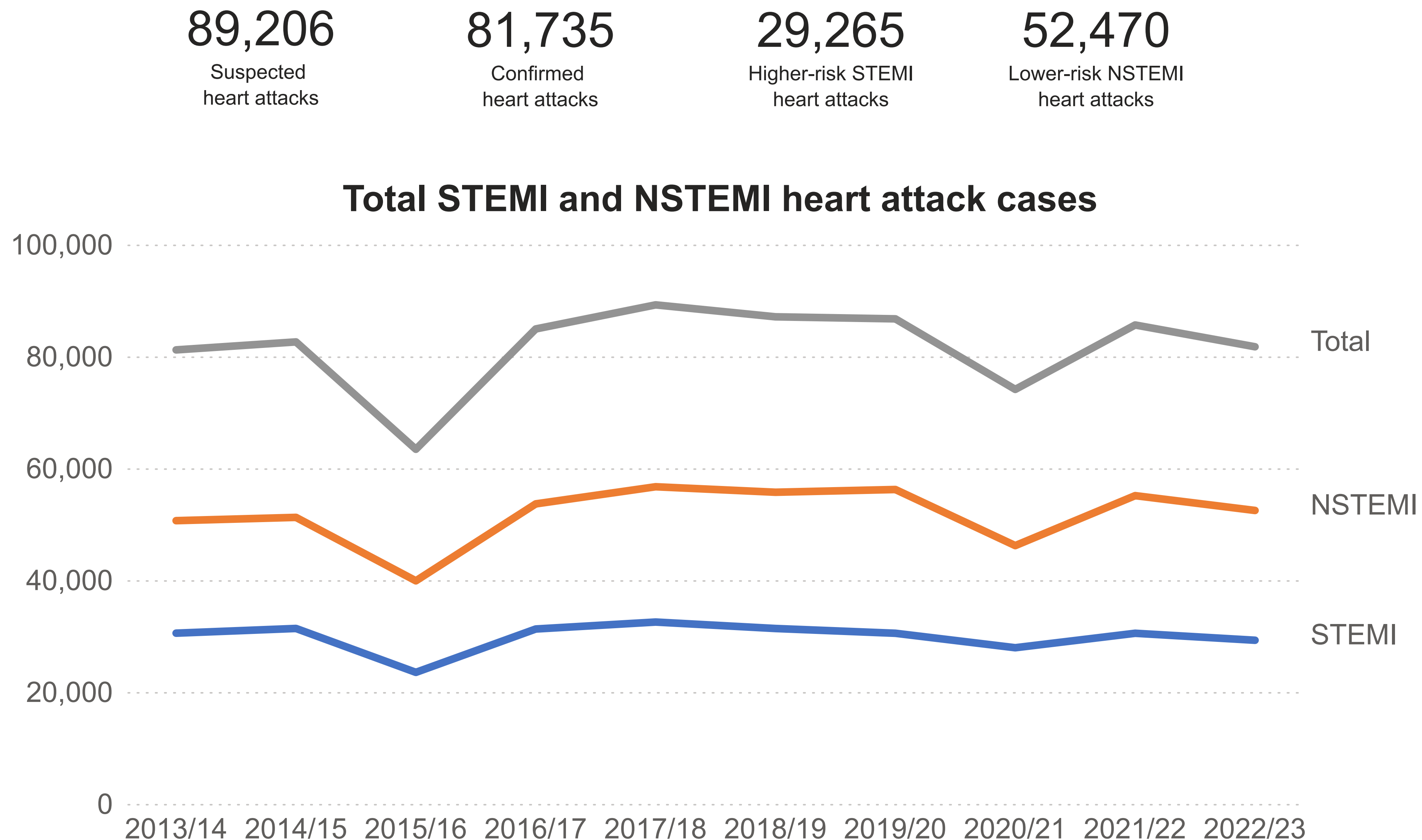


Hospitals reported 81,735 patients with a confirmed heart attack in 2022/23.

This was a reduction of about 4% compared with the previous year and is 8.4% fewer than recorded in 2017/18.

Just over a third of heart attacks involved 'higher-risk' STEMI cases, the remainder were NSTEMI.

Note: Data for 2015/16 were for 9 months only. The reduction in cases during 2020/21 was during the COVID-19 pandemic.



More younger and fewer older individuals suffered lower-risk NSTEMI heart attacks

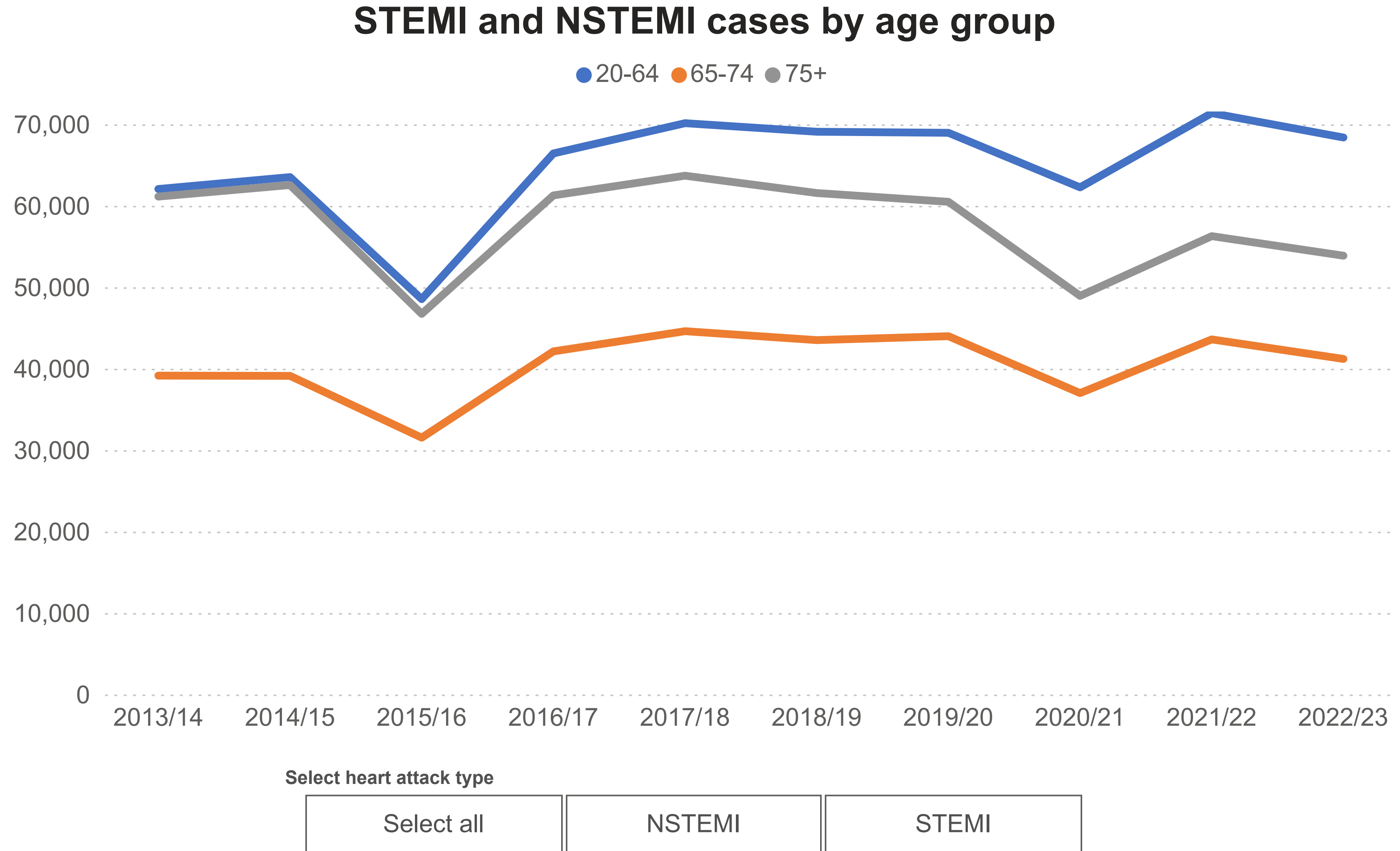


Patients with higher-risk STEMI heart attacks tend to be younger than those with NSTEMI (e.g. those aged less than 65 accounted for 50% of STEMI cases in 2022/3 but less than 40% of NSTEMI).

Over time, case numbers seem to be falling for those aged 75 years and older but rising for younger individuals, particularly with lower-risk NSTEMI heart attacks.

It is not possible to be certain of the causes of this, but possible factors could be:

- increasing obesity and diabetes in younger individuals
- greater uptake of primary and secondary prevention measures in older individuals
- post-COVID, some patients being less likely to go to hospital when first experiencing symptoms
- better testing for troponin identifying patients earlier



The number of heart attacks per 100,000 of population is nearly four times greater in ICB areas with the highest rates compared to those with the lowest



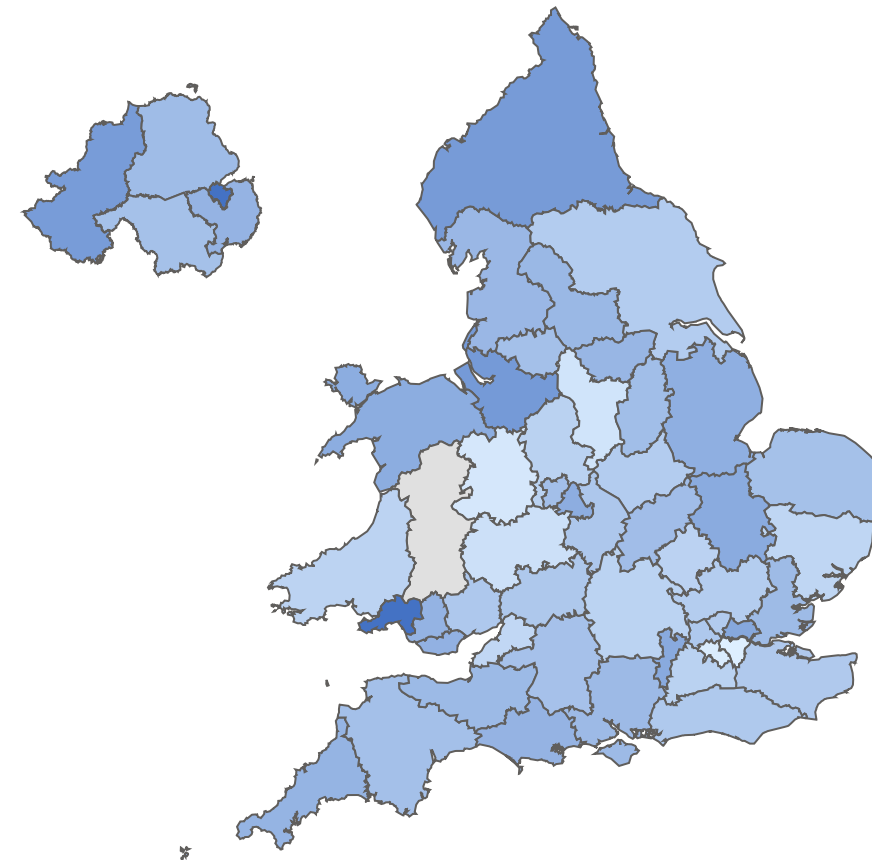
The rates of heart attack cases per 100,000 of population vary substantially.

The maps show data for the 42 Integrated Care Boards in England, five Health and Social Care Trusts in Northern Ireland and seven Welsh University Health Boards, with the darker shading indicating higher rates.

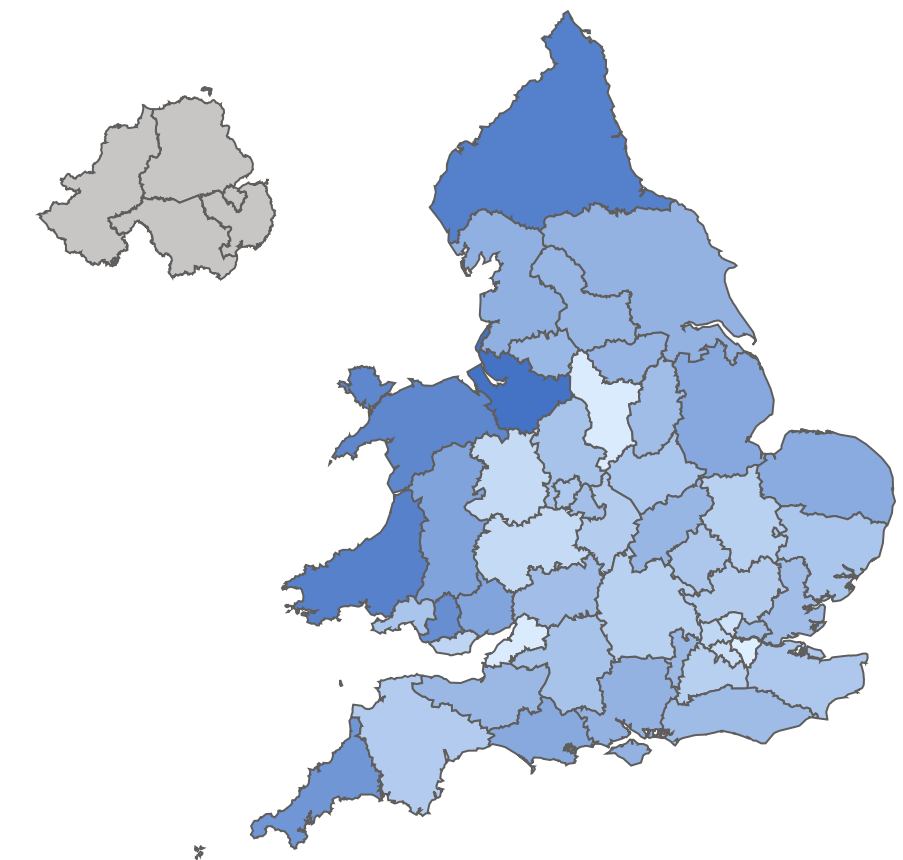
The highest rate based on the home location of patients is in Cheshire and Merseyside (213 cases per 100,000 population) compared with South East London (60 cases per 100,000 population).

NOTE: The MINAP audit is not provided with postcodes for patients admitted to hospitals in Northern Ireland so cannot present its rates of cases by patient home location. There is no District General Hospital in Powys that admits heart attack patients.

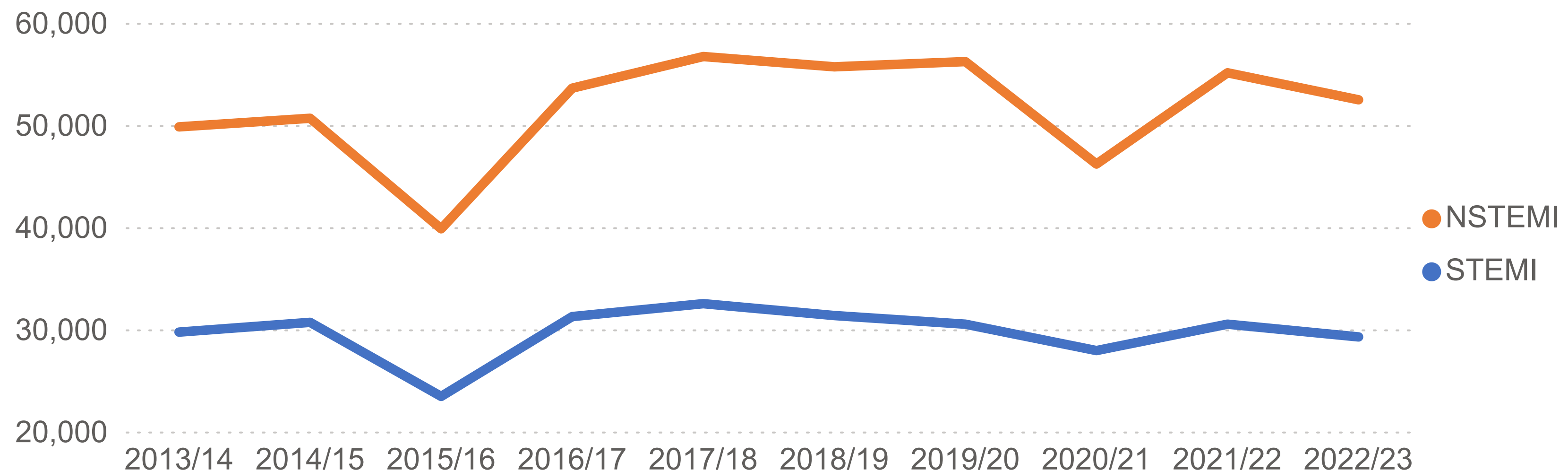
Cases per 100k of population based on hospital location by ICB (2022/23)



Cases per 100k of population based on patient home location by ICB (2022/23)



Total cases for selected ICB based on hospital location



Select heart attack type

Select all

NSTEMI

STEMI

Rates of heart attack cases in Cheshire and Merseyside Cardiac Network in 2022/23 were more than three times higher than in South London Cardiac Network

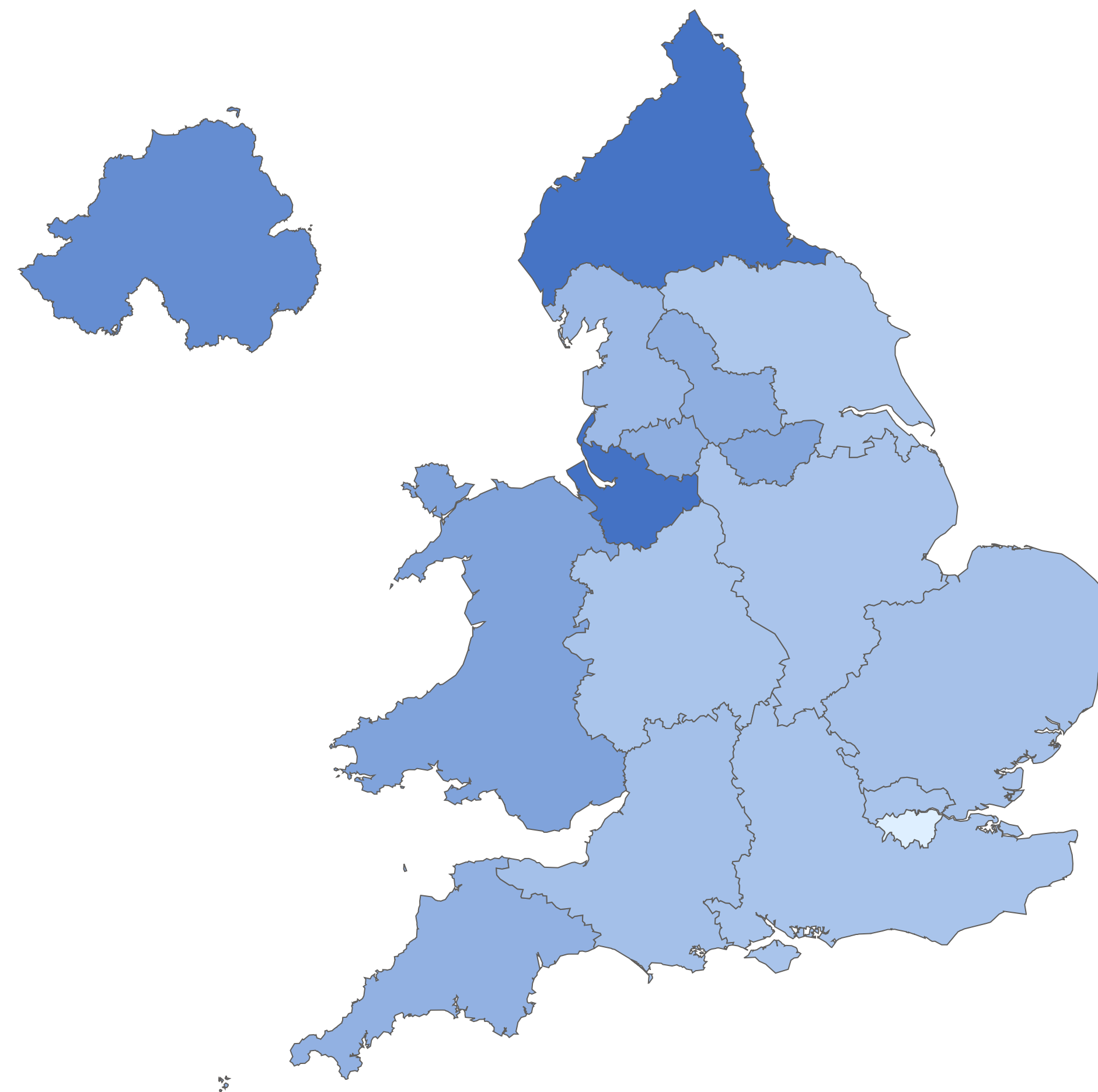


Cases per 100,000 population based on hospital location by Cardiac Network (2022/23)

Cardiac Networks in England, which each include multiple hospital trusts, were introduced to improve access to high quality care by enabling more effective collaboration across primary, secondary and community care providers.

The maps show data for the 17 Cardiac Networks in England, Northern Ireland and Wales with the darker shading indicating higher rates of heart attack cases per 100,000 of population.

Cheshire and Merseyside had the highest rate (205 cases per 100,000 population) considerably more than three times higher than South London (58 cases per 100,000 population).



The improvement over time in higher-risk STEMI patients receiving reperfusion therapy was maintained in 2022/23



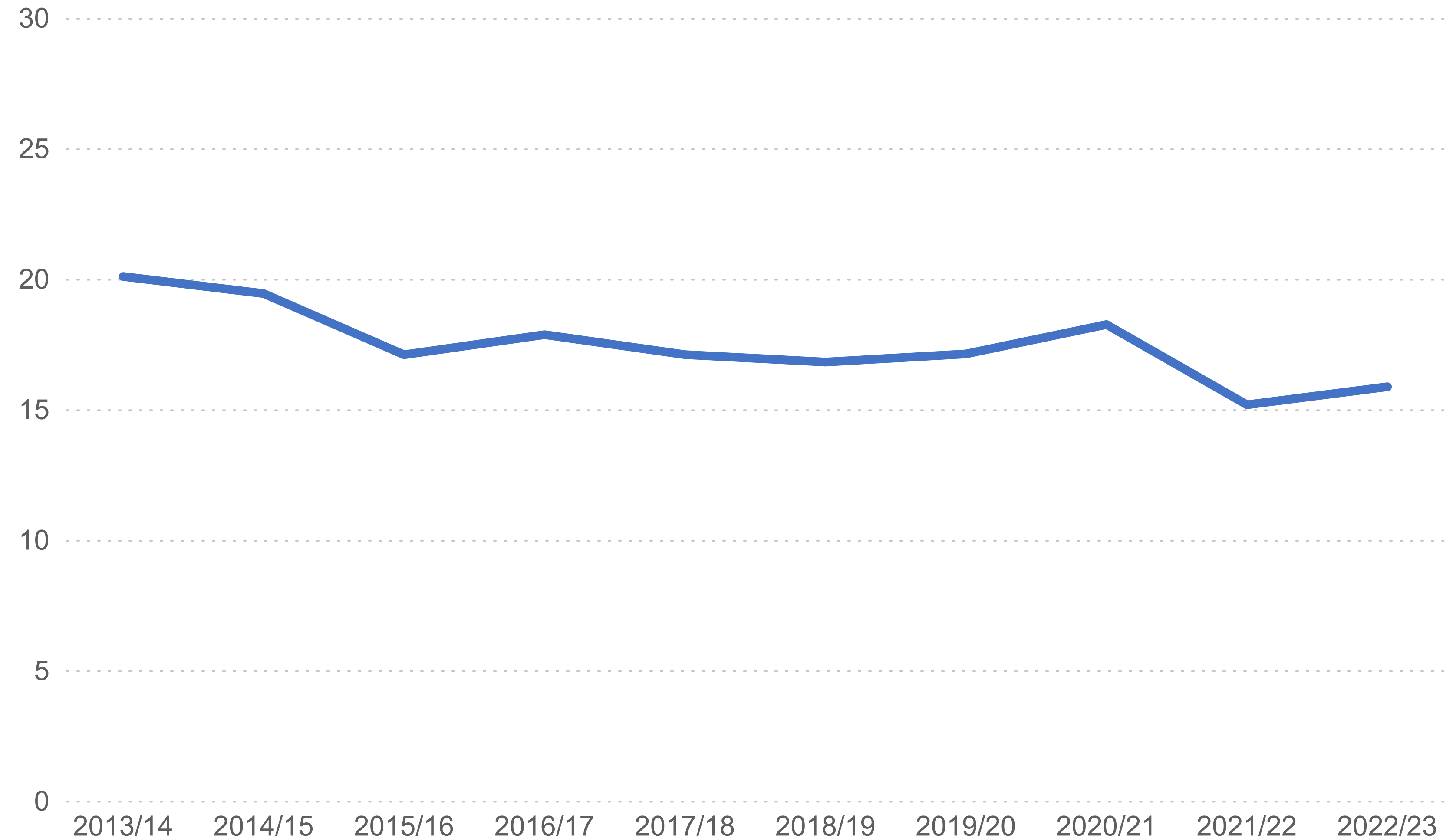
Reperfusion therapy uses clot-busting drugs or percutaneous coronary intervention (PCI, or 'angioplasty') or some combination of both to restore blood flow through blocked arteries.

