Statistical Note: Ambulance Quality Indicators (AQI)

In England, for all four categories, the average response times in November 2023 were shorter than in October 2023, but longer than the averages for 2023-24 so far.

The average time from 999 call to clinical intervention for STEMI (a type of heart attack) in July 2023 was the shortest for two years.

Today's published AmbSYS spreadsheet includes data on ambulance handovers to hospitals for the first time.

1.   Ambulance Systems Indicators (AmbSYS)

1.1   Response times

For England, the mean average response time in November 2023 for C1, the most urgent Category, was 8 minutes 32 seconds, and the 90th centile time was 15:08, longer than the standards[1] of 7 and 15 minutes. Both times were 1% longer than the figures for 2023-24 so far, but 8% shorter than the figures for 2022-23. (Figure 1)

For C1T (time to the arrival of the transporting vehicle for C1 incidents), the average was 10:31, and the 90th centile was 19:07.
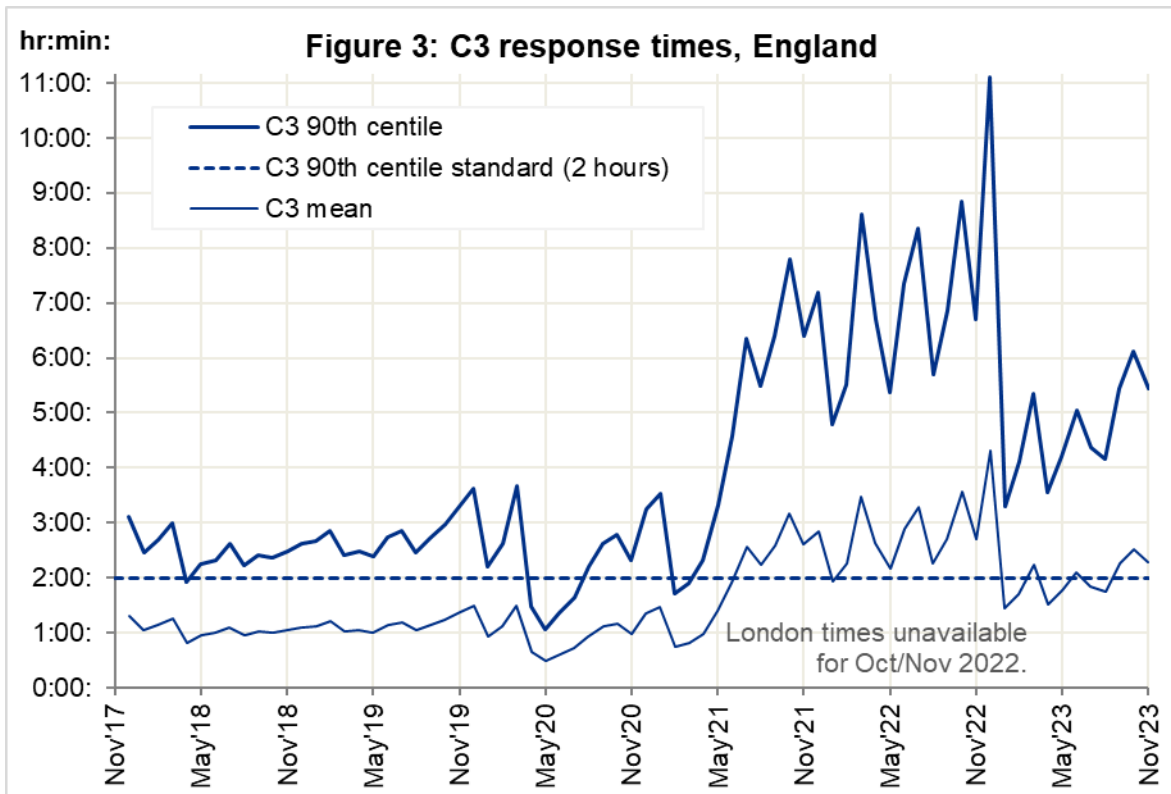