[Guidelines](#) suggest all patients with higher-risk STEMI heart attacks should be considered for reperfusion therapy within 12 hours of onset of symptoms.

The proportion of patients with a diagnosis of STEMI who failed to receive any form of reperfusion treatment has fallen over the last 10 years from 20% to under 16%.

This improvement was largely maintained in 2022/23.

Percentage of higher-risk STEMI patients who do NOT receive reperfusion therapy

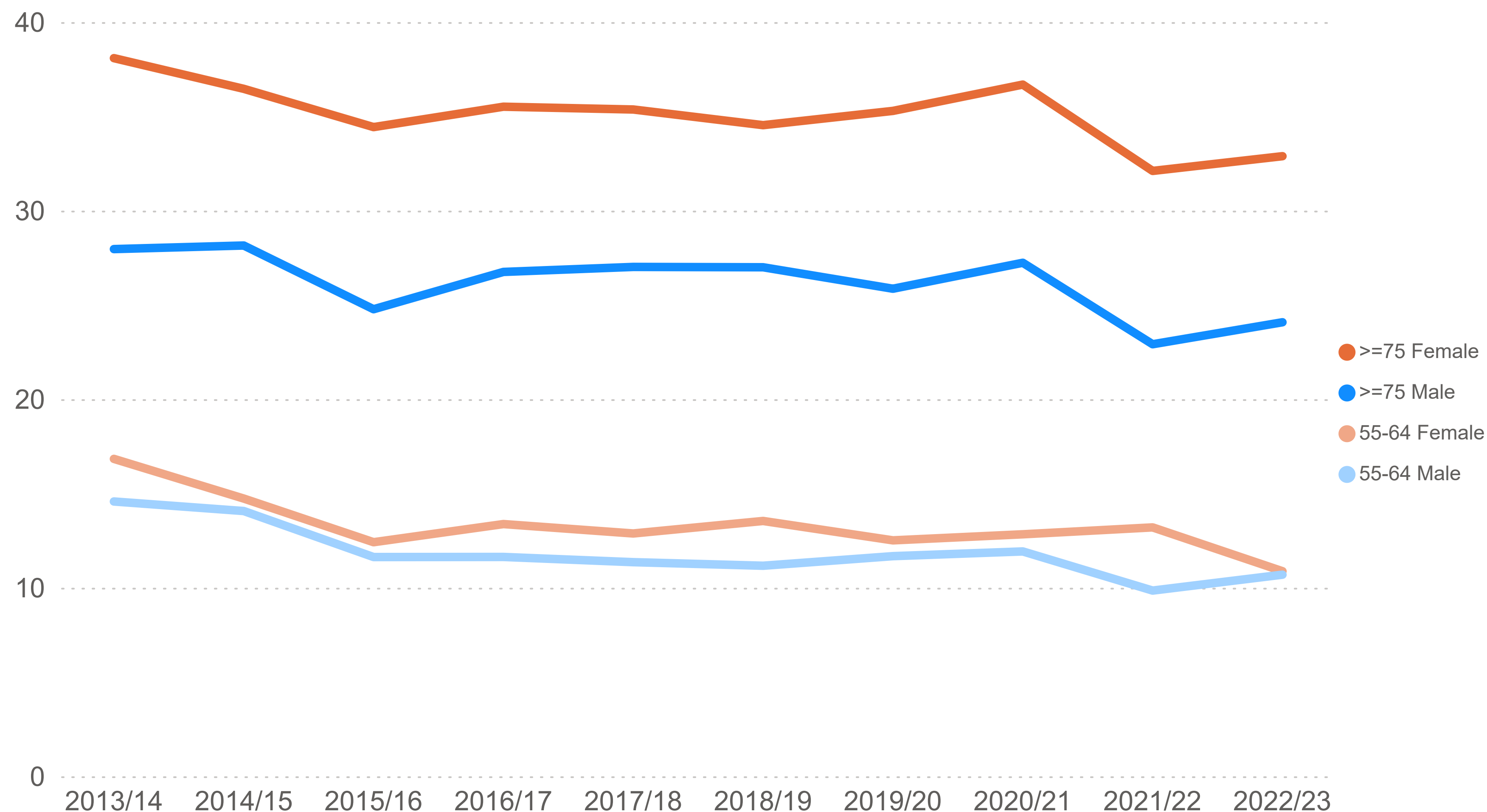




A far higher proportion of older patients with higher-risk STEMI heart attacks do not receive reperfusion treatment. This is most apparent in older females.

The reasons for this might include the degree of frailty, difficulties in making diagnoses or late presentations to hospital.

Percentage of STEMI patients not receiving reperfusion by age and gender



The times taken to treat higher-risk STEMI heart attacks with primary PCI are critical to outcomes for patients



To achieve the best possible outcomes, after an initial call for help or self-presentation at hospital, patients must be rapidly assessed, and an ECG performed. Patients should then receive primary PCI (PPCI) if a 'higher risk' STEMI heart attack is confirmed.

The Call-To-Door (CTD) time covers the period when the patient is brought to hospital by the ambulance services.

The Door-To-Balloon (DTB) time measures how long it takes the hospital to admit a patient and start PPCI treatment. Hospitals not set up to deliver PPCI transfer patients directly to the catheter laboratory of the nearest PCI Centre able to do this.

For patients who present themselves to hospital (usually to the A&E department), the DTB period covers the arrival at hospital to the start of treatment.

Taken together, the CTD and DTB times comprise the overall Call-To-Balloon (CTB) time.

Emergency time periods for the treatment of high-risk STEMI heart attack patients



CTD = Call-To-Door time

From patient 999 call to arrival at hospital

DTB = Door-To-Balloon time

From arrival at hospital to re-opening of artery using reperfusion primary PCI therapy

CTB = Call-To-Balloon time

From patient 999 call to re-opening of artery using reperfusion primary PCI therapy

In the last two years, Call-To-Door times have worsened significantly and Door-To-Balloon times also seem to be getting longer



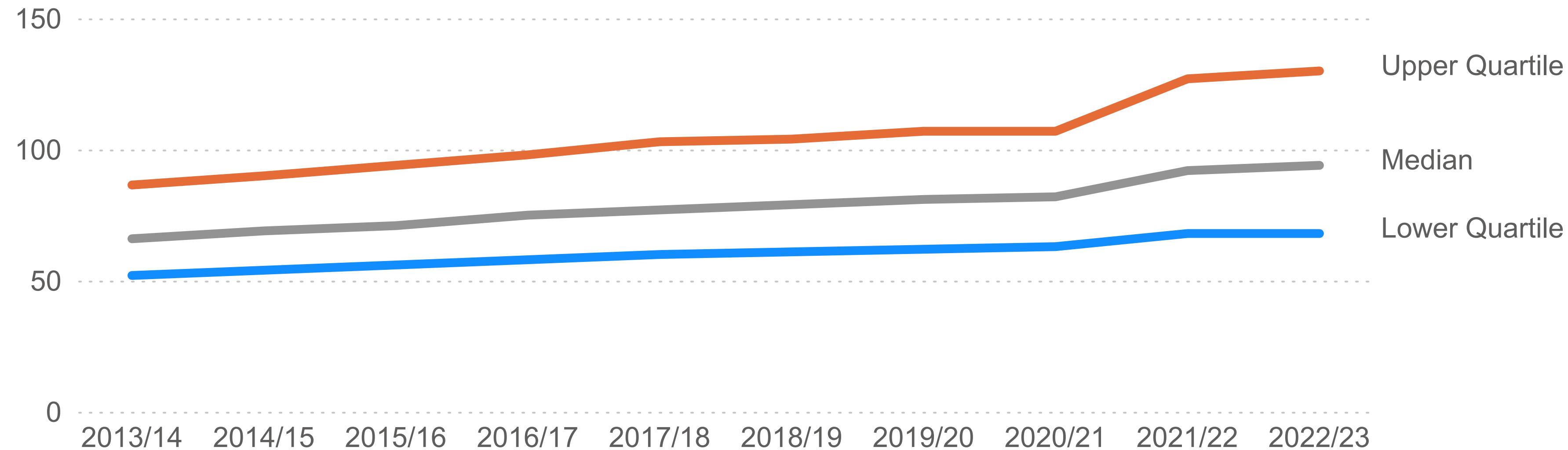
The Call-To-Balloon (CTB) time is made up of the Call-To-Door (CTD) and Door-To-Balloon (DTB) times.

Most of the deterioration in the CTB times results from a significant worsening in CTD times. The median CTD time is now 28 minutes longer than ten years ago.

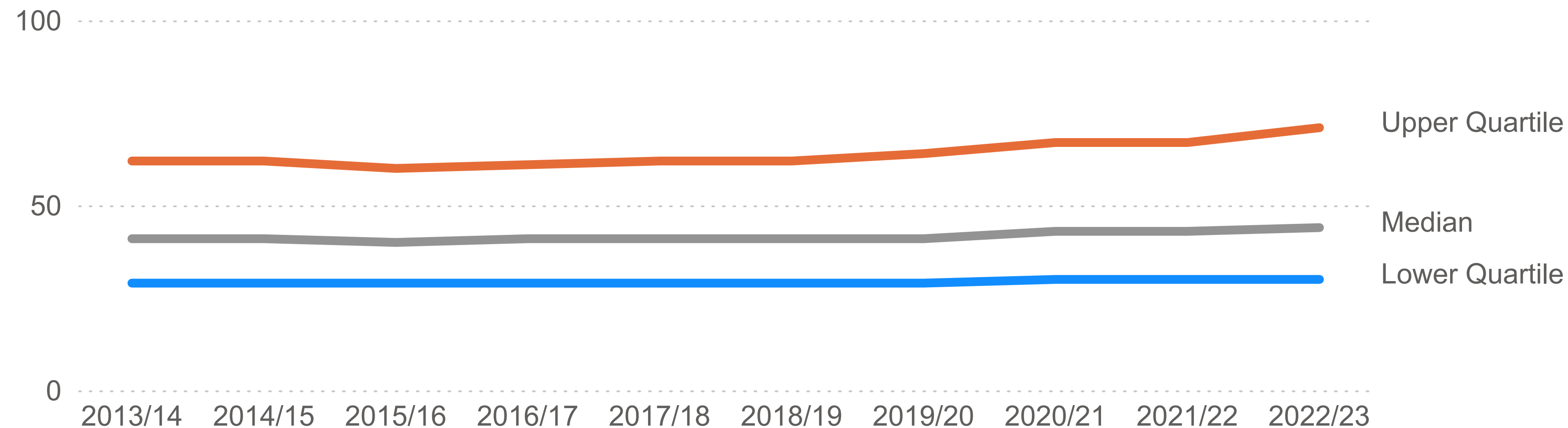
The impact is greatest in the 25% of patients whose times are 130 minutes or more.

There is evidence that DTB times are also getting longer. The median is now three minutes longer than five years ago, with the biggest change in the 25% of cases where delays of 71 minutes or more occur.

CTD times (minutes) for higher-risk STEMI heart attack patients



DTB times (minutes) for higher-risk STEMI heart attack patients



The overall Call-To-Balloon time to deliver reperfusion therapy to higher-risk STEMI patients has continued to worsen

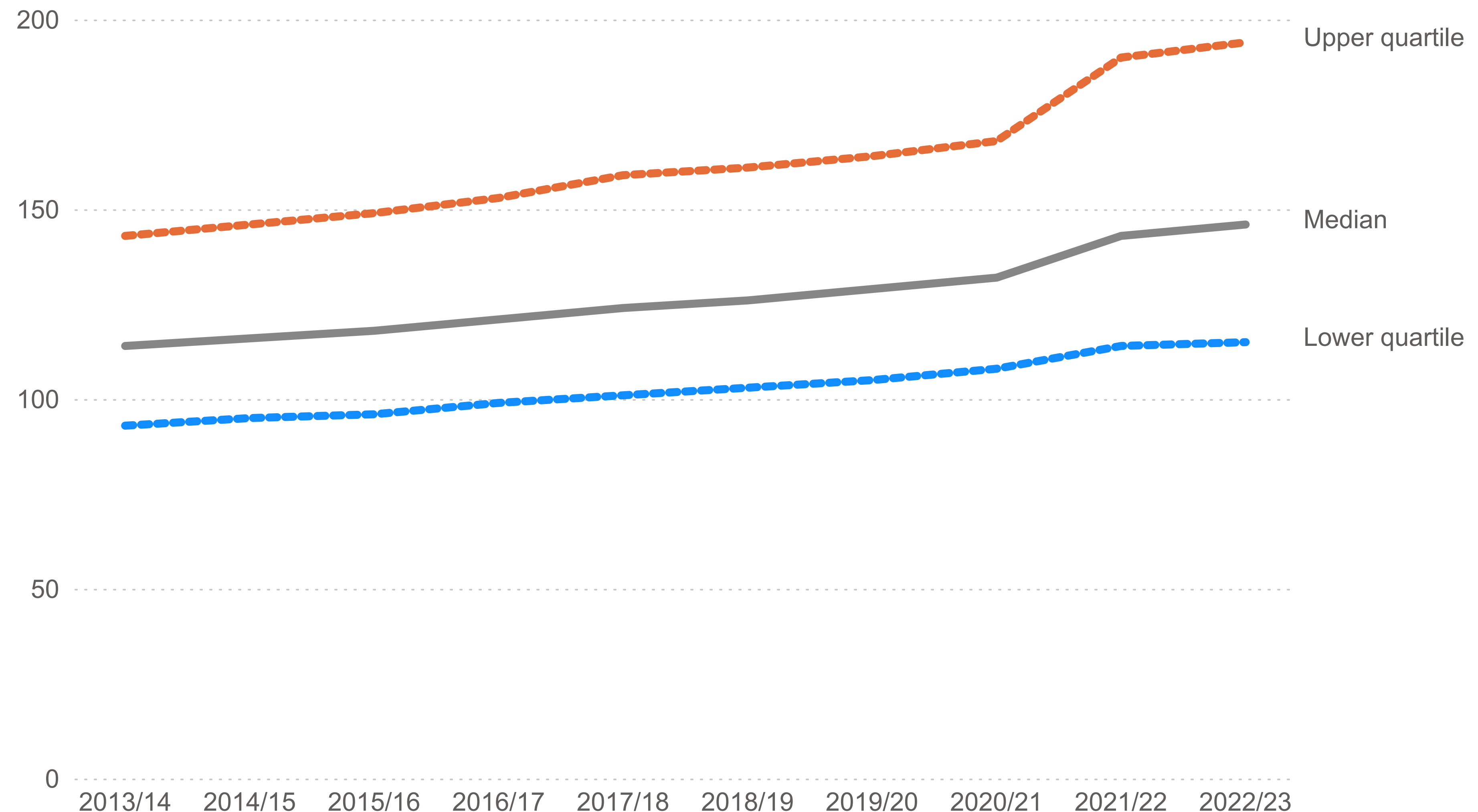


CTB times (minutes) for higher-risk STEMI heart attack patients

The steady deterioration in Call-To-Balloon (CTB) time for patients treated with primary PCI continued in 2022/23.

The median CTB time is now 32 minutes longer than ten years ago.

This is particularly noticeable for the 25% of cases with the longest time to treatment (upper quartile). These patients waited more than three hours from calling for help to receiving primary PCI.



A rise in the proportion of higher-risk STEMI patients self-presenting to hospital can result in slower treatment times because of the initial triage required on arrival



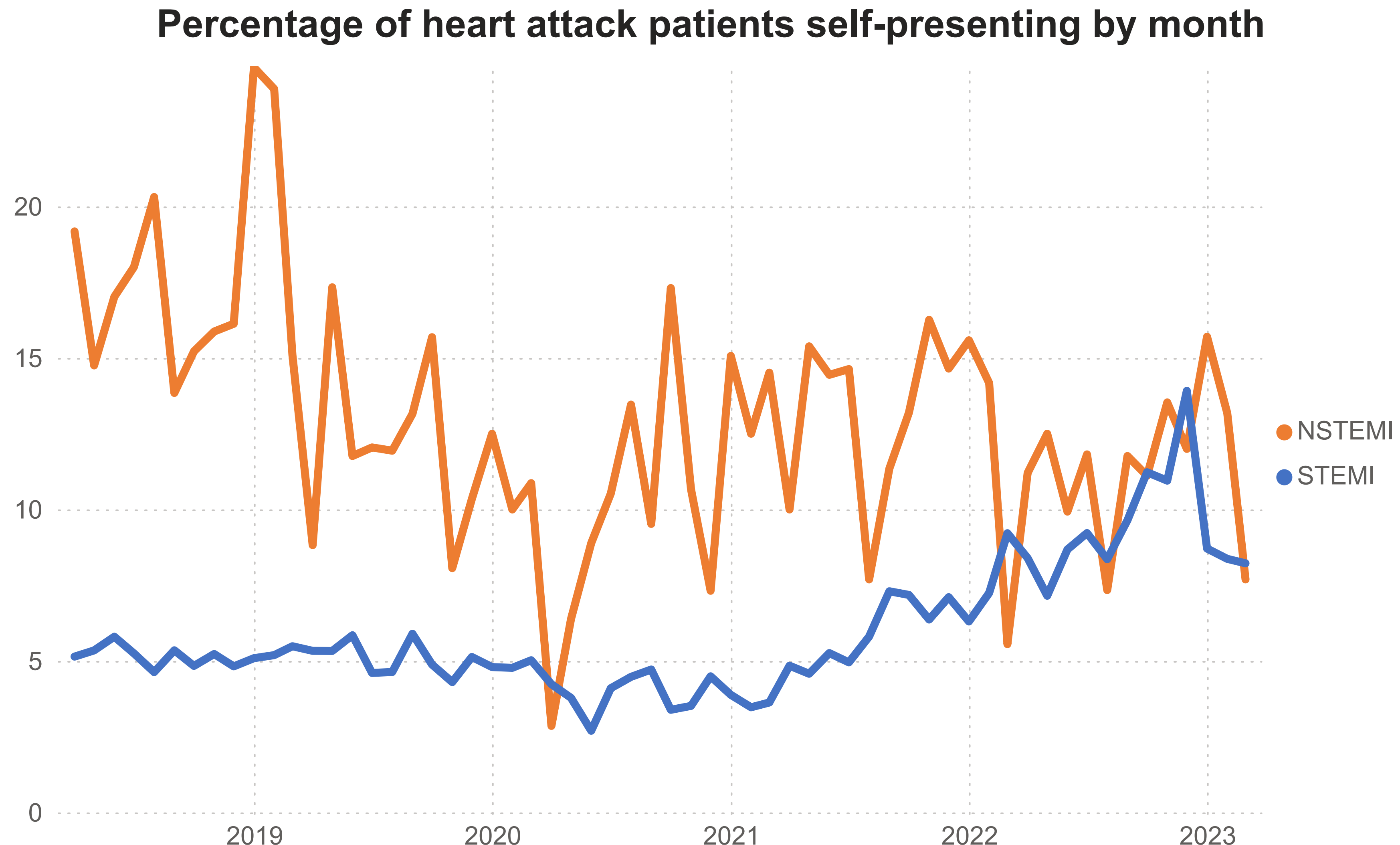
Patients with symptoms of heart attack are advised to call for an ambulance rather than present themselves to hospital. This allows the emergency services to dispatch expert teams to the scene who can:

- make an accurate diagnosis using an ECG,
- provide resuscitation if needed
- liaise with local cardiac centres.

Until recently, higher-risk STEMI patients were less likely to self-present than those with NSTEMI but this is no longer the case. It is not known how many have first requested an ambulance.

Once at hospital, self-presenters have typically incurred longer treatment times because of the triage required in the A&E department (rather than being taken directly to a cardiac treatment centre by ambulance).

The treatment times for self-presenters also do not capture how long it takes for these patients to arrive at hospital, during which their condition could deteriorate.



Fewer patients are treated within target Call-To-Balloon times



While the long-standing target time to treat higher-risk STEMI heart attack patients requiring primary PCI is 150 minutes from Call-To-Balloon (CTB), the current ambition is to achieve this within 120 minutes.

The performance against these treatment time targets has been in decline for more than 10 years, especially for those taken directly to the hospital providing reperfusion therapy .

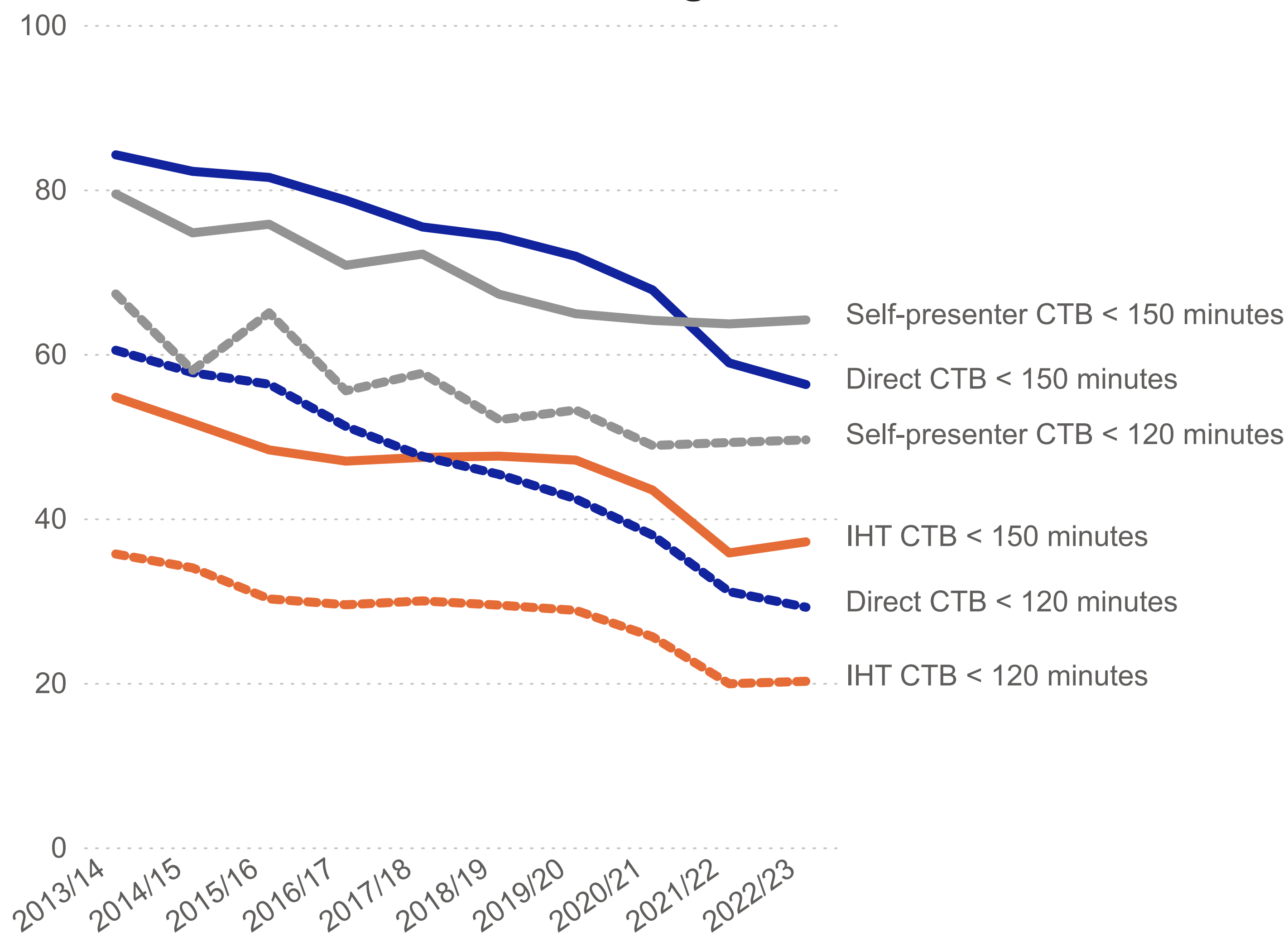
In 2022/23, only 29% of patients taken directly to a hospital received their treatment within the more stringent 120 minute target (56% were treated within 150 minutes).

Patients requiring an inter-hospital transfer (IHT) saw a small improvement relative to direct admissions, albeit these cases always have longer delays.

Worryingly, in 2022/23 it was observed that self-presenters to the PPCI centre were more likely to be treated within CTB target times than those brought to hospital by ambulance. This highlights the urgent need to tackle the complex factors affecting the delivery of reperfusion treatment to higher-risk patients.

It is still recommended that patients who think they may be suffering a heart attack should call the ambulance services.

Percentage of higher-risk STEMI patients treated within CTB time targets



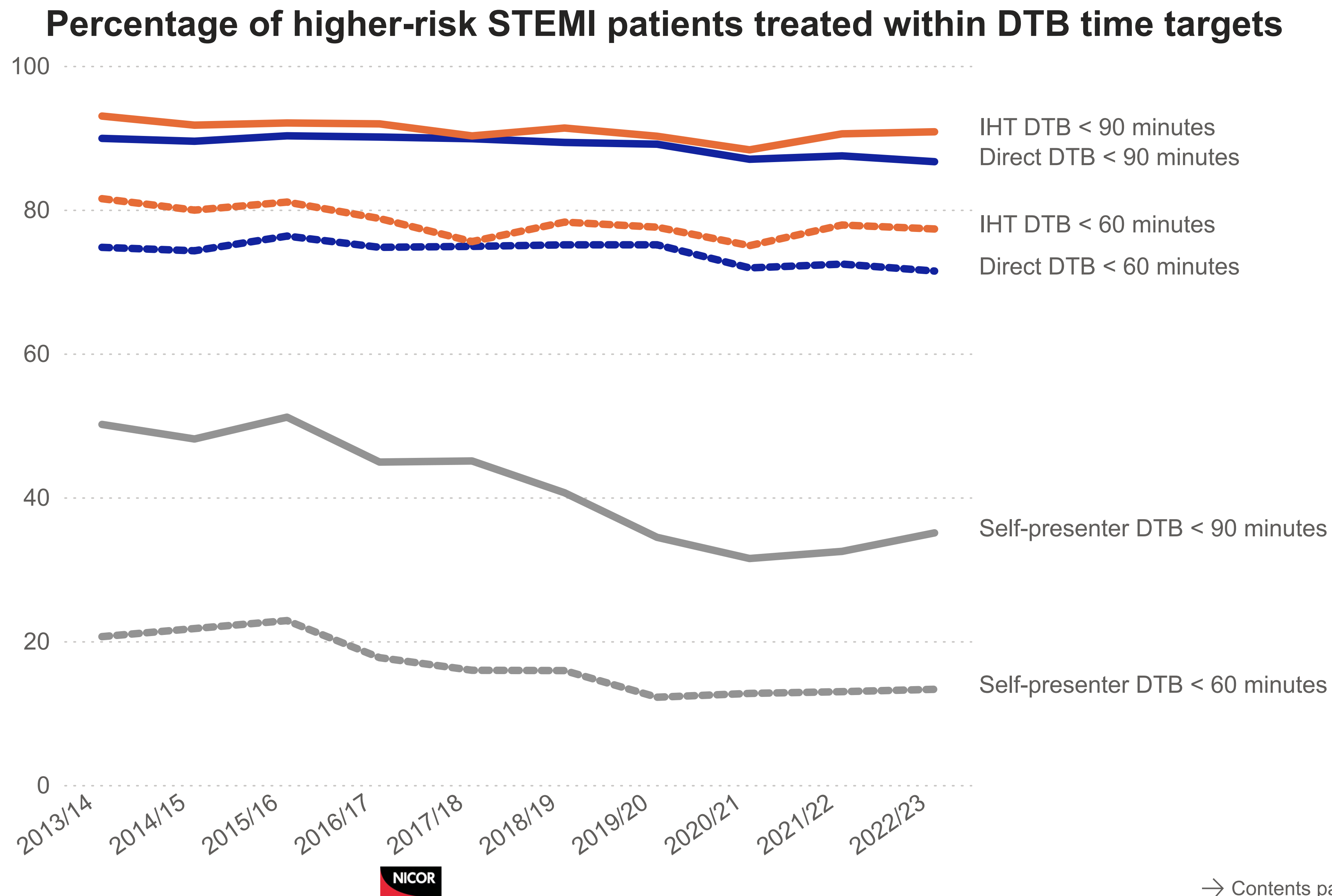
Fewer patients are treated within target Door-To-Balloon times



Door-To-Balloon (DTB) times showed that fewer patients who were admitted directly were treated within the two target times in 2022/23.

There was a small improvement for inter-hospital transfer cases against the less stringent 90-minute treatment target.

Patients who self-present at hospital (rather than being transported by ambulance) are more than twice as likely to be treated outside the DTB time targets.



The median CTB times for the worst performing ICB regions are up to three times longer than for the best



For patients with higher-risk STEMI heart attacks, the time between calling for help and being receiving the percutaneous coronary intervention (PCI) should be as short as possible.

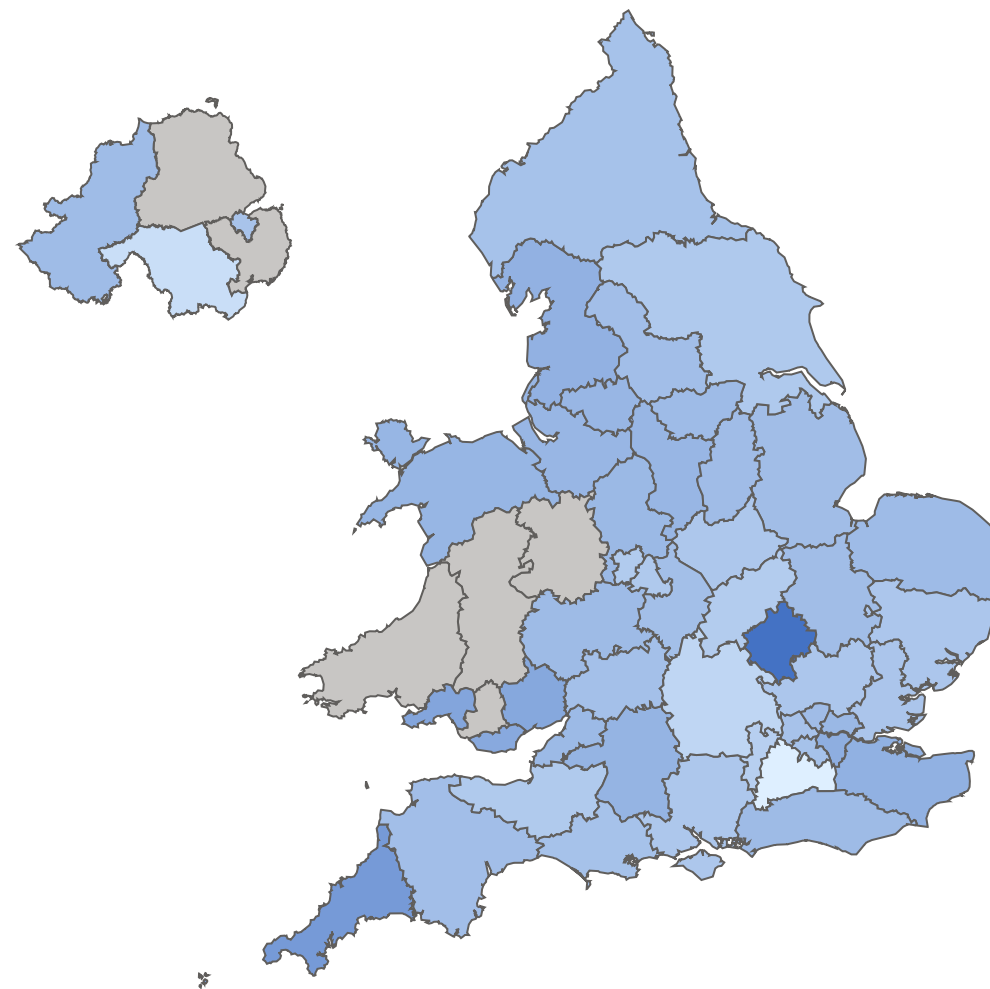
Known as the Call-To-Balloon time (CTB), this should be no longer than 150 minutes and, ideally, less than 120 minutes.

The maps show the median CTB times and the percentage of CTB times over 120 minutes for the 42 Integrated Care Boards in England, five Health and Social Care Trusts in Northern Ireland and seven Welsh University Health Boards.

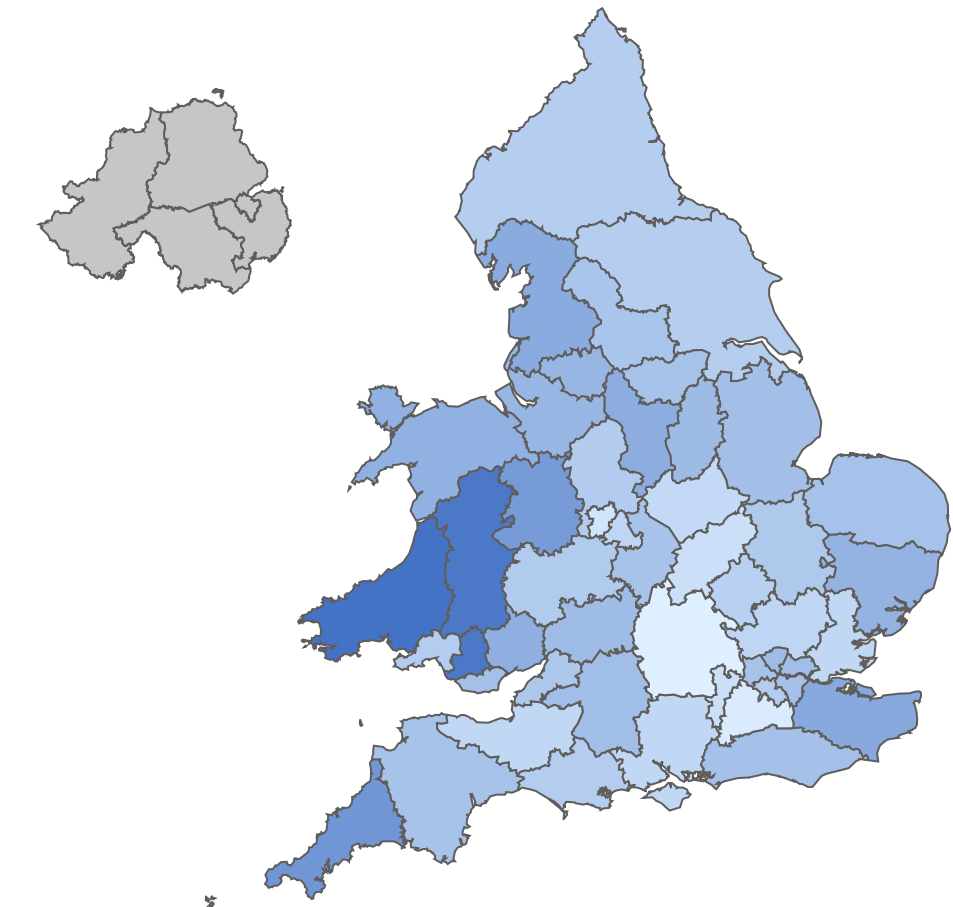
Darker shades are higher CTB times, so lighter shades show better performance.

Note: Patient home location is not provided by Northern Ireland.

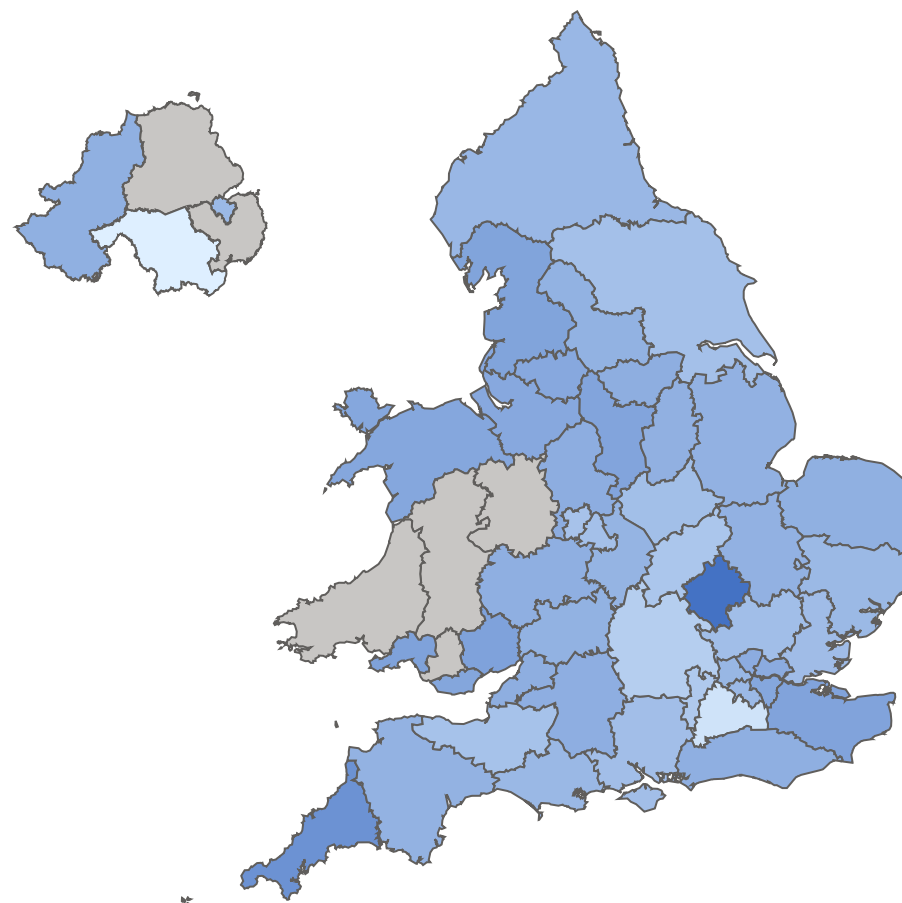
Median CTB times based on hospital location



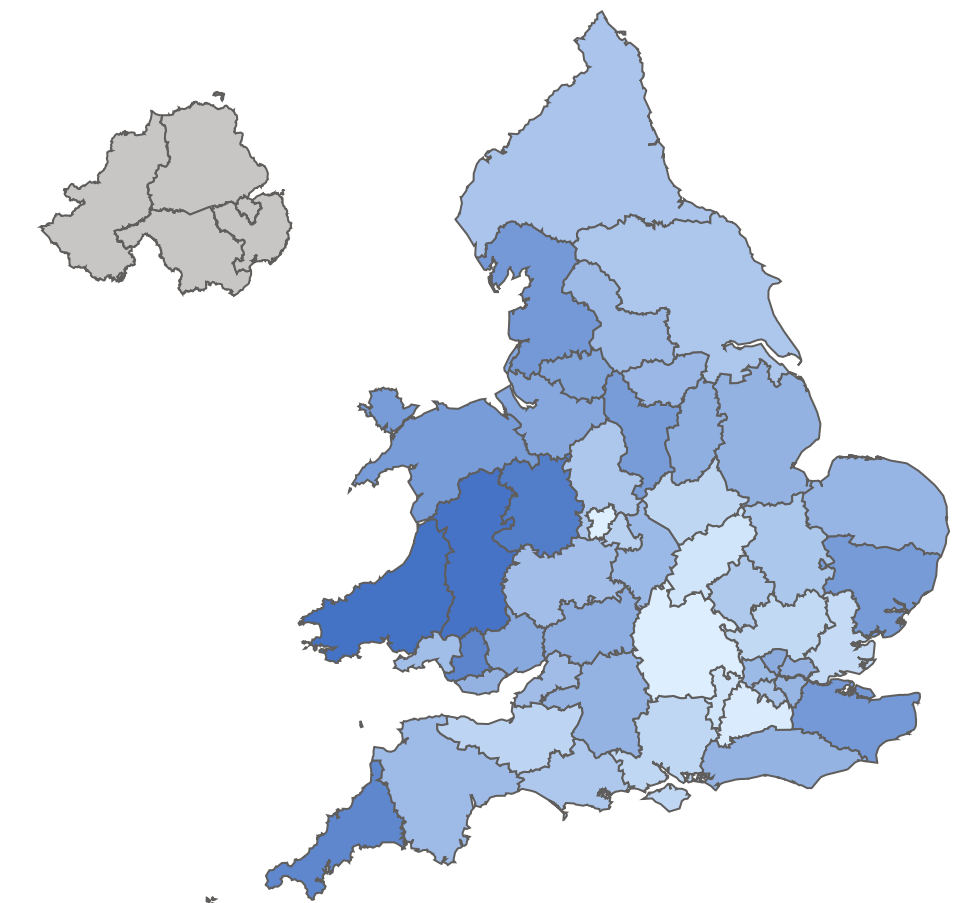
Median CTB times based on patient home location



Percentage of CTB times over 150 minutes by hospital location



Percentage of CTB times over 150 minutes based on patient home location



The wide variation in median DTB times by ICB (from 30 to over 50 minutes) underlines that hospitals should be aiming to treat patients faster



For patients with higher-risk STEMI heart attacks, the time between arrival at the interventional hospital and the percutaneous coronary intervention (PCI) should be as short as possible.

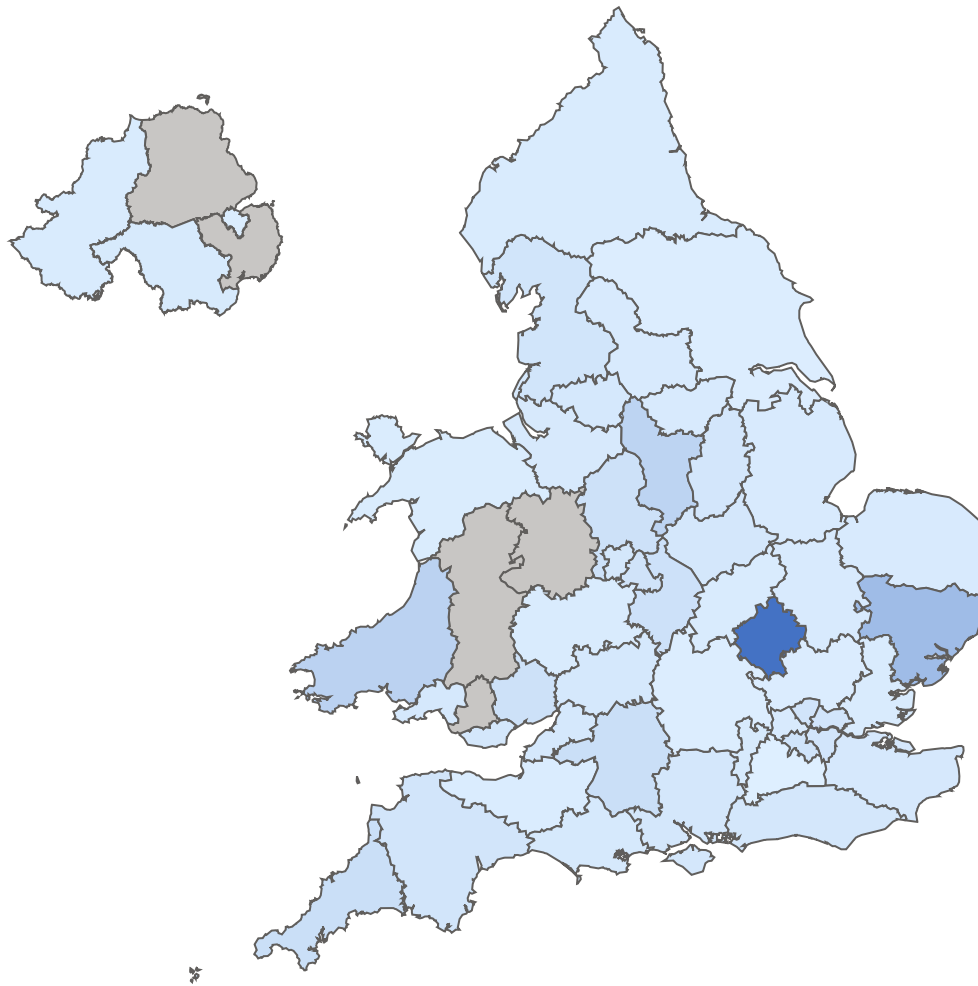
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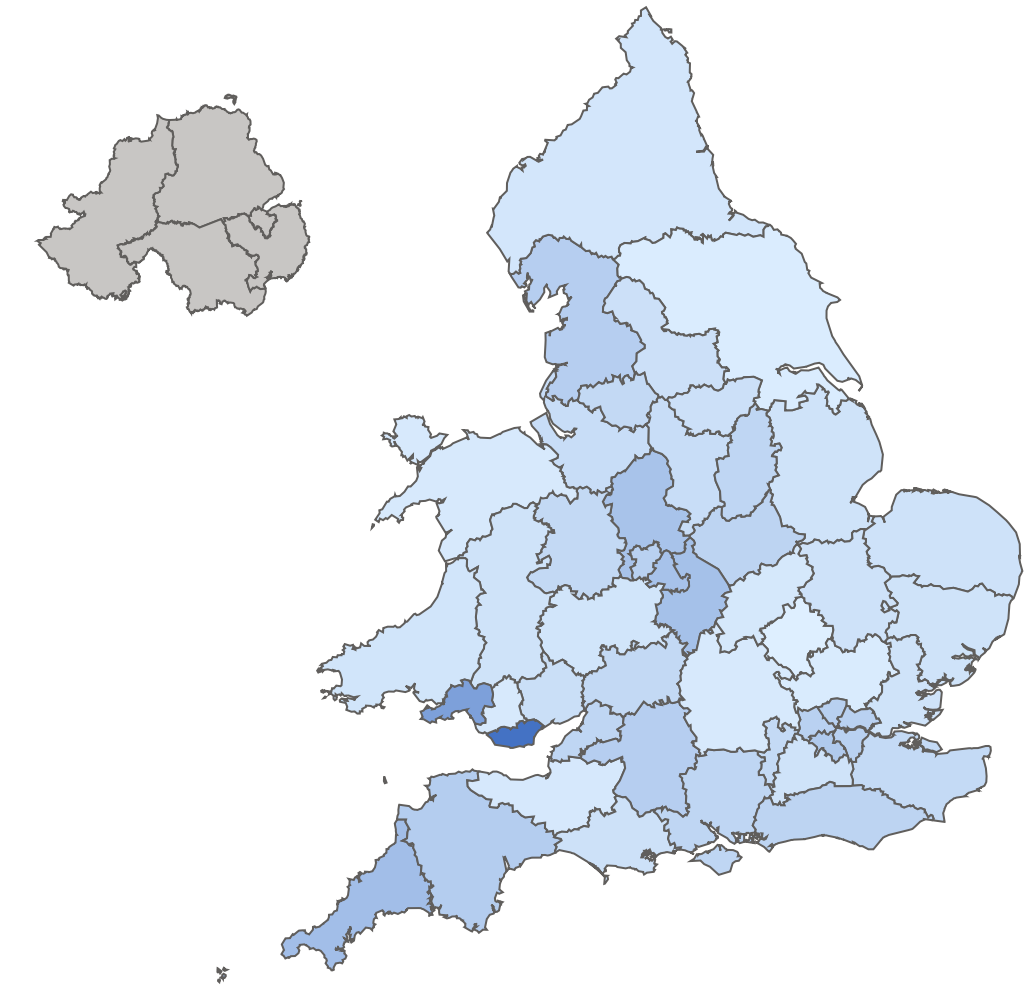
Darker shades are higher DTB times, so lighter shades show better performance.

Note: Patient home location is not provided for Northern Ireland.