Figure 1: C1 response times, England
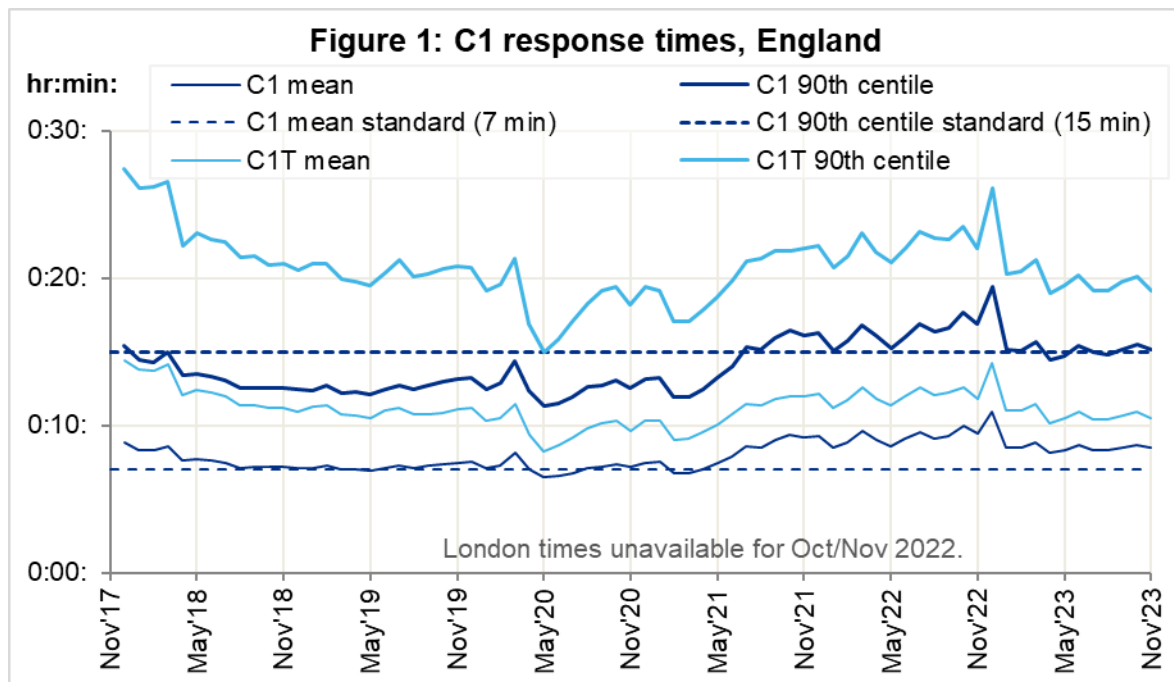
Today we publish revisions to AmbSYS data from October 2022 to October 2023. The C2 average for February 2023 was revised down by 15 seconds (0.8%) to 32:20; revisions to other C1 to C4 response times at England level were all less than a quarter of a percent. We describe revisions to other indicators on page 4.