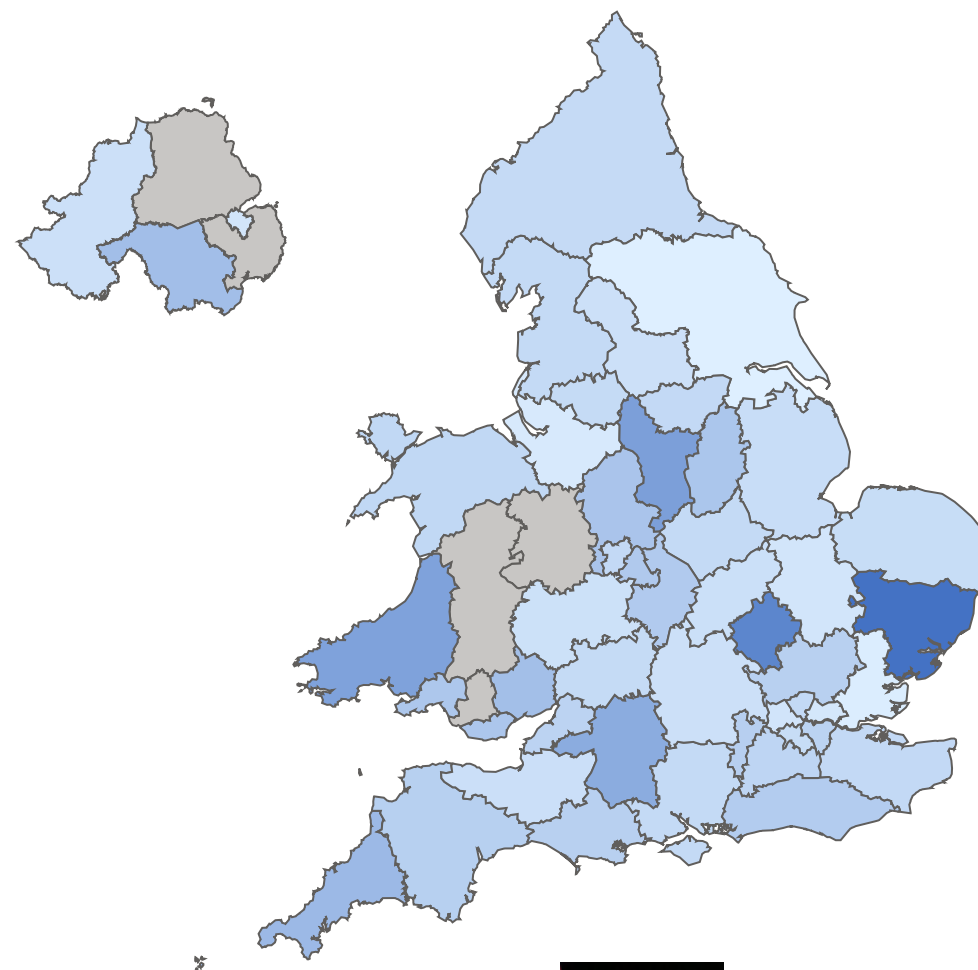
Median DTB times based on hospital location



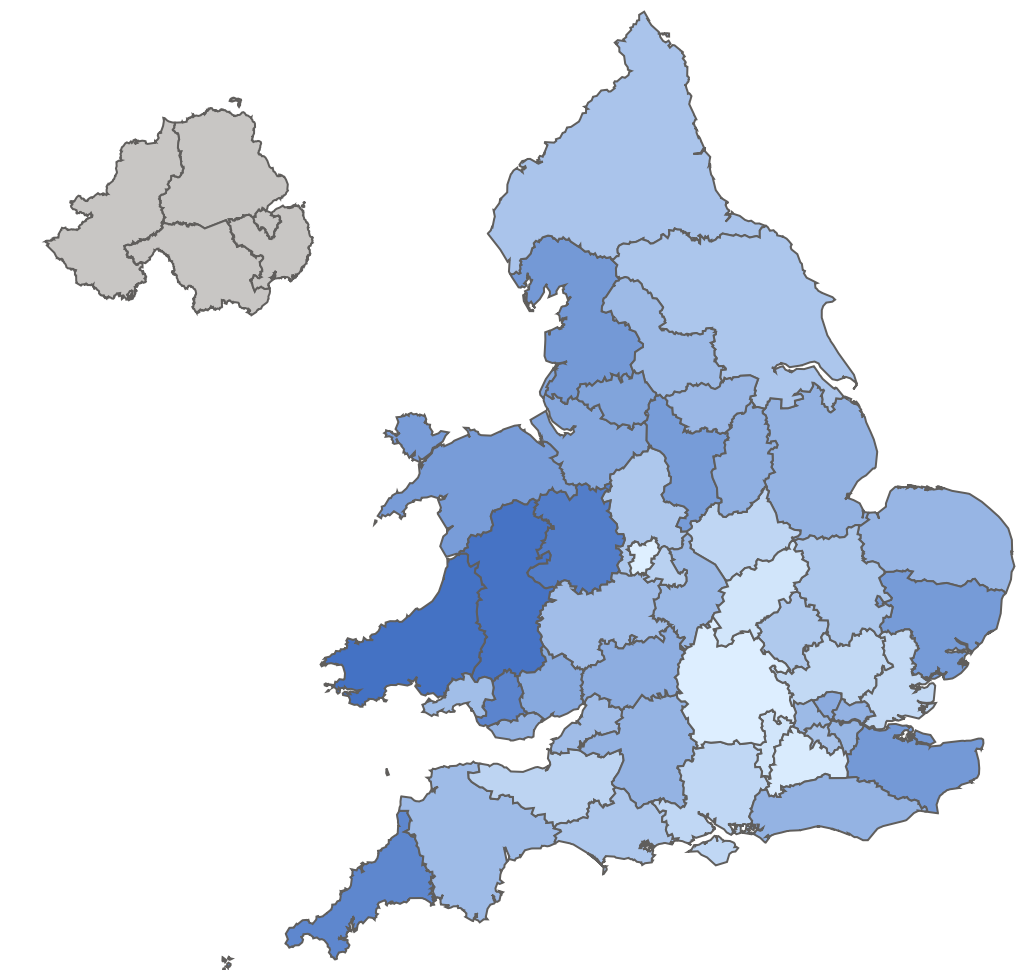
Median DTB based on patient home location



Percentage of DTB times over 90 minutes based on hospital location



Percentage of DTB times over 90 minutes based on patient home location



Call-To-Door times have increased over time in most Ambulance Trusts



A critical component of the time to treat a higher-risk STEMI heart attack patient is the time taken to arrive at hospital.

For those patients who arrive by ambulance, the Call-To-Door (CTD) time is made up of:

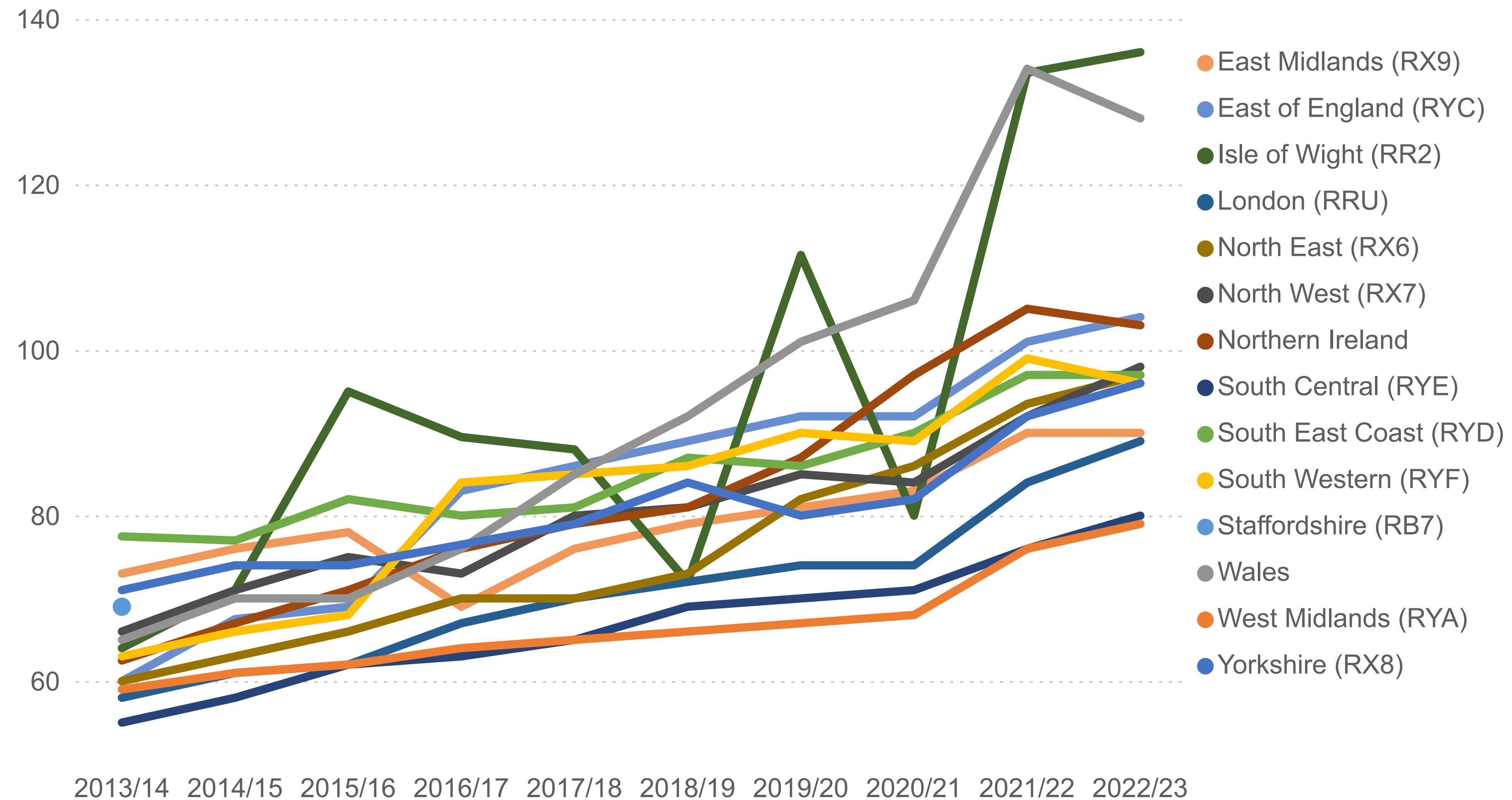
- the ambulance response time from receipt of a call to arrival of emergency staff at the patient's location
- the pre-hospital treatment time
- the time taken to transport the patient to hospital.

Since 2013, CTD times have risen across all Ambulance Trusts. There is also very wide variation between Trusts, with the worst performers taking up to 50% longer than the best.

Some improvement though has been seen in Wales, Northern Ireland, and South Western Ambulance Trusts

Longer CTD times are a significant contribution to increasing CTB times, the overall time to treat a patient.

Median CTD times (minutes) by Ambulance Trust



At country and regional level, a slightly worsening median DTB time masks faster rising average times and greater variation between the best and worst performers



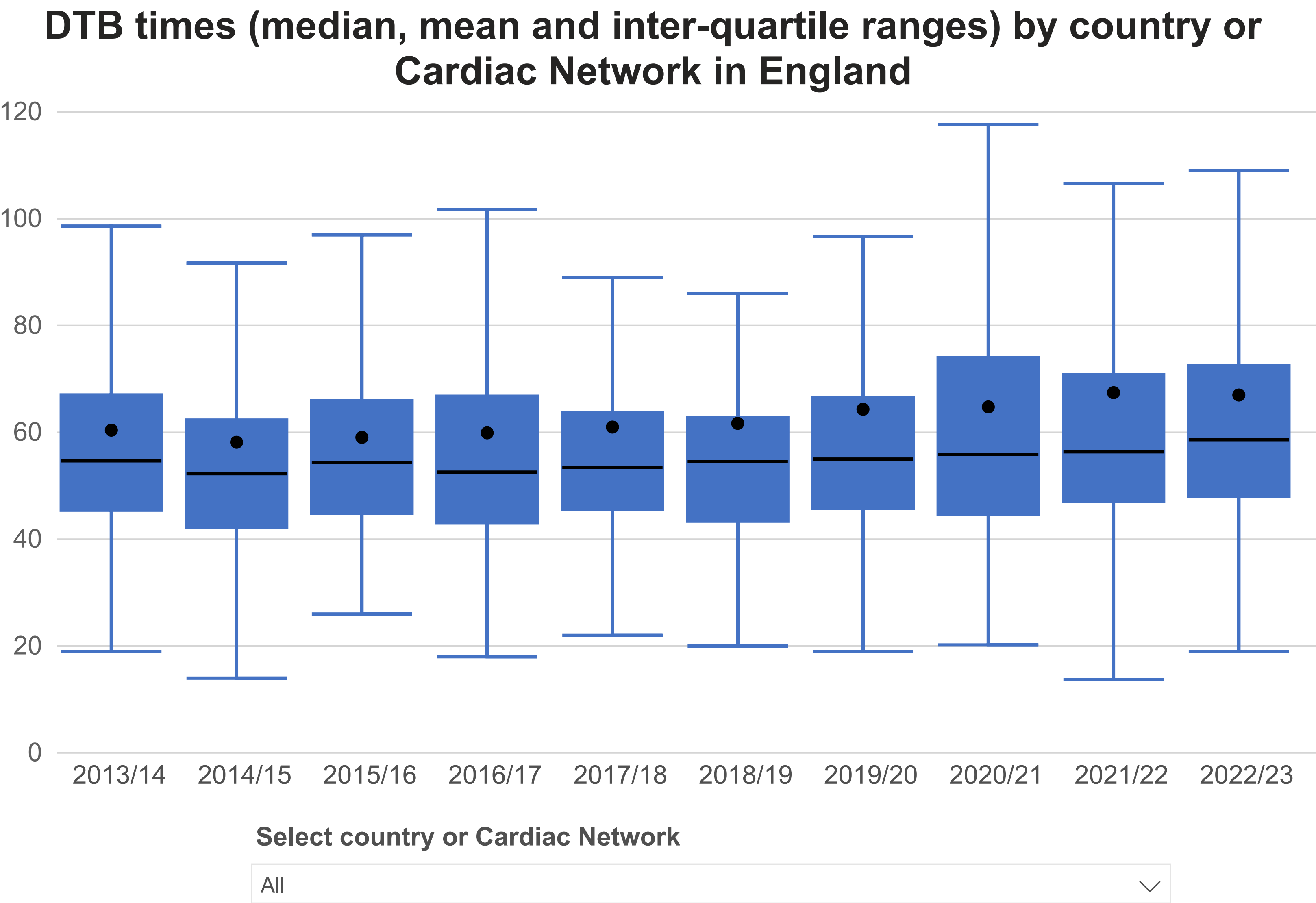
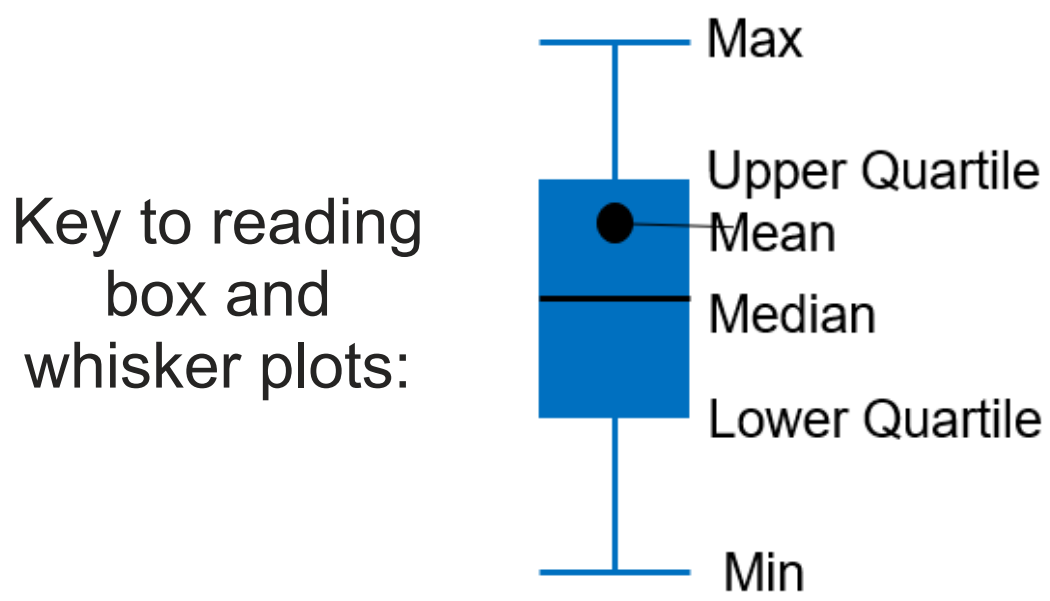
This chart shows Door-To-Balloon (DTB) times at a country level for Northern Ireland and Wales and at Cardiac Network level for England.

Selecting a country or Cardiac Network shows the hospitals in that area which reported data.

Since 2013, the overall median DTB time has risen slowly (from 54 to 58 minutes), while the average has increased from 60 to 67 minutes.

After a marked deterioration in the maximum treatment time during the COVID-19 pandemic, this improved in 2022/23 but not to the levels seen between 2013 and 2019.

The variation between areas, from fastest to slowest treatment times, has also widened.



The new 60-minute Door-To-Balloon targets challenges hospitals to improve their systems and processes so as to shorten time to treatment



While the long-standing Door-To-Balloon (DTB) target time to treat higher-risk STEMI heart attack patients requiring primary percutaneous coronary intervention (PCI) is 90 minutes, the current ambition is to achieve this in 60 minutes from arrival at hospital.

Accepting that some patients will by necessity require care prior to a PCI procedure (e.g. related to initial diagnostic uncertainty or the potential safety of treatment), the aim is for 70% of patients to be treated within the target times.

Thirteen hospitals failed to meet the 90-minute target and 45 hospitals the 60-minute target.

Selecting a country or Cardiac Network below shows the hospitals in that area which reported data.

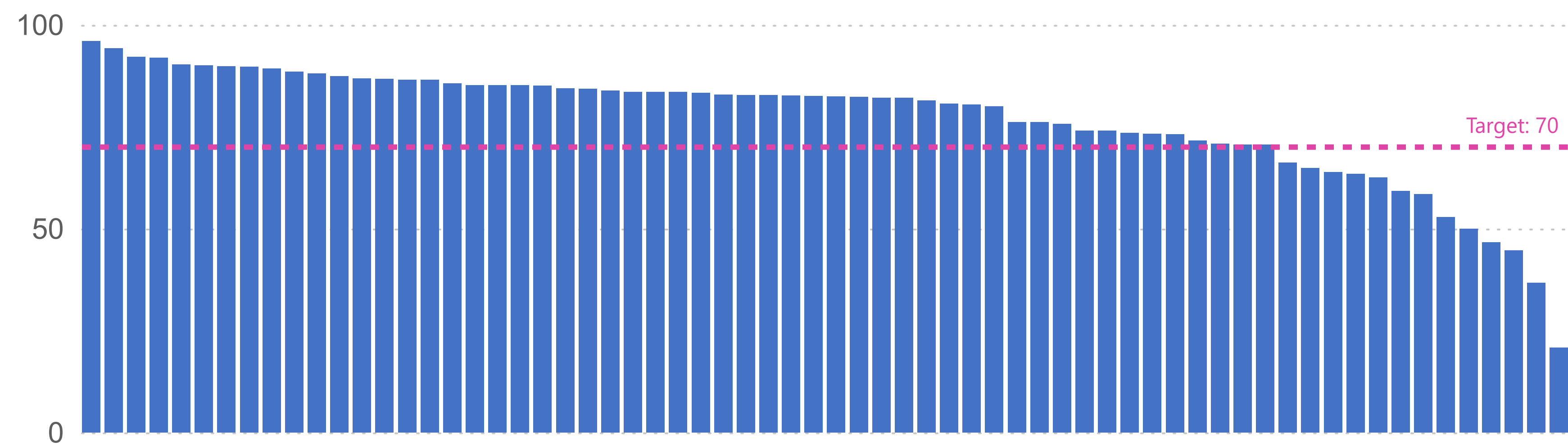
Select country or Cardiac Network

All

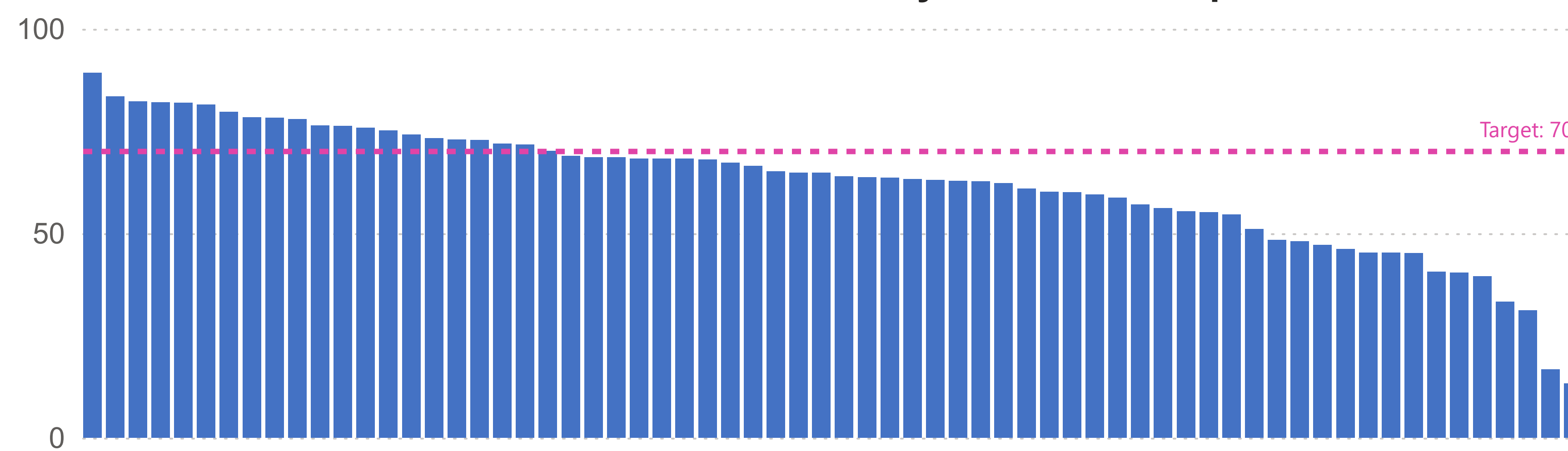
Select hospital

All

Percentage of patients with higher-risk STEMI heart attacks who undergo primary PCI within 90 minutes of arrival by individual hospital



Percentage of patients with higher-risk STEMI heart attacks who undergo primary PCI within 60 minutes of arrival by individual hospital



At country and Cardiac Network levels, CTB times continue to worsen, although there is very significant variation between areas



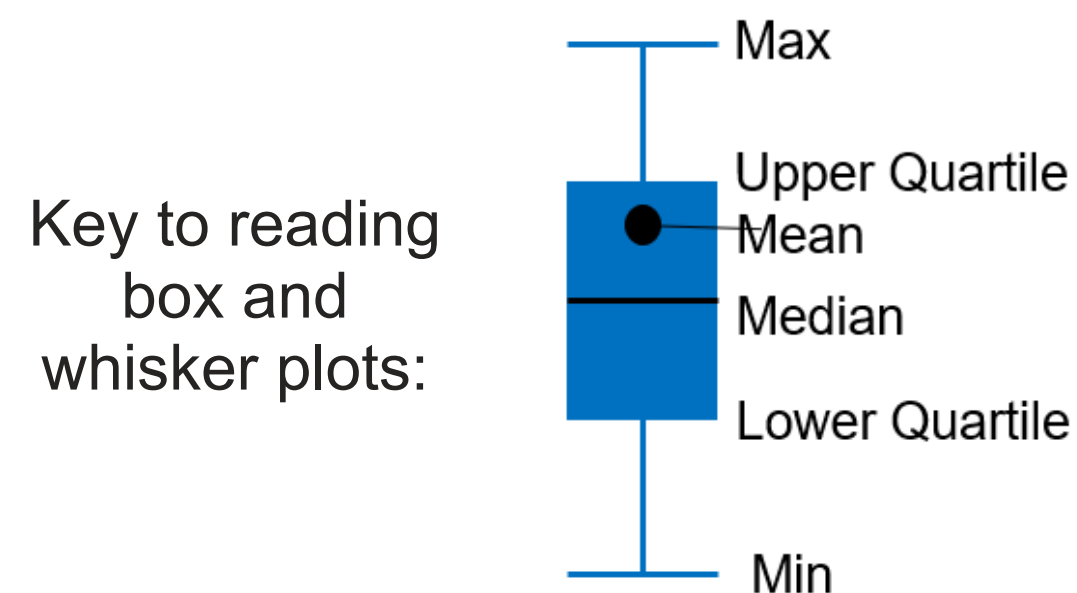
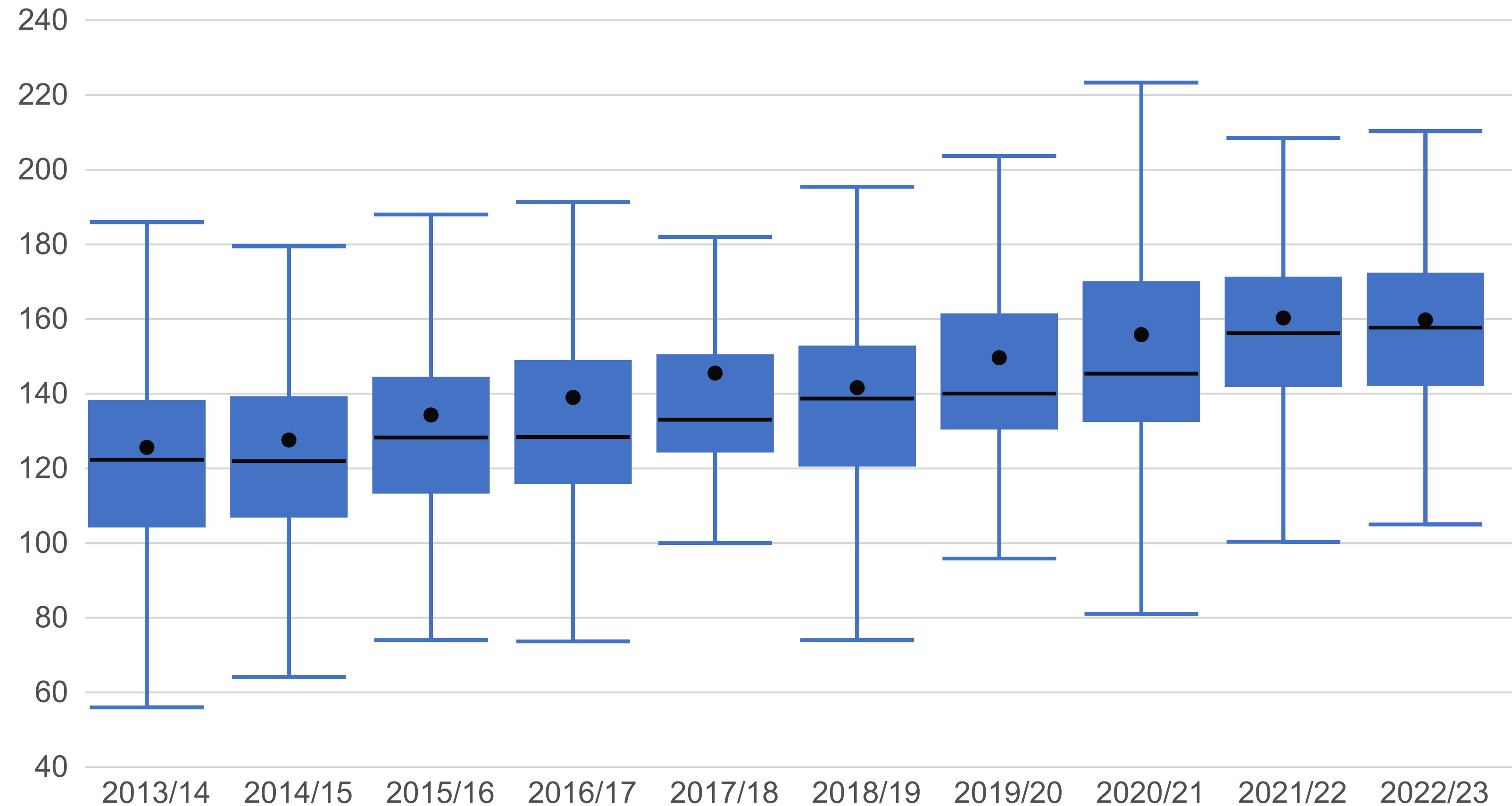
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Selecting a country or Cardiac Network shows the hospitals in that area which reported data.