---

[1] Standards in the NHS Constitution Handbook: www.gov.uk/government/publications/supplements-to-the-nhs-constitution-for-england/the-handbook-to-the-nhs-constitution-for-england
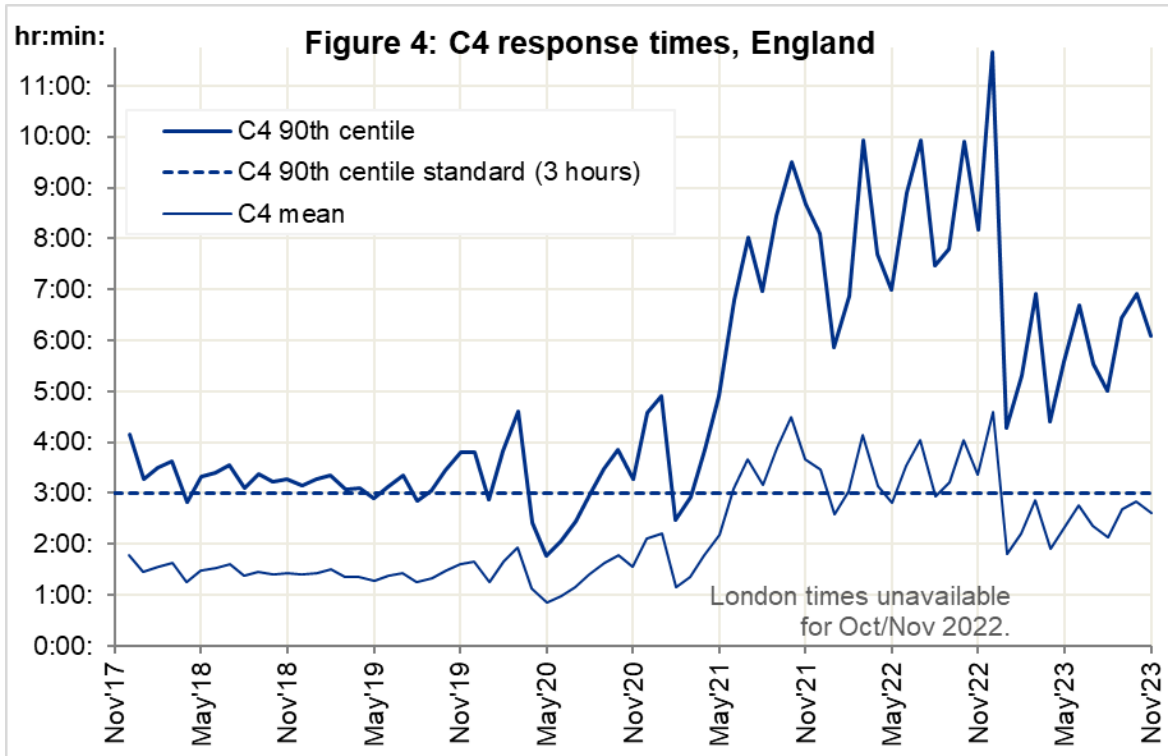
The England C2 average in November 2023 was 38:30. The 90th centile, 1:22:07, was longer than most months of 2023, but shorter than all months of 2022. (Figure 2)

Figure 2: C2 response times, England
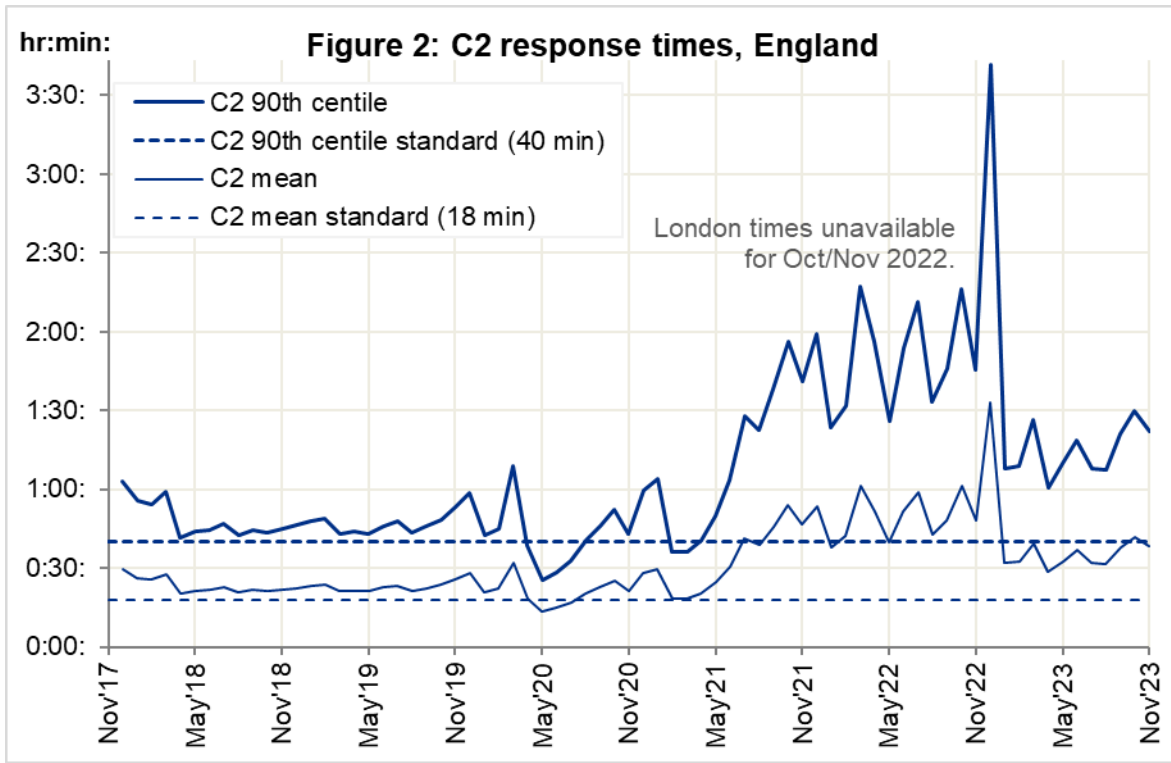
The November 2023 C3 average was 2:16:47 and the 90th centile was 5:25:46, longer than 1:59:25 and 4:45:19 respectively for 2023-24 so far. (Figure 3)