Longer delays are associated with worse outcomes for patients and, since 2013, the overall median CTB time has risen from 122 to 158 minutes, increasing by a further two minutes in 2022/23.

There is variation in the data by year, but the worsening trends have been seen in all areas. The median times in 2022/23 range from 147 minutes (Northern Ireland) to 177 minutes (Wales).

CTB times (median, mean and inter-quartile ranges) by country or Cardiac Network in England



Select country or Cardiac Network

All



Considerable work is needed in all areas if the new Call-To-Balloon target of treatment within 120 minutes of a call for help is to be met



While the long-standing Call-To-Balloon (CTB) target time to treat higher-risk STEMI patients requiring primary PCI is 150 minutes, the current ambition is to achieve this in 120 minutes from a call for help.

Accepting that there will be clinically appropriate delays for some patients, the aim is for 50% of patients to be treated within the target time.

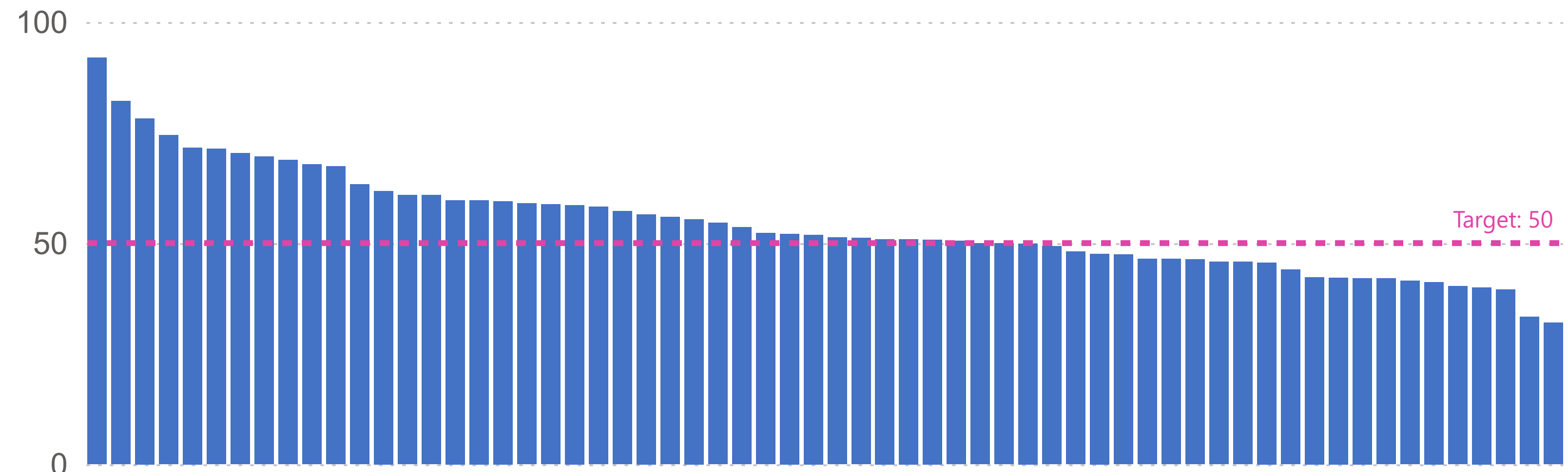
In 2022/23, 40 hospitals treated at least half their patients within 150 minutes (compared to 44 hospitals in 2021/22).

Only four hospitals achieved a CTB time of 120 minutes for more than 50% of patients (compared with 10 hospitals in 2021/22).

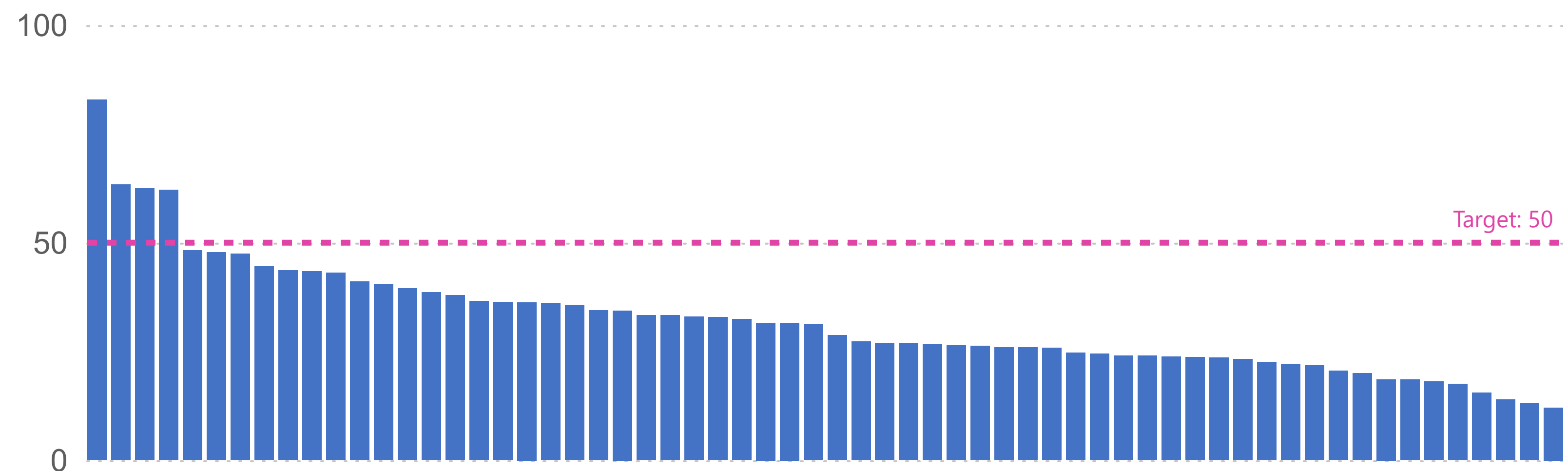
Selecting a country or region below shows the hospitals in that area which reported data.

Select country or Cardiac Network

Percentage of patients who undergo PCI within 150 minutes of a call for help by individual hospital



Percentage of patients who undergo PCI within 120 minutes of a call for help by individual hospital



Some small variations associated with ethnicity can be seen in Call-To-Balloon and Door-To-Balloon times for higher-risk STEMI heart attack patients



Capturing ethnicity data within the MINAP audit depends on self-reporting by patients within a narrow selection of groups.

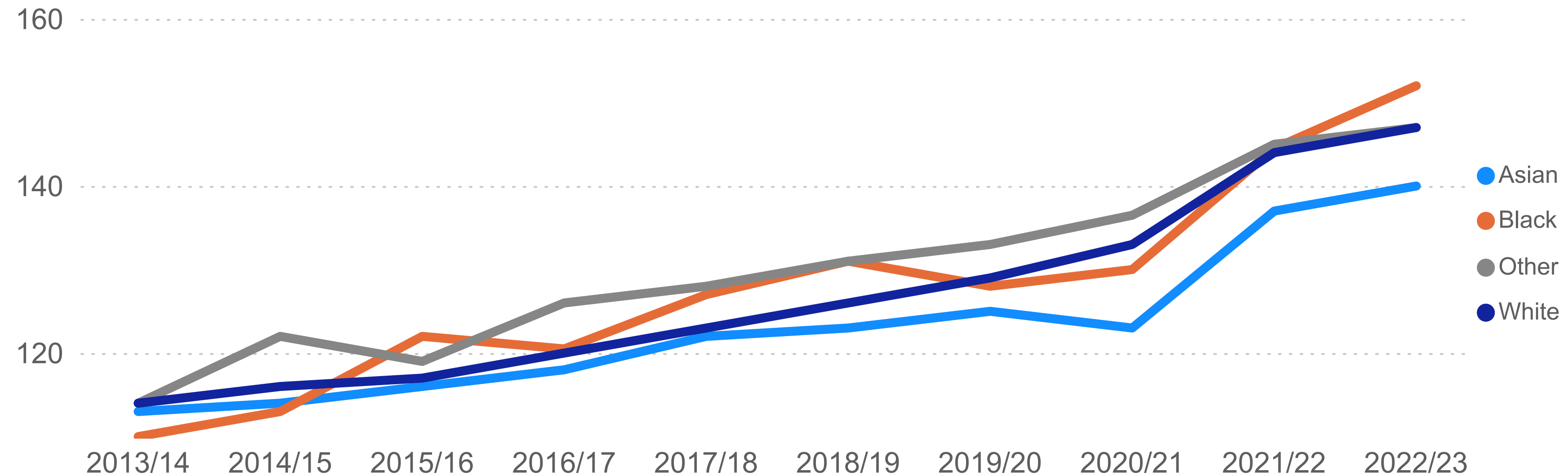
For higher-risk STEMI heart attack patients, those identifying as Asian have slightly shorter median Call-To-Balloon (CTB) times. Those identifying as White tend to have shorter Door-To-Balloon (DTB) times.

These variations may reflect differing patterns of response to the symptoms of heart attack (e.g. differing rates of self-presentation to hospital) and regional variations in ethnic diversity (with lower rates of diversity in rural areas).

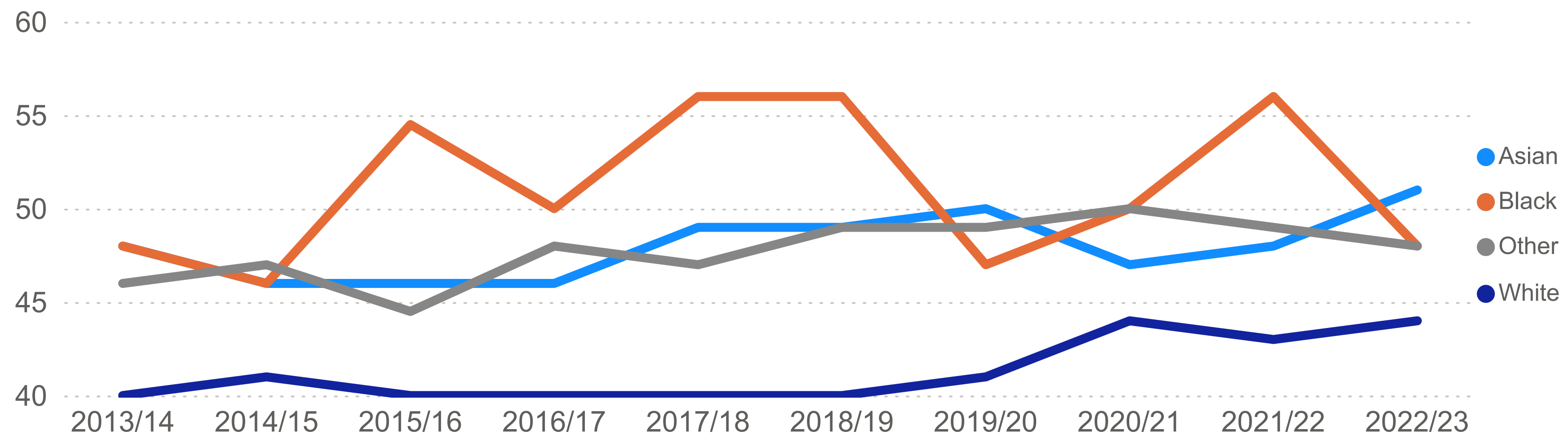
Importantly, the increase in CTB time over this period is seen across all ethnic groups, and the absolute differences in median CTB are very small.

Note: No adjustment has been made for age or gender.

Median CTB times (minutes) by ethnicity



Median DTB times (minutes) by ethnicity



More patients underwent coronary angiography during hospitalisation after NSTEMI but fewer had the investigation within 72 hours of admission



International guidelines recommend that patients presenting with lower-risk NSTEMI heart attacks should undergo angiography imaging prior to discharge, preferably within 72 hours of admission (and within 24 hours for some patients with specific high-risk features).

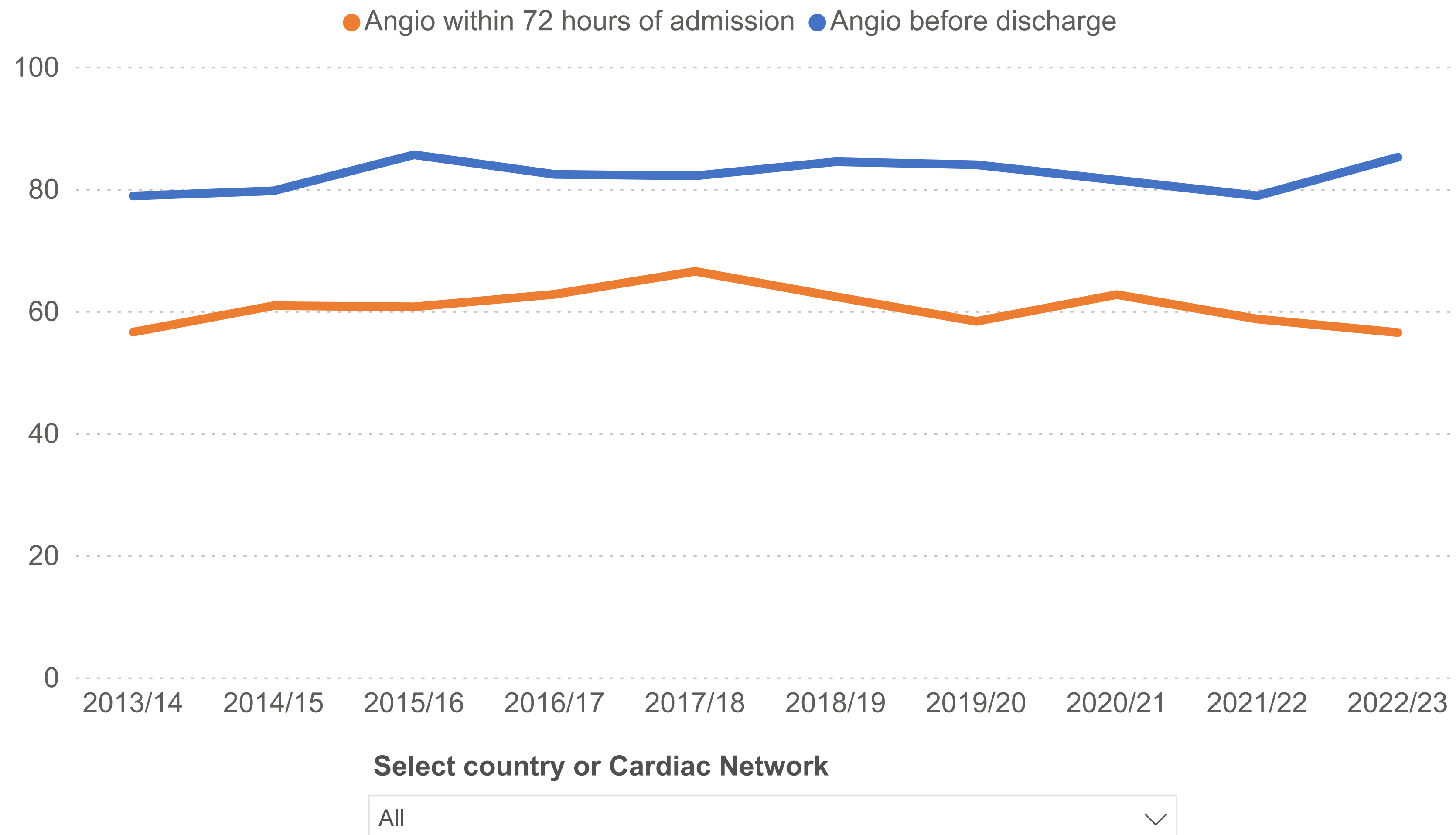
There has been a gradual increase in the percentage of patients who receive angiography in hospital, from 78% in 2013/14 to 84% in 2022/23.

There has been a decline though in the proportion receiving angiography within 72 hours of admission. During the COVID-19 pandemic in 2020/21, the 72-hour percentage increased, helped by the lower number of NSTEMI cases and increased catheter laboratory availability resulting from reduced elective angiography.

As cardiac programmes have returned to pre-pandemic levels of activity, the ability to meet the 72-hour target has fallen.

Selecting a country or Cardiac Network shows the hospitals in that area which reported data.

Percentage of patients receiving timely angiography after presenting with a lower-risk NSTEMI heart attack



Slightly fewer females with lower-risk NSTEMI heart attacks are offered early angiography



Compared with higher-risk patients, a smaller proportion of older people with lower-risk NSTEMI receive angiography within 72 hours of admission.

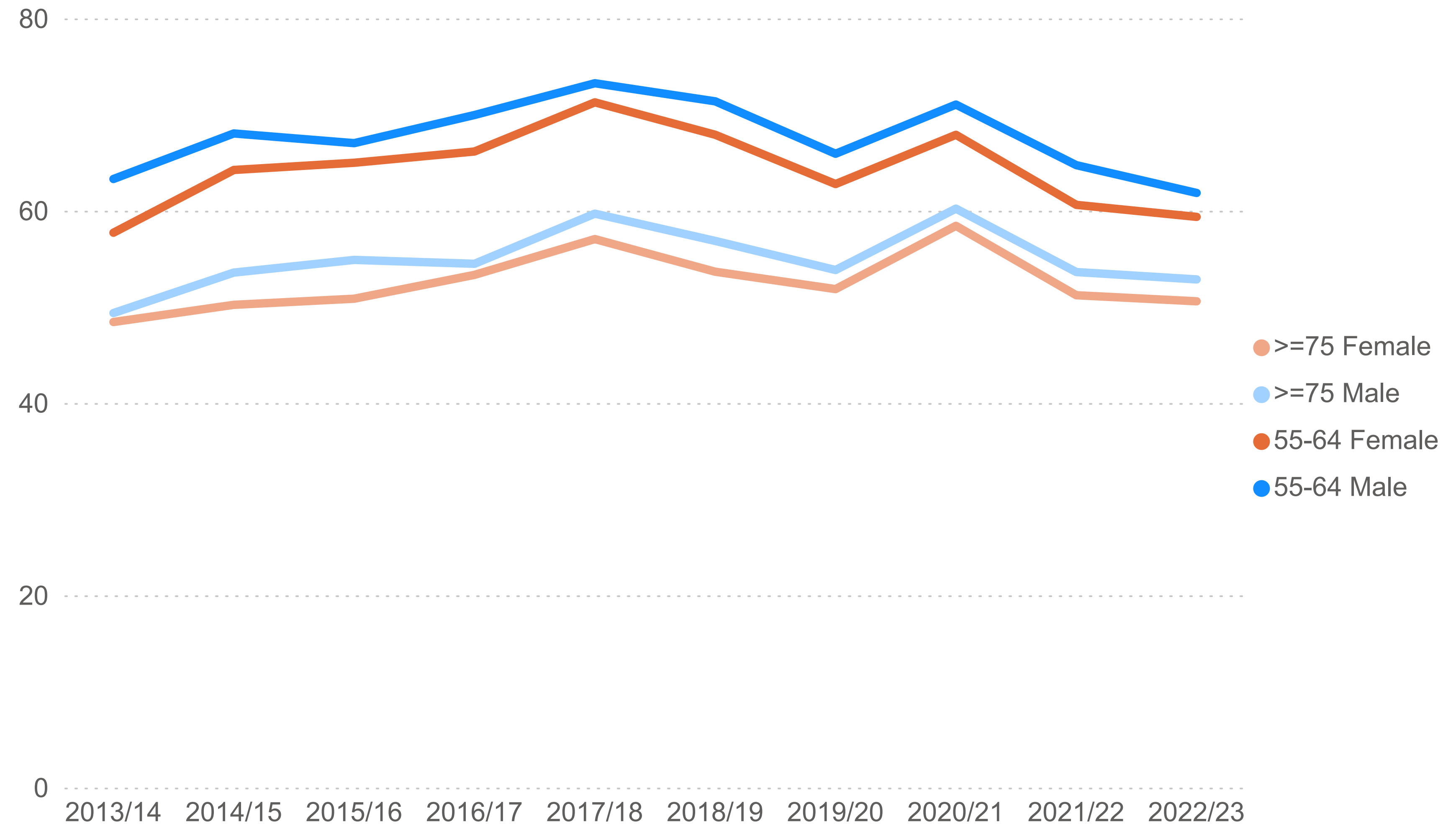
There is a small difference between males and females, with slightly fewer females receiving angiography within the target time.

These data are not adjusted for other factors that might drive the variations, such as:

- diagnostic difficulties relative to different modes of presentation
- clinical status on arrival
- ethnicity
- co-morbidities
- the need for inter-hospital transfer

Consequently, further investigation is desirable to ensure that service providers offer equal opportunities for optimal treatment regardless of gender.

Percentage of NSTEMI patients receiving angiography within 72 hours by age and gender



Some ICBs are not conforming to recommendations for early investigation of patients who have presented with NSTEMI



The maps show the percentage of patients who were NOT investigated using angiography imaging after presenting with lower-risk NSTEMI heart attacks for:

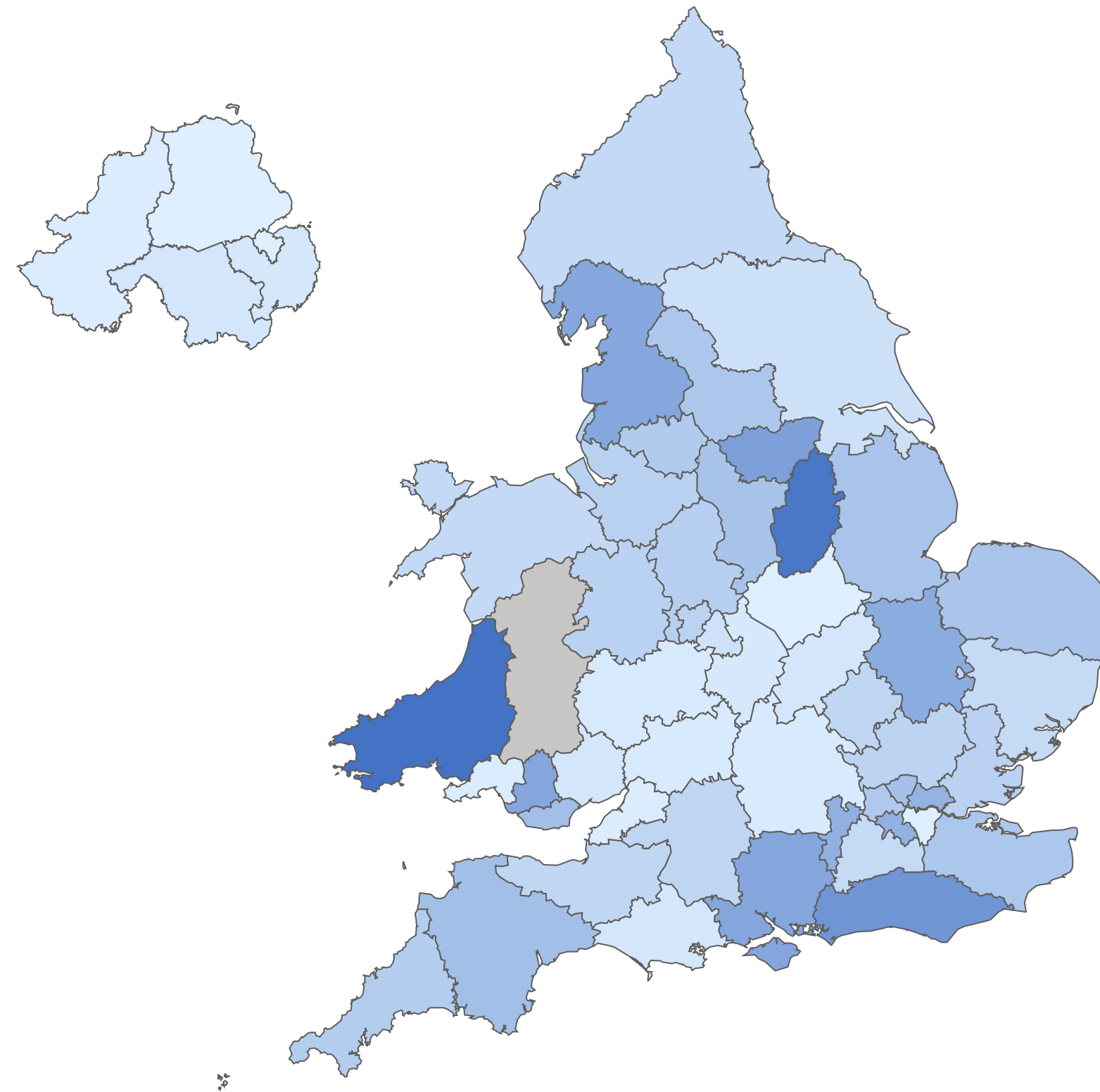
- the 42 Integrated Care Boards (ICBs) in England
- five Health and Social Care Trusts in Northern Ireland
- seven Welsh University Health Boards.

Lighter shades show better levels of performance.

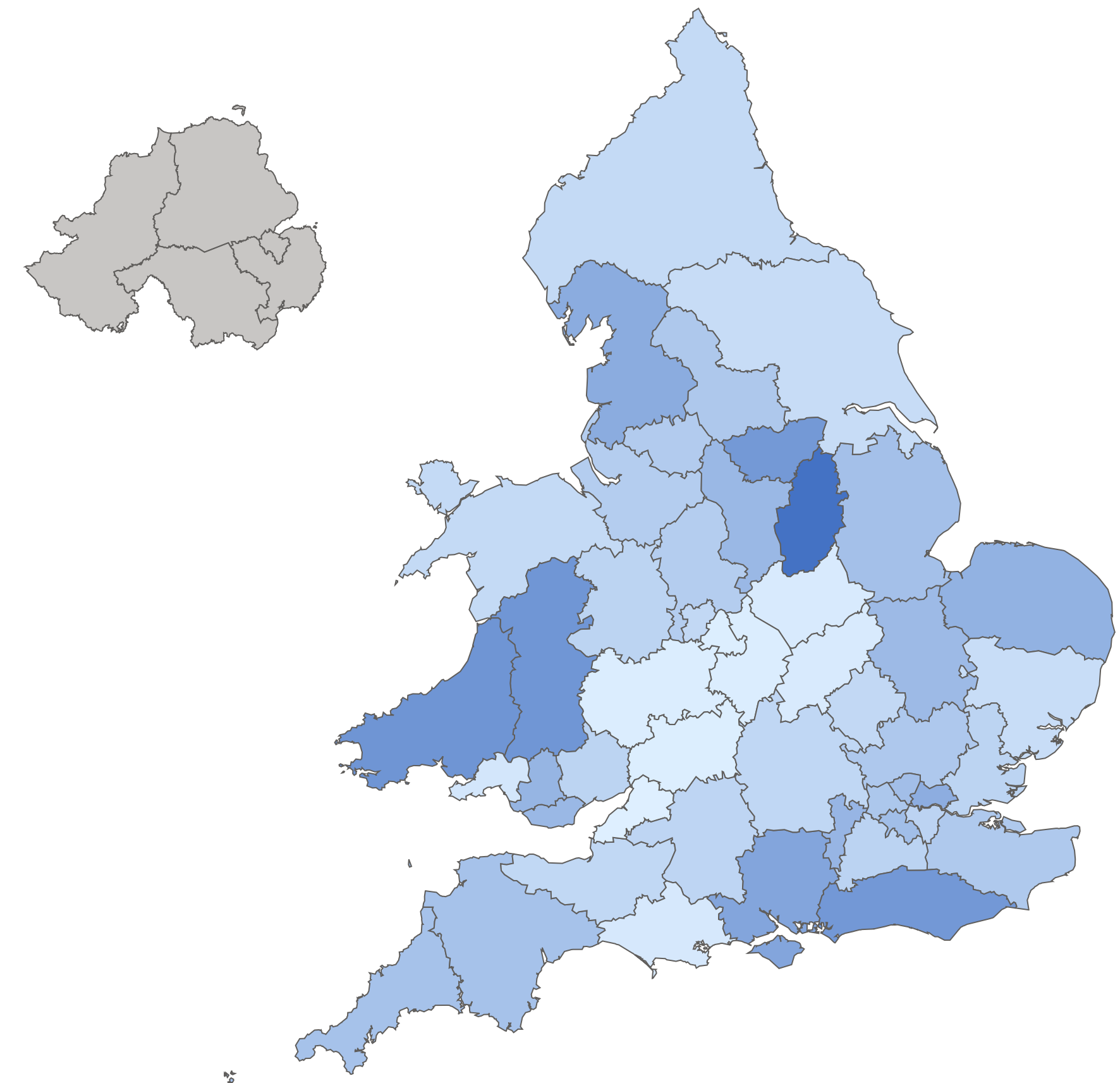
In 2022/23, there were some areas where all patients are investigated and others where virtually no patients are investigated during the initial admission.

Note: Patient home location is not provided for Northern Ireland.

Percentage of NSTEMI patients who DID NOT receive angiography before discharge by ICB/HB based on hospital location (2022/23)



Percentage of NSTEMI patients who DID NOT receive angiography before discharge by ICB/HB based on patient home location (2022/23)



There is considerable variance within and between regions on rates of angiography for patients with NSTEMI



The maps show the percentage of patients who are NOT investigated by angiography imaging within the 72-hour target for:

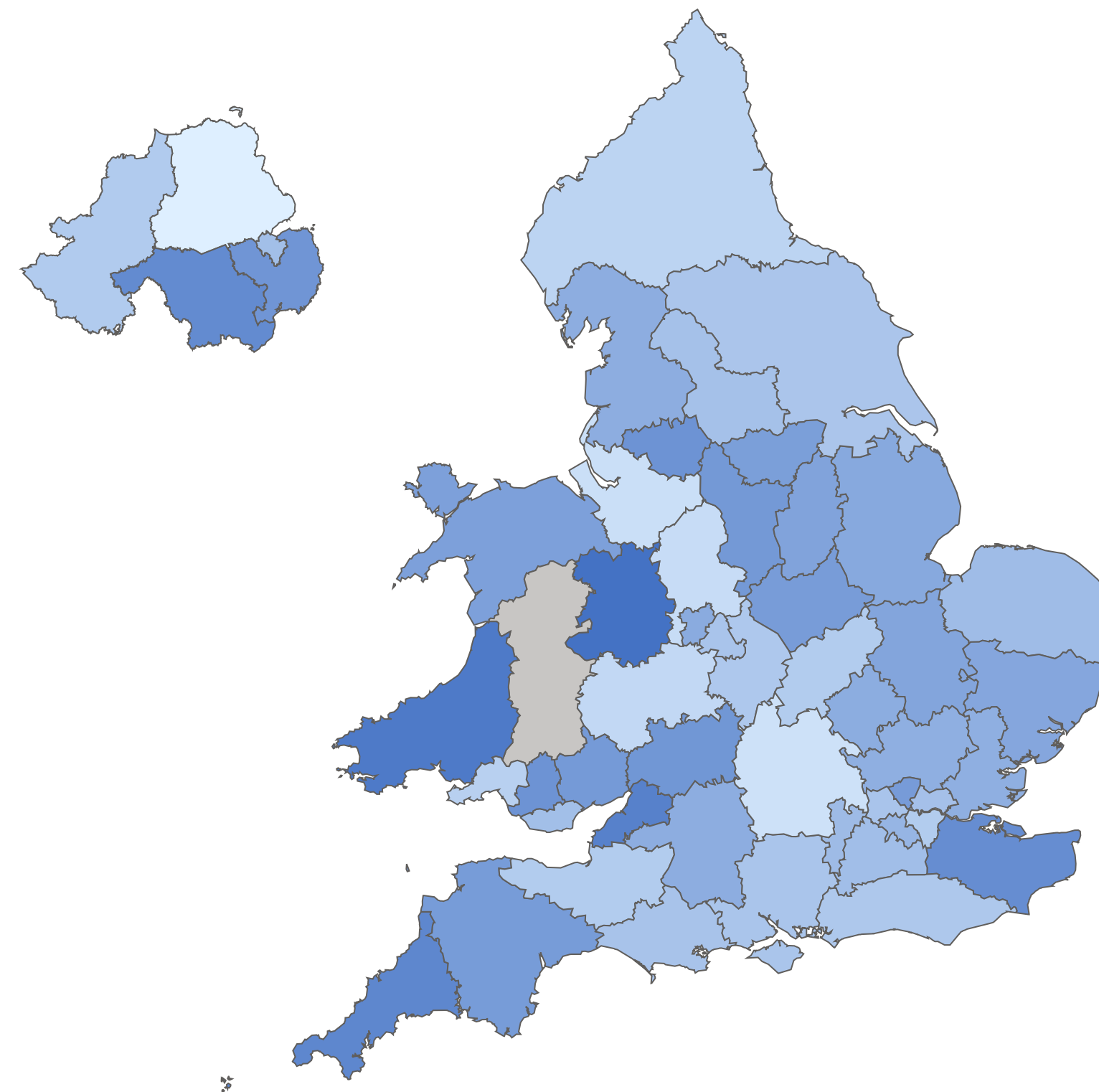
- the 42 Integrated Care Boards (ICBs) in England
- five Health and Social Care Trusts in Northern Ireland
- seven Welsh University Health Boards.

Lighter shades show better levels of performance.

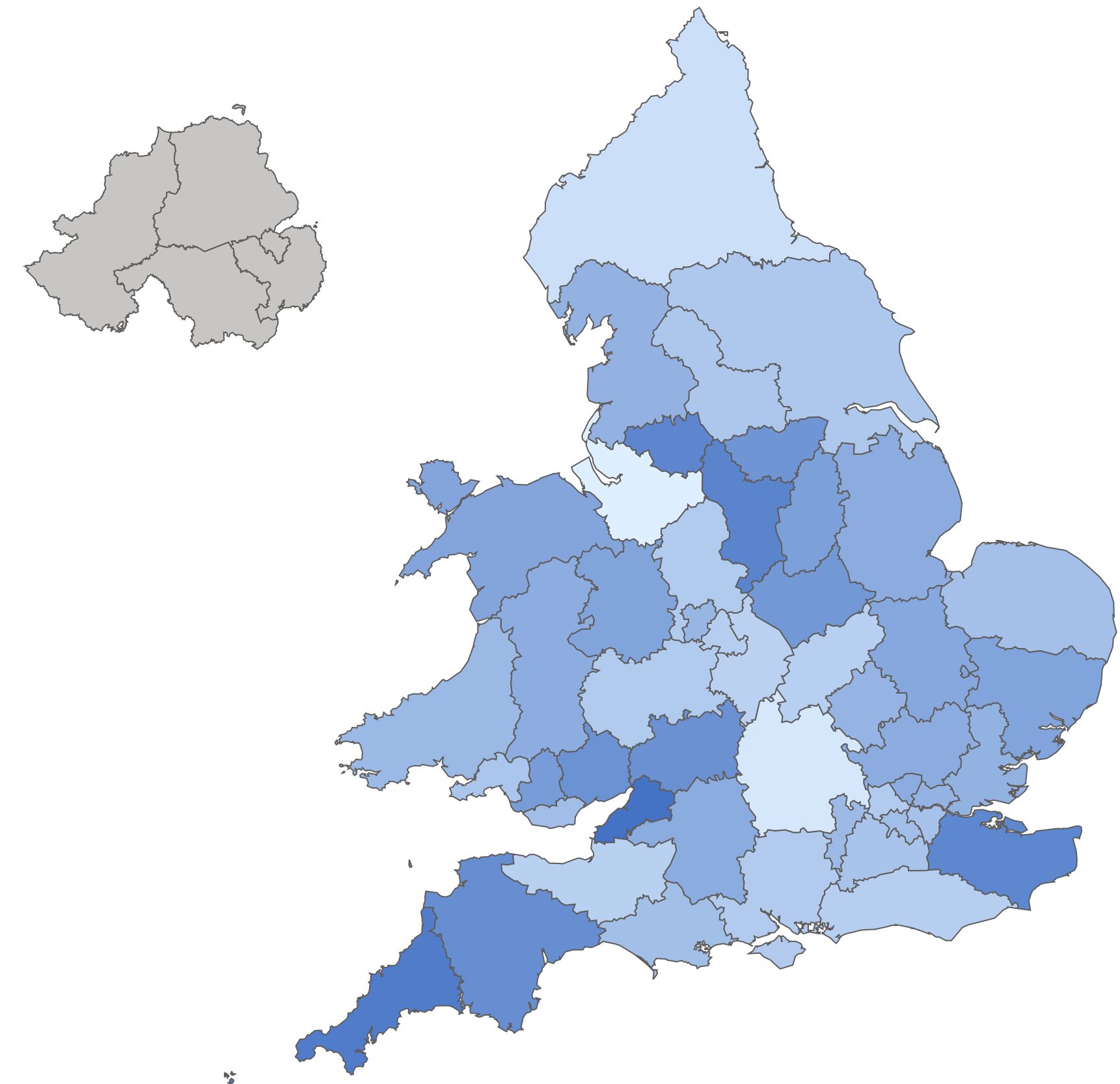
In 2022/23, some areas investigated all or nearly all patients within the timeframe while other areas showed a very poor performance against this standard.

Note: Patient home location is not provided for Northern Ireland.

Percentage of NSTEMI patients NOT receiving angiography within 72 hours of admission based on hospital location by ICB/HB(2022/23)



Percentage of NSTEMI patients NOT receiving angiography within 72 hours of admission based on patient home location by ICB/HB (2022/23)



There is considerable variation in the proportion of patients with NSTEMI who receive an angiogram within 72 hours of arrival at hospital



Ideally, 100% of eligible patients would undergo angiography imaging prior to discharge.

In 2022/23, 84% of all lower-risk NSTEMI heart attack patients underwent angiography prior to discharge. While most hospitals performed above that figure, 80 hospitals fell below that level for their patients.

Across all lower-risk NSTEMI heart attack patients, 58% had an angiography within 72 hours of admission in 2022/23. Almost two thirds of hospitals performed below this figure.

Selecting a country or Cardiac Network shows the hospitals in that area that provided data.

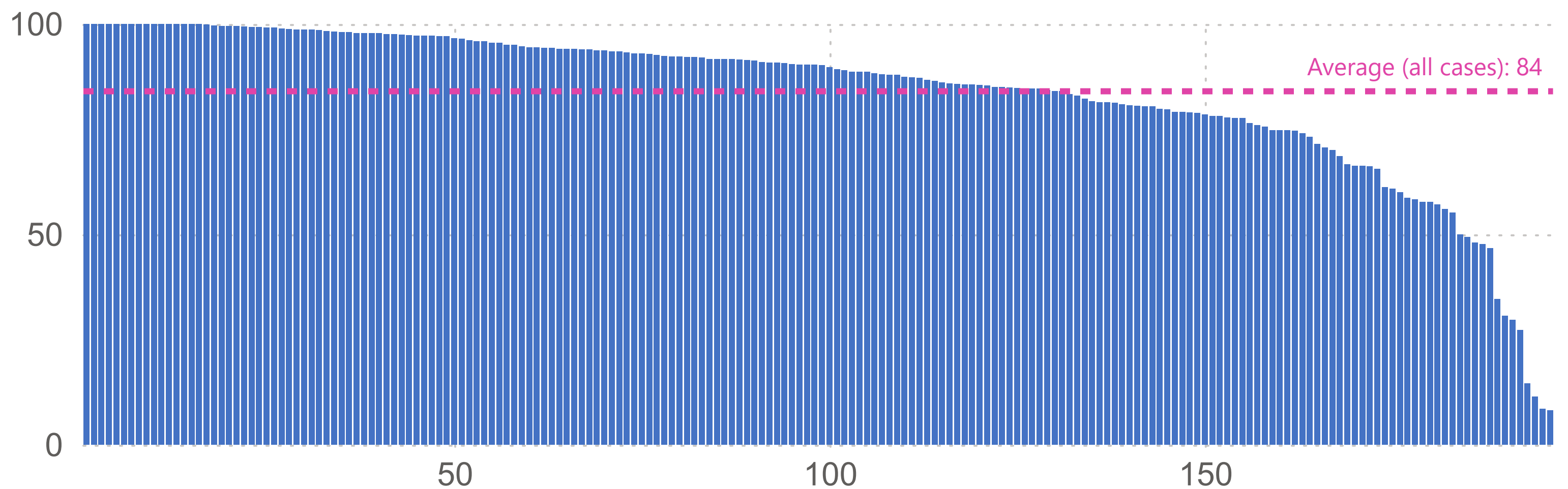
Select country or Cardiac Network

All

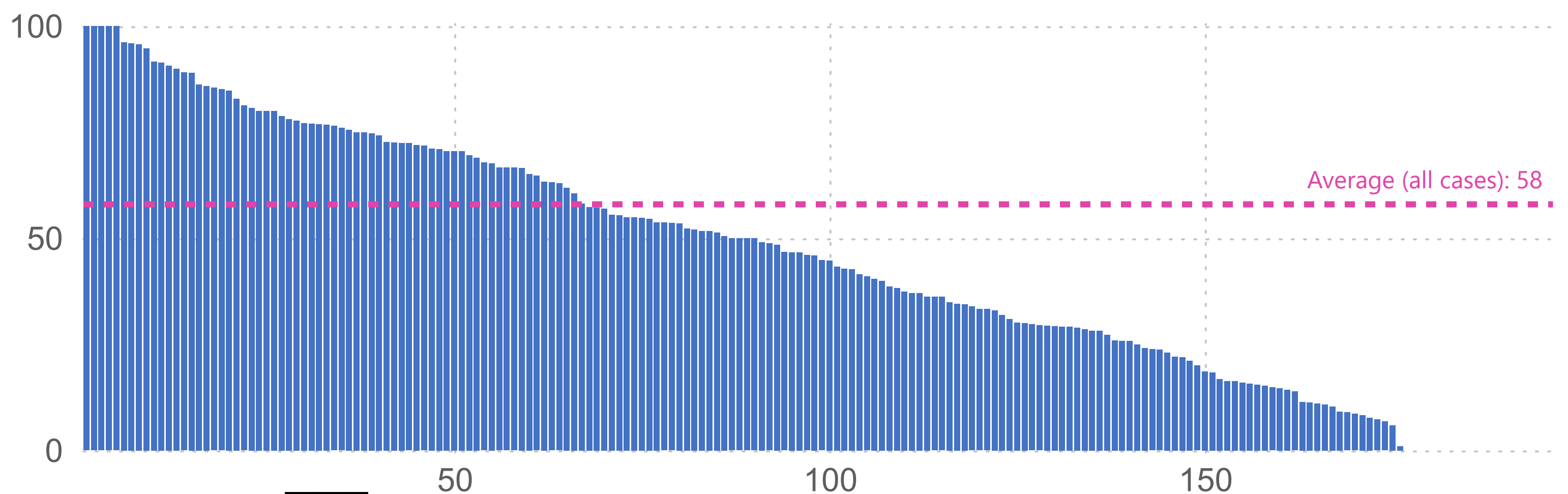
Select hospital

All

Percentage of NSTEMI patients undergoing an angiogram before discharge by hospital



Percentage of NSTEMI patients undergoing an angiogram within 72 hours by hospital



The use of echocardiography after higher-risk STEMI heart attacks has risen steadily but the 90% target level has not been reached across all cases



After a heart attack, all patients should undergo an investigation to evaluate their left ventricular function as this determines treatment strategies.

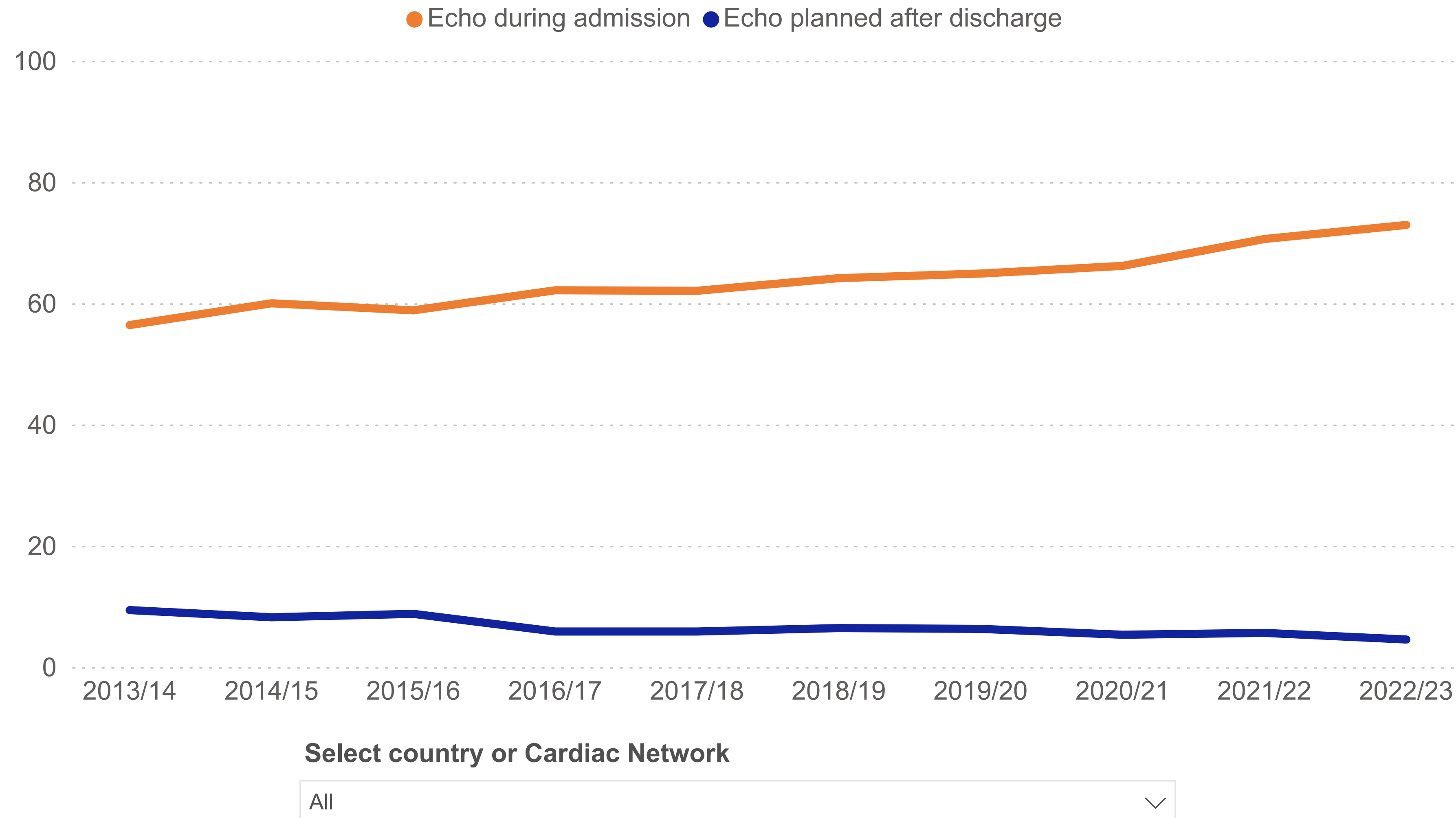
This is most commonly performed by echocardiography, although other techniques are used and some patients do not undergo a test if, for example, they have recently had one and a repeat result will not change treatment decisions.