Figure 3: C3 response times, England

The C4 average was 2:36:40 and the 90th centile was 6:04:54. (Figure 4)

Figure 4: C4 response times, England

Legend:
- C4 90th centile
- C4 90th centile standard (3 hours)
- C4 mean

London times unavailable for Oct/Nov 2022.

1.2   Other Systems Indicators

In November 2023, the average 999 call answer time was 8 seconds. Only April 2023 had a shorter average in the previous 24 months. (Figure 5)

Figure 5: Call answer times, England

Legend:
- 99th centile
- 95th centile
- 90th centile
- Mean
- Median
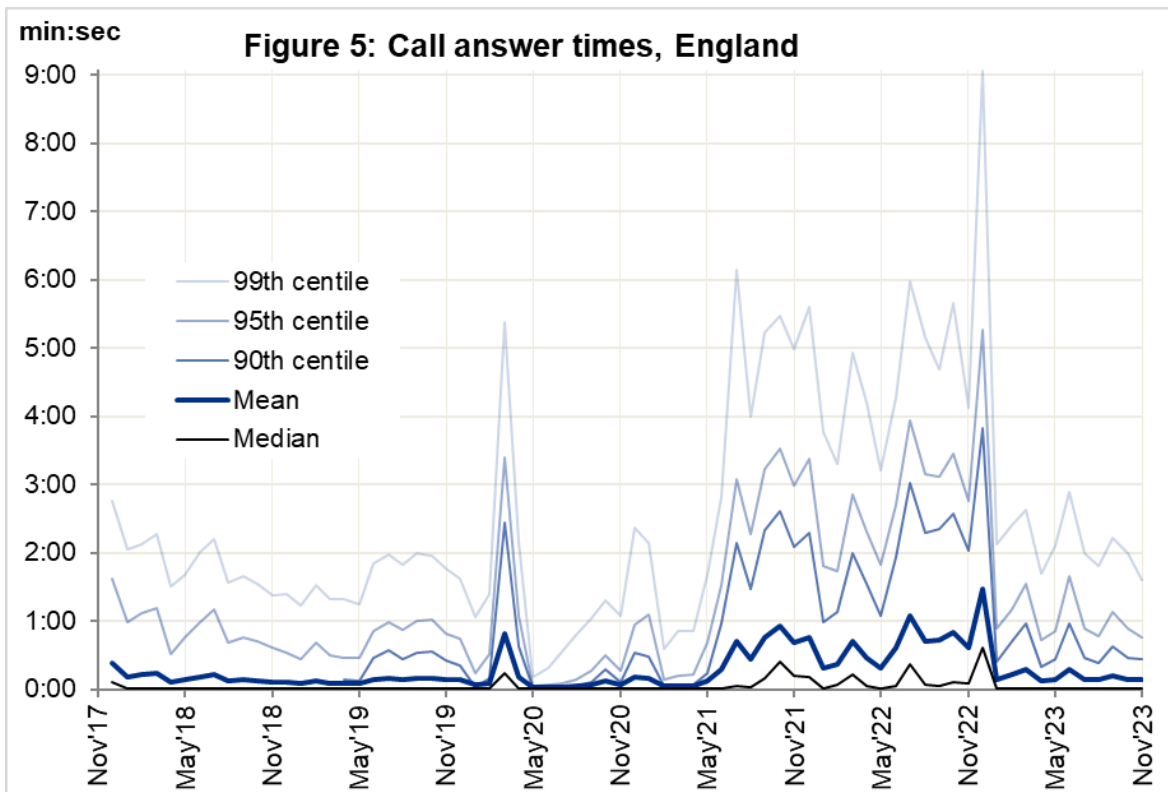
The count of 999 calls answered was 826,023 in November 2023. This was 27,534 per day, which was more than the average for 2023-24 so far of 25,942 per day.

The count of calls answered in England is barely changed by revisions for most months of 2023, but it is revised up nearly 3,000 in June, and over 11,000 in July, now that calls answered by West Midlands Ambulance Service on behalf of other trusts are added in. (These were already included in data for later months.)

These additions caused some call answer times for England to be revised down by a second or two, even though all trusts' call answer times were not revised.

There were 709,217 incidents in November 2023, of which 365,645 had conveyance to ED. Per day, both of these (23,641 and 12,188 respectively) were the largest since November 2021. (Figure 6)

Figure 6: Calls, incidents, convey to ED, England, per day
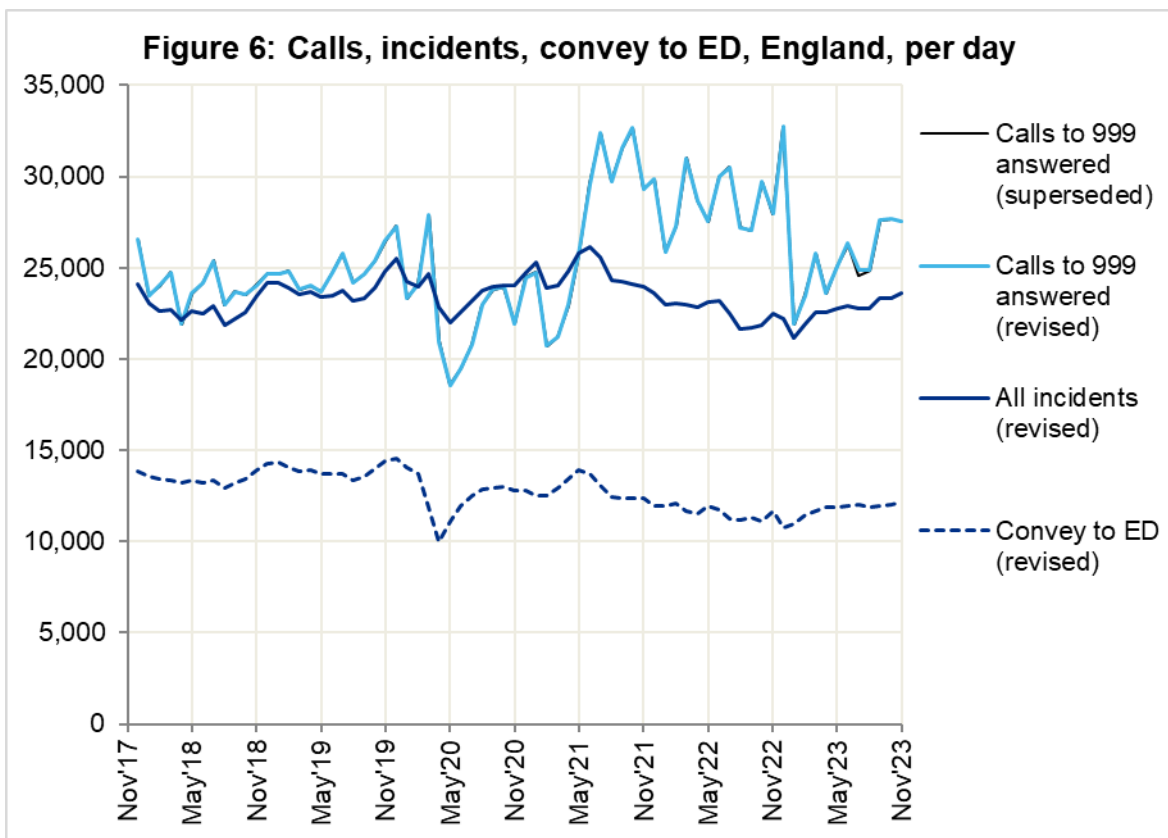
Revisions to the numbers of incidents in England in the latest 12 months are all small, with the largest revision for April 2023, from 674,552 up to 677,018.