Based on this, a target of 90% of patients undergoing echocardiography has been set.

Overall, there has been a gradual increase in the use of echocardiography over time, reaching 73% in 2022/23.

However, across different areas, only Northern Ireland has met the 90% target.

Percentage of STEMI patients who underwent echocardiography



Although the use of echocardiography is increasing, most hospitals do not achieve the target for the investigation of patients after a heart attack



A third of hospitals achieve the target of performing echocardiography for at least 90% patients after a heart attack

Fewer than half of hospitals achieve the 90% target for patients with higher-risk STEMI heart attacks.

Selecting a country or Cardiac Network below shows the hospitals in that area which reported data.

Select country or Cardiac Network

All

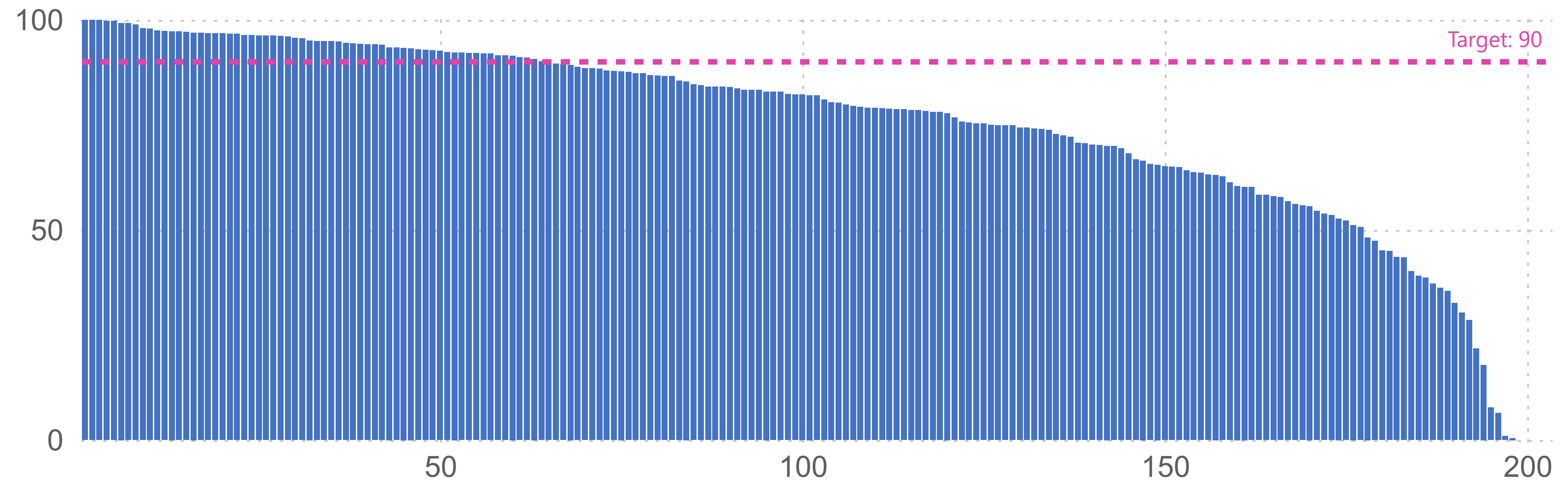


Select hospital

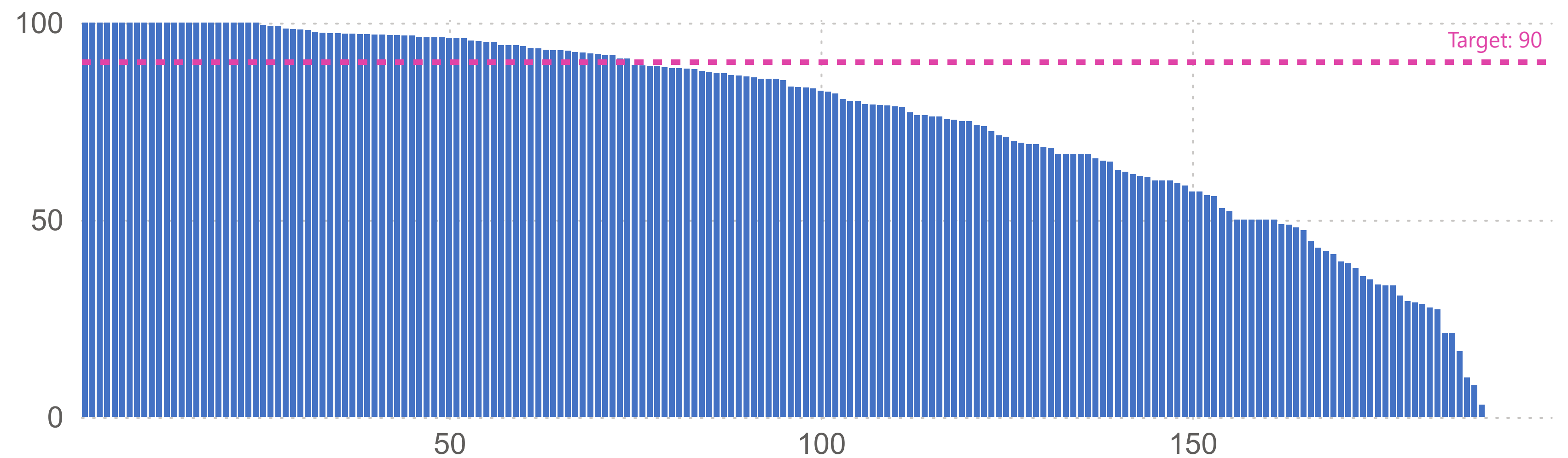
All



Percentage of all heart attack patients undergoing echocardiography by hospital



Percentage of STEMI patients undergoing echocardiography by hospital



Nearly all NSTEMI patients are seen by a specialist cardiology team but more than 40% are not cared for on a cardiology ward



It is expected that patients suffering a heart attack should be:

- cared for on a cardiac ward
- seen by a specialist cardiology team.

Admission to a cardiac ward allows optimal cardiac monitoring and care from highly trained cardiac nursing staff. **There has been a slight rise in the proportion of patients admitted to a cardiac ward from 56% in 2013/14 to 59% in 2022/23.** The rate remains below 60% in six areas.

All patients with lower-risk NSTEMI heart attacks deemed to be caused by an acute coronary event should be reviewed by a specialist cardiology team during their initial admission to ensure increased and more timely access to recommended treatment.

Almost all NSTEMI patients were seen by a specialist in 2022/23, even though for some their care was then provided on a general or other ward.

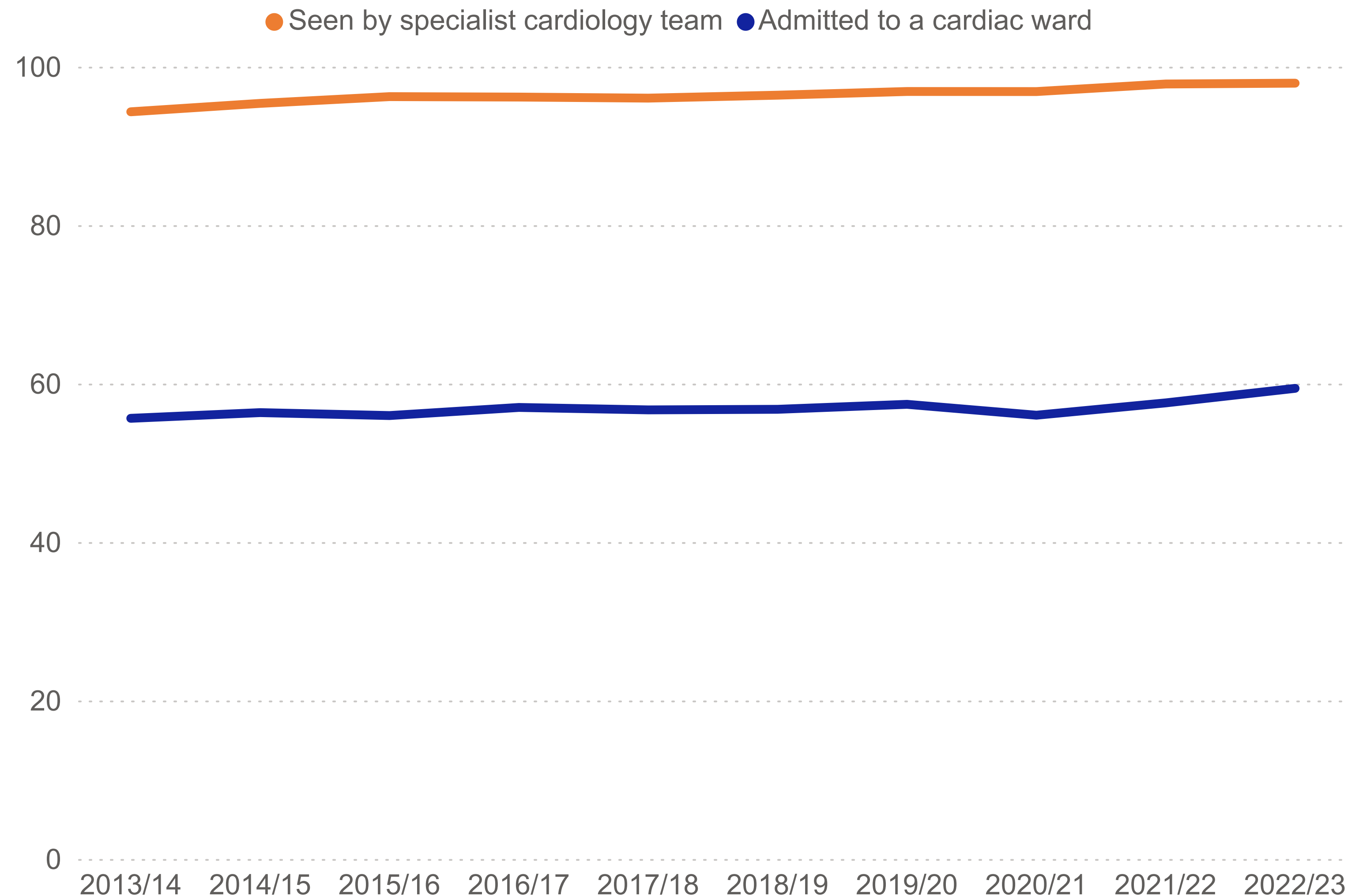
Selecting a country or Cardiac Network below shows the hospitals in that area which reported data.

Select country or Cardiac Network

All



Percentage of NSTEMI patients receiving specialist cardiac care



Many hospitals do not achieve the aim of admitting 80% of NSTEMI patients to a cardiac ward and not all patients are seen by a specialist team



The aspiration is that 80% of patients with a lower-risk NSTEMI heart attack caused by an acute coronary event should be cared for on a cardiac ward.

Although many hospitals have achieved the target for admitting NSTEMI patients to a cardiac ward, more than three quarters have not.

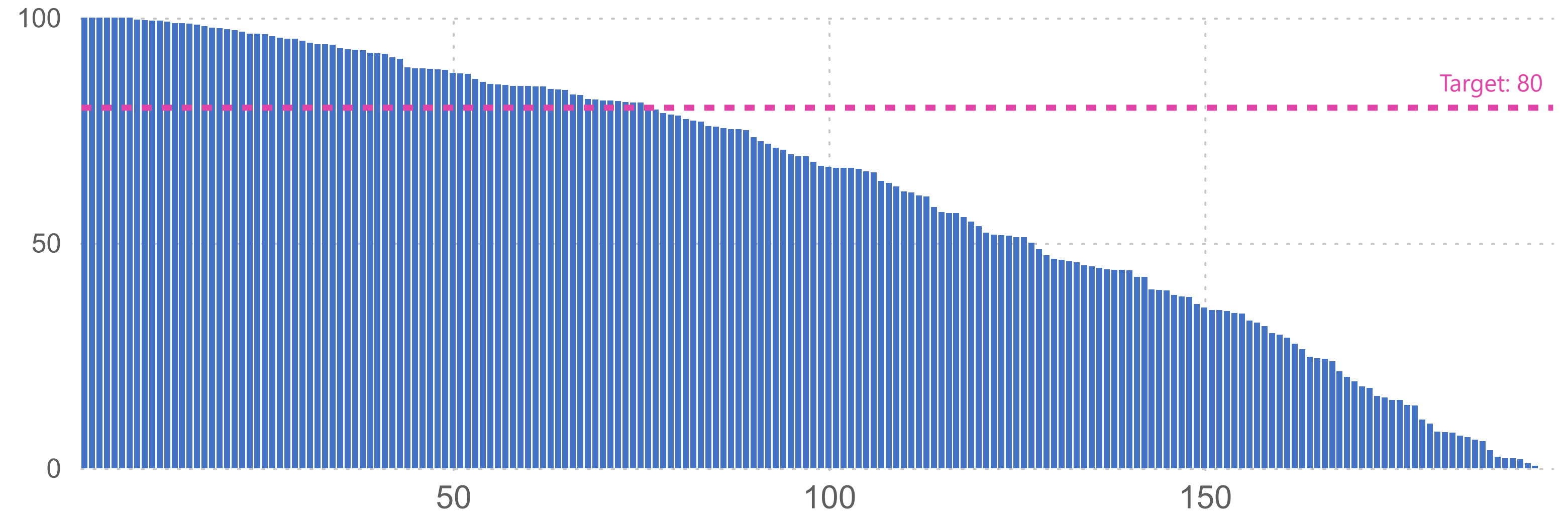
The aspiration for all such patients to be seen by a specialist cardiology team, regardless of their ward of care, has been virtually achieved in the majority of hospitals. Only 23 hospitals achieved this for fewer than 95% of patients.

Selecting a country or Cardiac Network below shows the hospitals in that area which reported data.

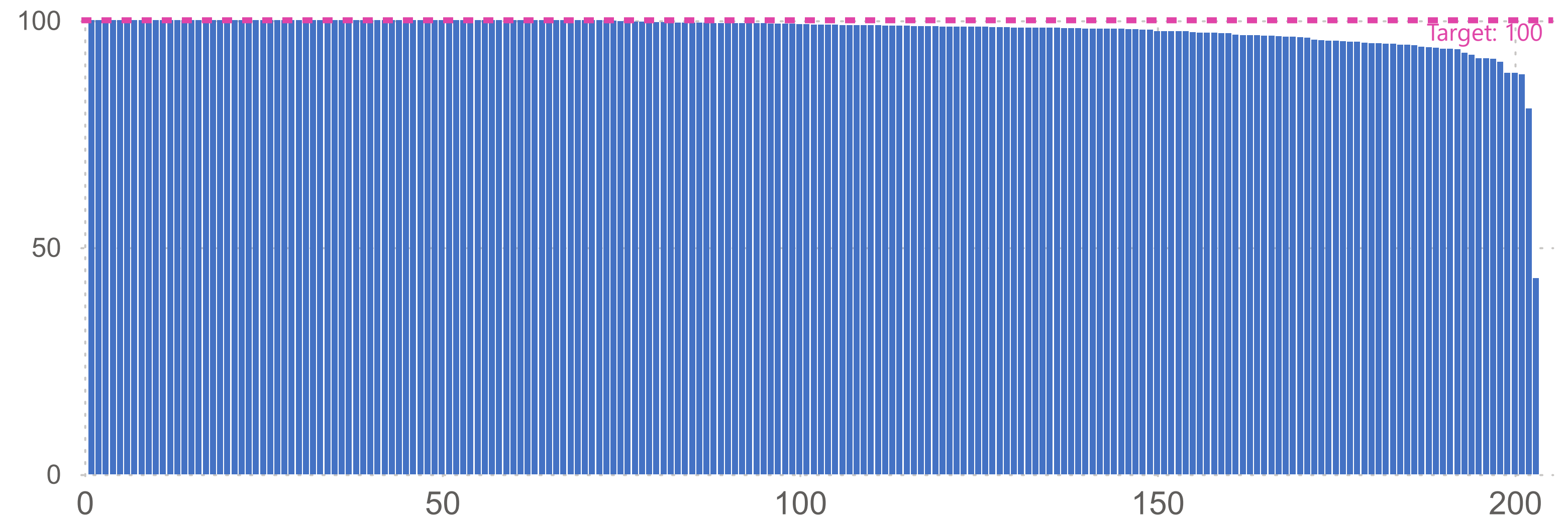
Select country or Cardiac Network

Select hospital

Percentage of NSTEMI patients admitted to a cardiac ward



Percentage of NSTEMI patients receiving specialist cardiology care



There has been a concerning fall in the prescription of secondary prevention medications but an increase in the use of aldosterone antagonists



National guidelines recommend that all heart attack patients should be considered for important secondary prevention drugs that have been shown to improve outcomes (including ACE inhibitors, beta blockers, dual antiplatelet drugs and statins). The audit measures prescribing to those patients who are eligible for these.

In 2022/23, 81% of eligible patients received all secondary prevention drugs for which they were eligible, down from 87% in 2017/18.

Guidelines also recommend that patients with impaired left ventricular function after a heart attack should be considered for an aldosterone antagonist drug. **There has been steady improvement in this with 73% of eligible patients prescribed this class of medication in 2022/23.**

Selecting a country or Cardiac Network below shows the hospitals in that area which reported data.

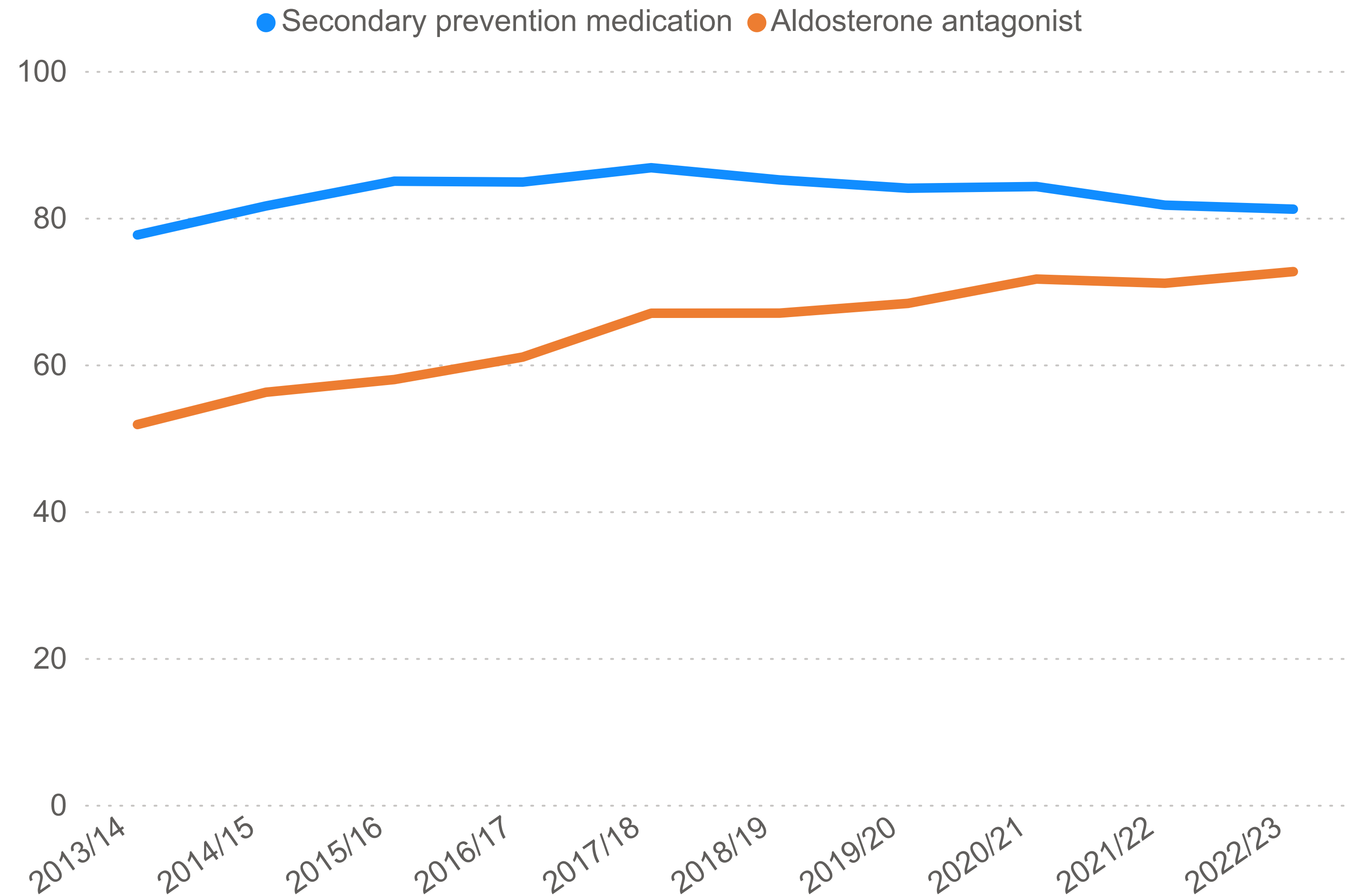
Note: This analysis now assumes that audit data submitted as 'unknown' or left blank means that the drug was not given to an eligible patient.

Select country or Cardiac Network

All



Percentage of eligible heart attack patients receiving guideline drugs



Many patients are being discharged from hospital without being prescribed the secondary prevention medications for which they are eligible



The audit aspiration is for:

- 90% of heart attack patients to be prescribed all the standard secondary prevention medications for which they are eligible
- 90% of patients who are eligible to receive an aldosterone antagonist to be prescribed a medication in this class.

In 2022/23, 89 hospitals failed to reach the secondary medication target and 92 hospitals the aldosterone antagonist target.

Selecting a country or Cardiac Network below shows the hospitals in that area which reported data.

Note: This analysis now assumes that audit data submitted as 'unknown' or left blank means that the drug was not given to an eligible patient.

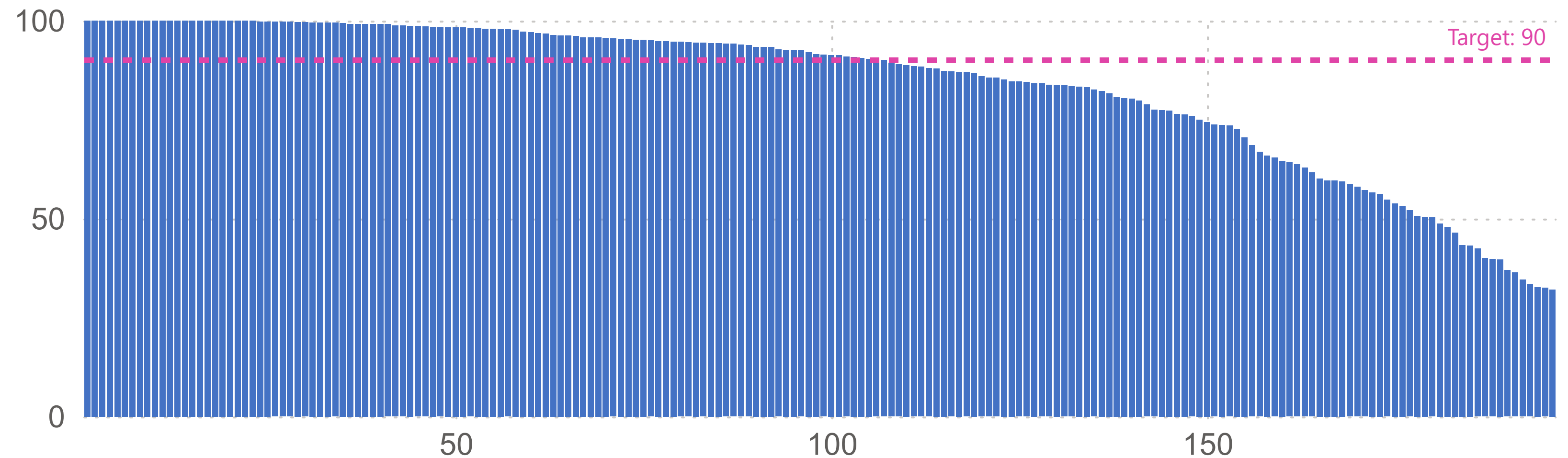
Select country or Cardiac Network

All

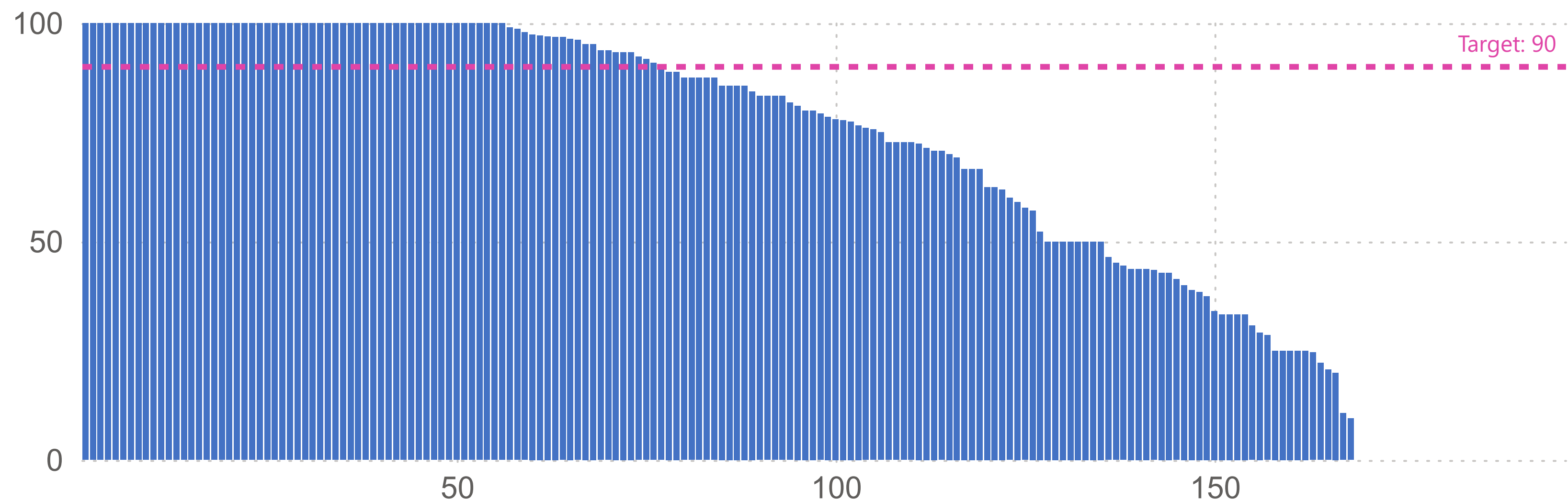
Select hospital

All

Percentage of all eligible heart attack patients receiving secondary prevention medication by hospital



Percentage of all eligible heart attack patients receiving aldosterone antagonists



Most patients are being referred for cardiac rehabilitation at the moment of discharge or when being transferred to another hospital



National guidelines recommend that all patients after heart attack should receive cardiac rehabilitation. This begins during the hospital admission and is normally followed by an invitation to attend an exercise-based outpatient (or virtual) cardiac rehabilitation programme. Such programmes are not suitable for all patients, and not all patients take up the invitation.

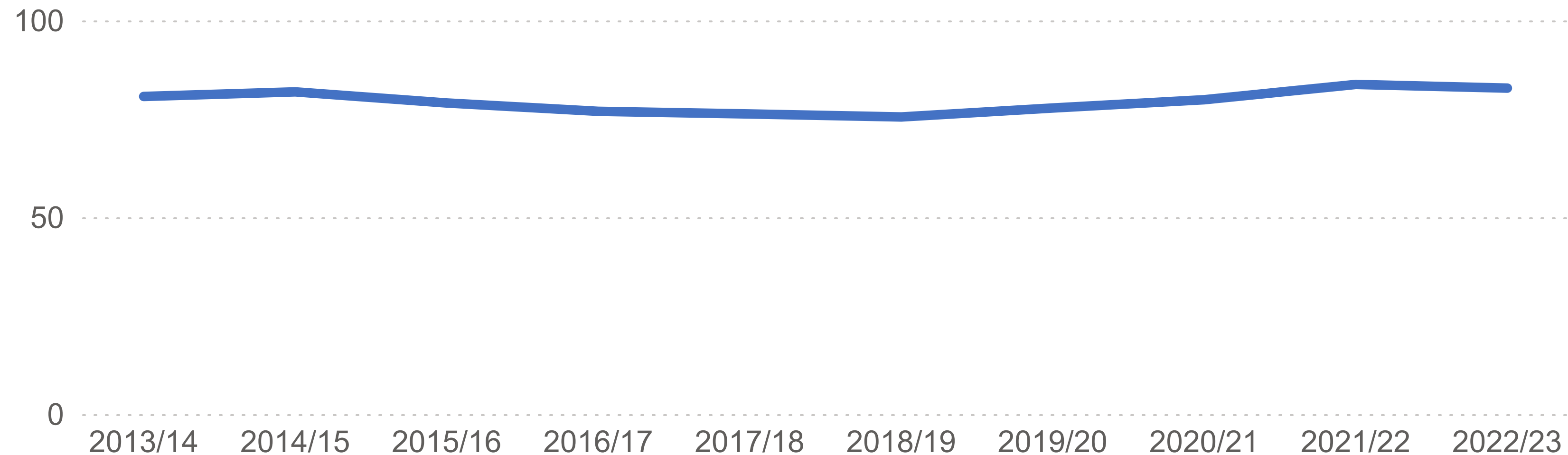
As aimed for by the audit, many hospitals report that at least 85% of patients discharged home or transferred to another hospital for continuing treatment receive an invitation. There are, however, a significant number who do not achieve this level.

Selecting a country or Cardiac Network below shows the hospitals in that area which reported data.

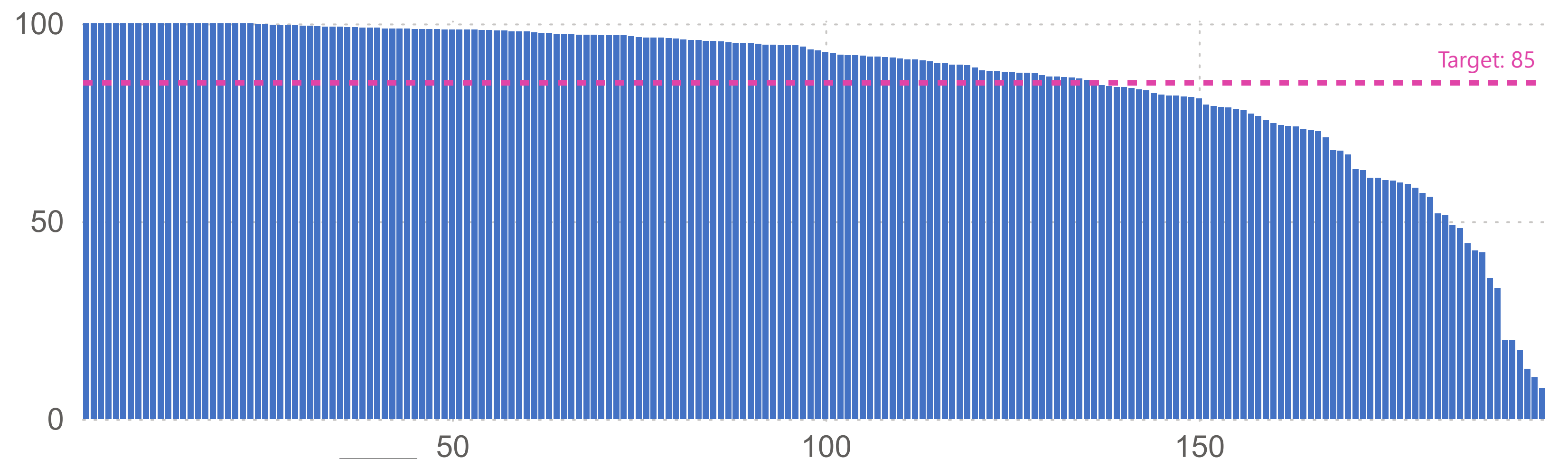
Select a country or Cardiac Network

Select hospital

Percentage of STEMI and NSTEMI patients who were referred for cardiac rehabilitation at point of discharge home or transfer to another hospital



Percentage of all heart attack patients who were been referred for cardiac rehabilitation at point of discharge home or transfer to another hospital





The following pages contain analyses previously contained in the appendices available on the NICOR website. These contain supplemental data which may not be relevant to all users of our report.

Performance of an angiogram



Management of patients admitted to hospital with NSTEMI, with respect to proportion undergoing angiography during index admission, and the proportion undergoing angiogram within 72hr of admission

Hospital	Number of patients eligible for angiogram	Number undergoing angiogram during admission	Proportion of NSTEMI patients undergoing angiogram during admission (%)	Number of patients with valid admission and angiography times	Number of Patients undergoing angiography within 72hrs of admision	Proportion of Patients with angiography within 72hrs of admission (%)
Addenbrooke's Hospital	199	195	0.98	< 20	< 20	
Airedale General Hospital	292	228	0.78	< 20	< 20	
Alexandra Hospital	195	195	1.00	< 20	< 20	
Altnagelvin Area Hospital	239	239	1.00	184	236	0.78
Antrim Area Hospital	257	257	1.00	< 20	< 20	
Arrowe Park Hospital	220	219	1.00	< 20	< 20	
Barnet General Hospital	142	140	0.99	< 20	< 20	
Barnsley Hospital	268	175	0.65	< 20	< 20	
Basildon Hospital	285	248	0.87	44	123	0.36
Basingstoke and North Hampshire Hospital	313	270	0.86	123	261	0.47
Bassetlaw Hospital	83	83	1.00	< 20	< 20	
Bedford Hospital	178	177	0.99	101	161	0.63

Select a cardiac network

All

Select a hospital

All

*Due to unforeseen data quality issues, Kingston Hospital data only include data for the first 3 months of the financial



Performance of an Echocardiogram



Performance of an echocardiogram in patients with a final diagnosis of either STEMI alone, or STEMI and NSTEMI combined, during admission to hospitals in England, Wales and Northern Ireland. The number indicates the number of patients suitable for an echocardiogram and the percentage is the proportion of patients who underwent an echocardiogram. ['<20' indicates that fewer than 20 patients underwent an in-hospital echocardiogram.]

Hospital	STEMI patients	Number of Patients undergoing echo during Admission (STEMI)	Percentage of patients undergoing echo during admission (STEMI)	STEMI & NSTEMI patients	Number of Patients undergoing echo during admission (STEMI & NSTEMI)	Percentage undergoing echo during admission (STEMI & NSTEMI)
Southend University Hospital	94	80	0.85	517	466	0.90
Queen's Hospital, Romford	86	25	0.29	401	296	0.74
Blackpool Victoria Hospital	807	805	1.00	1154	1130	0.98
King George Hospital	80	<20	0.10	362	211	0.58
Papworth Hospital	738	608	0.82	757	622	0.82
Northern General Hospital	733	59	0.08	1085	70	0.06
Barnsley Hospital	72	61	0.85	358	281	0.78
St Bartholomew's Hospital	683	668	0.98	1539	1497	0.97
Countess of Chester Hospital	67	28	0.42	380	301	0.79
New Cross Hospital	668	658	0.99	1094	1032	0.94
Basildon Hospital	662	661	1.00	972	915	0.94
Royal United Hospital Bath	65	62	0.95	410	322	0.79
Royal Victoria Hospital, Belfast	641	617	0.96	920	873	0.95

Select a cardiac network

All

Select a hospital

All

*Due to unforeseen data quality issues, Kingston Hospital data only include data for the first 3 months of the financial



Referral to cardiac rehabilitation



Performance of hospitals with respect to referral of patients with either STEMI or NSTEMI to cardiac rehabilitation programmes. This is expressed both for those discharged home from hospital and for patients either discharged home or transferred to another hospital for further treatment. ['<20' indicates that fewer than 20 patients were referred]

Hospital	Total number of patients discharged home	Number referred at time of discharge home	Proportion of all eligible patients referred (%)	Total number of patients discharged home or transferred	Number referred at time of discharge home or transfer to another hospital	Proportion of all eligible patients referred (%)
▲						
Addenbrooke's Hospital	75	39	0.52	255	190	0.75
Airedale General Hospital	212	212	1.00	369	369	1.00
Alexandra Hospital	179	179	1.00	209	209	1.00
Altnagelvin Area Hospital	293	293	1.00	459	459	1.00
Antrim Area Hospital	222	222	1.00	410	409	1.00
Arrowe Park Hospital	78	67	0.86	311	256	0.82
Barnet General Hospital	110	104	0.95	130	123	0.95
Barnsley Hospital	295	205	0.69	317	216	0.68
Basildon Hospital	888	858	0.97	906	873	0.96
Basingstoke and North Hampshire Hospital	383	376	0.98	393	383	0.97
Bassetlaw Hospital	177	176	0.99	187	186	0.99
Bedford Hospital	184	123	0.67	260	134	0.52
Birmingham City Hospital	359	357	0.99	379	376	0.99

Select a cardiac network

All

▼

Select a hospital

All

▼

*Due to unforeseen data quality issues, Kingston Hospital data only include data for the first 3 months of the financial





Management of patients admitted to hospital with NSTEMI with respect to involvement of a cardiologist and admission to a specialist cardiac ward

Hospital	Total eligible patients	Total number admitted to Cardiac Ward	Percentage admitted to Cardiac Ward	Total number seen by Cardiologist	Percentage seen by Cardiologist
Addenbrooke's Hospital	295	135	0.46	269	0.91
Airedale General Hospital	294	136	0.46	294	1.00
Alexandra Hospital	197	93	0.47	197	1.00
Altnagelvin Area Hospital	254	250	0.98	254	1.00
Antrim Area Hospital	302	268	0.89	302	1.00
Arrowe Park Hospital	347	269	0.78	337	0.97
Barnet General Hospital	142	137	0.96	142	1.00
Barnsley Hospital	277	< 20		271	0.98
Basildon Hospital	291	172	0.59	270	0.93
Basingstoke and North Hampshire Hospital	318	135	0.42	315	0.99
Bassetlaw Hospital	149	122	0.82	149	1.00
Bedford Hospital	260	121	0.47	252	0.97
Birmingham City Hospital	204	160	0.78	204	1.00
Birmingham Heartlands Hospital	620	606	0.98	620	1.00
Brighton and Sussex Medical Centre	338	318	0.94	338	1.00

Select a cardiac network

All

Select a hospital

All

*Due to unforeseen data quality issues, Kingston Hospital data only include data for the first 3 months of the financial year



Discharged on appropriate medications



Performance of hospitals with respect to prescription of secondary prevention medication at time of discharge home to patients with either STEMI or nSTEMI. Performance is not reported when there are fewer than 20 eligible patients. Patients are excluded if they were transferred to another hospital or if they died in hospital. The medication presented in this table includes use of aldosterone antagonists in patients with echocardiographically proven poor left ventricular (LV) function and a combination of: Angiotensin Converting Enzyme (ACE) inhibitors, Angiotensin receptor blockers (ARBs), aspirin, other anti-platelet agents, beta blockers and statins in all patients.

Hospital	Number of patients discharged home	Number of patients discharged on all medication for which they were eligible	Percentage discharged on all medication for which they were eligible
Addenbrooke's Hospital	105	78	0.74
Airedale General Hospital	212	212	1.00
Alexandra Hospital	181	181	1.00
Altnagelvin Area Hospital	298	294	0.99
Antrim Area Hospital	228	215	0.94
Arrowe Park Hospital	112	108	0.96
Barnet General Hospital	123	122	0.99
Barnsley Hospital	293	148	0.51
Basildon Hospital	858	828	0.97
Basingstoke and North Hampshire Hospital	421	398	0.95
Bassettlaw Hospital	178	178	1.00

Select a cardiac network

All

Select a hospital

All

*Due to unforeseen data quality issues, Kingston Hospital data only include data for the first 3 months of the financial year





Delays to treatment reported by those hospitals providing primary PCI for patients admitted directly and those transferred from another hospital with STEMI.

DTB = door to balloon interval

CTB = call to balloon interval

CTB150 = proportion treated within 150 minutes of call for help

CTB120 = proportion treated within 120 minutes of call for help

DTB90 = proportion treated within 90 minutes of arrival at hospital

DTB60 = proportion treated within 60 minutes of arrival at hospital

Median is the time within which 50% of patients were treated (following call for help - CTB Median - and arrival at hospital - DTB Median). Delays are not reported when there were fewer than 20 patients in any particular category. Highlighted Hospitals are those with 20 or more patients. The majority of the hospitals in this table are not designated Heart Attack Centres, designed to be continuously able to receive and treat patients with STEMI with primary PCI. However, some of these (non-Heart Attack Centre) hospitals provide primary PCI opportunistically to a limited number of patients, allowing presentation of a median DTB/CTB even when there are fewer than 20 patients.



Hospital	Out of N (DTB)	Median DTB (mins)	N achieving DTB 60	N achieving DTB 90	Out of N (CTB)	Median CTB (mins)	N achieving CTB 120	N achieving CTB 150
Altnagelvin Area Hospital	209	36.00	161	190	206	146.00	49	109
Basildon Hospital	574	37.00	461	537	516	140.00	167	294
Basingstoke and North Hampshire Hospital	115	37.00	77	97	92	128.00	39	62
Birmingham City Hospital	169	61.00	81	137	142	127.50	58	101
Birmingham Heartlands Hospital	386	59.50	193	290	386	140.50	106	212
Blackpool Victoria Hospital	551	52.00	352	489	477	160.00	64	206
Bradford Royal Infirmary	< 20	3,543.00	< 20	< 20	< 20	2,477.00	< 20	< 20
Bristol Royal Infirmary	128	46.00	83	100	127	170.00	21	47
Calderdale Royal Hospital	< 20	184.00	< 20	< 20	< 20	352.00	< 20	< 20
Castle Hill Hospital	510	31.00	450	485	375	133.00	138	233
Cheltenham General Hospital	222	46.00	132	167	192	145.00	53	86
Conquest Hospital	77	43.00	55	67	70	144.00	24	41
Craigavon Area Hospital	< 20	41.00	< 20	< 20	< 20	105.00	< 20	< 20
Croydon University Hospital	< 20	111.50	< 20	< 20	<20	0.00	<20	
Cumberland Infirmary	146	61.00	62	91	103	159.00	< 20	41
Darent Valley Hospital	< 20	126.00	< 20	< 20	< 20	132.00	< 20	< 20
Derriford Hospital	188	51.00	113	155	188	139.00	71	107

Select a cardiac network

All

Select a hospital

All



Ambulance Trust	Number of all patients with STEMI who received pPCI	Median CTB	Median CTD	Percentage who received primary PCI within 120 mins of calling for help	Percentage who received primary PCI within 150 mins of calling for help
East Midlands	1241	140.00	89	31.83%	58.02%
East Of England	1533	147.00	104	25.51%	51.86%
Isle Of Wight	22	183.00	136	0.00%	22.73%
London	1207	143.00	87	26.35%	56.34%
North East	729	137.00	98	33.20%	57.48%
North West	1906	152.00	97	20.99%	45.86%
Northern Ireland	687	143.00	103	28.24%	55.17%
Republic Of Ireland*	45	145.00	113	31.11%	55.56%
South Central	1081	124.00	81	45.33%	70.21%
South East Coast	1477	146.00	98	23.22%	49.70%
South Western	1352	152.00	97	26.41%	46.52%
Welsh	496	172.00	128	18.35%	35.28%
West Midlands	1712	136.00	79	32.30%	58.94%
Yorkshire	1216	142.50	96	27.30%	54.28%



Case ascertainment rates are expressed at a NHS Trust level with audit participation displayed for constituent hospital sites. Case ascertainment is expressed as a ratio of the number of cases submitted to the MINAP database to the number coded as myocardial infarction (in the Hospital Episode Statistics (HES) data provided by NHS Digital in England.

NICOR Submit the following inclusion criteria to NHS Digital with respect to ICD 10 Codes:

Stringent criteria :

STEMI: all patients discharged with final diagnosis of STEMI – identified by the presence of the following ICD 10 codes IN ANY POSITION:

- I21.0 ST elevation (STEMI) myocardial infarction of anterior wall;
- I21.1 ST elevation (STEMI) myocardial infarction of inferior wall;
- I21.2 ST elevation (STEMI) myocardial infarction of other sites;
- I21.3 ST elevation (STEMI) myocardial infarction of unspecified site

NSTEMI : all patients discharged with final diagnosis of NSTEMI – identified by the presence of the following code IN THE FIRST POSITION:

- I21.4 Non-ST elevation (NSTEMI) myocardial infarction.

Non-Stringent criteria :

STEMI :all patients discharged with final diagnosis of STEMI – identified by the presence of the following ICD 10 codes IN ANY POSITION

- I21.0 ST elevation (STEMI) myocardial infarction of anterior wall;
- I21.1 ST elevation (STEMI) myocardial infarction of inferior wall;
- I21.2 ST elevation (STEMI) myocardial infarction of other sites;
- I21.3 ST elevation (STEMI) myocardial infarction of unspecified site;
- I21.9 Acute myocardial infarction (unspecified)
- I22.0 Subsequent ST elevation (STEMI) myocardial infarction of anterior wall;
- I22.1 Subsequent ST elevation (STEMI) myocardial infarction of inferior wall;
- I22.8 Subsequent ST elevation (STEMI) myocardial infarction of other sites;
- I22.9 Subsequent ST elevation (STEMI) myocardial infarction of unspecified site;

Case ascertainment for England



Hospital	NHS Trust	STEMI cases	NSTEMI cases	Total Trust MINAP Submissions (N)	HES cases – Stringent (N)	Case Ascertainment -Stringent (%)	HES cases – Non Stringent (N)	Case Ascertainment - Non Stringent (%)
ADDENBROOKE'S HOSPITAL	CAMBRIDGE UNIVERSITY HOSPITALS NHS FOUNDATION TRUST	16	295	311	442	70.36	769	40.44
AIREDALE GENERAL HOSPITAL	AIREDALE NHS FOUNDATION TRUST	78	294	372	380	97.89	498	74.70
ALEXANDRA HOSPITAL	WORCESTERSHIRE ACUTE HOSPITALS NHS TRUST	16	197	213	330	64.55	429	49.65
ARROWE PARK HOSPITAL	WIRRAL UNIVERSITY TEACHING HOSPITAL NHS FOUNDATION TRUST	50	347	397	327	121.41	504	78.77
BARNET GENERAL HOSPITAL	ROYAL FREE LONDON NHS FOUNDATION TRUST	2	142	144	224	64.29	286	50.35
BARNSLEY HOSPITAL	BARNSLEY HOSPITAL NHS FOUNDATION TRUST	81	277	358	365	98.08	546	65.57

Select a cardiac network

All

Select a hospital

All

*Due to unforeseen data quality issues, Kingston Hospital data only include data for the first 3 months of the financial



Case ascertainment for Wales



Hospital	Local Health Board	STEMI cases	NSTEMI cases	Total MINAP Submissions (n)	PEDW cases Stringent (N)	Case Ascertainment - Stringent (%)	PEDW cases Non-Stringent (N)	Case Ascertainment – Non Stringent (%)
Morryston Hospital	Swansea Bay University Health Board	425	687	1112	894	124.38	1072	103.73
Grange University Hospital	Aneurin Bevan University Health Board	183	441	624	483	129.19	614	101.63
Prince Charles Hospital	Cwm Taf University Health Board	31	262	293	297	98.65	380	77.11
Glan Clwyd Hospital	Betsi Cadwaladr University Health Board	384	256	640	760	84.21	998	64.13
Wrexham Maelor Hospital	Betsi Cadwaladr University Health Board	29	250	279	319	87.46	421	66.27
University Hospital of Wales	Cardiff and Vale University Health Board	470	249	719	867	82.93	1039	69.20
Ysbyty Gwynedd	Betsi Cadwaladr University Health Board	48	168	216	265	81.51	344	62.79
Royal Glamorgan Hospital	Cwm Taf University Health Board	48	165	213	240	88.75	320	66.56
Princess of Wales Hospital	Cwm Taf University Health Board	25	137	162	159	101.89	189	85.71
Glangwili General Hospital	Hywel Dda University Health Board	24	135	159	171	92.98	216	73.61
Prince Philip Hospital	Hywel Dda University Health Board	8	70	78	60	130.00	106	73.58
Bronglais General Hospital	Hywel Dda University Health Board	14	48	62	76	81.58	98	63.27
University Hospital Llandough	Cardiff and Vale University Health Board	7	37	44	66	66.67	149	29.53
Withybush General Hospital	Hywel Dda University	1	14	15	113	13.27	141	10.64