So are conveyance to ED revisions, with the largest revision for May 2023, from 369,919 down to 368,786.

London bystander CPR data from June 2023 was missing but is now available.

Other notable revisions by Ambulance Services include increases in:

- convey to non-ED in London after March 2023;
- Hear & Treat components in South Central after March 2023, and East of England before June 2023;
- C1-C4 counts for South East Coast in October 2023.

Of incidents in England in November 2023, 13.2% were resolved on the telephone (Hear & Treat); only December 2022 had more. Other outcomes in November 2023 comprised 30.4% resolved on the scene (See & Treat), 51.6% with conveyance to an Emergency Department (ED), and 4.9% with conveyance to non-ED. (Figure 7)

Revisions to these proportions for England are all less than a half of a percentage point.

Figure 7: Hear, See, Treat, Convey
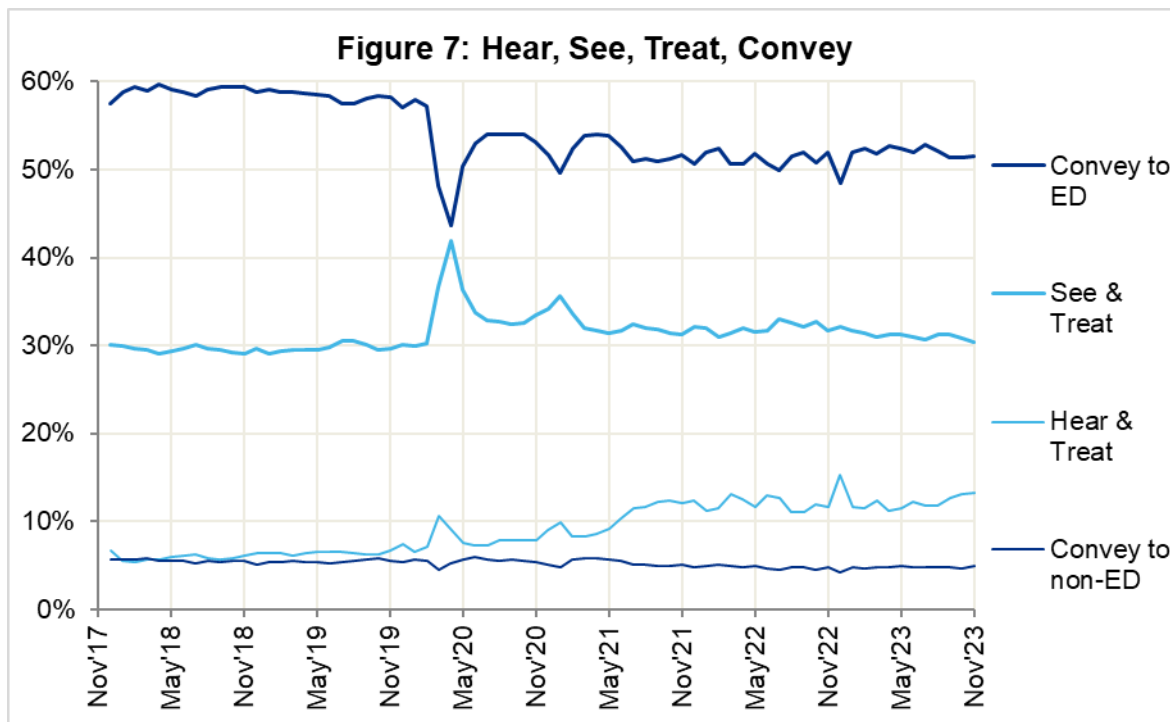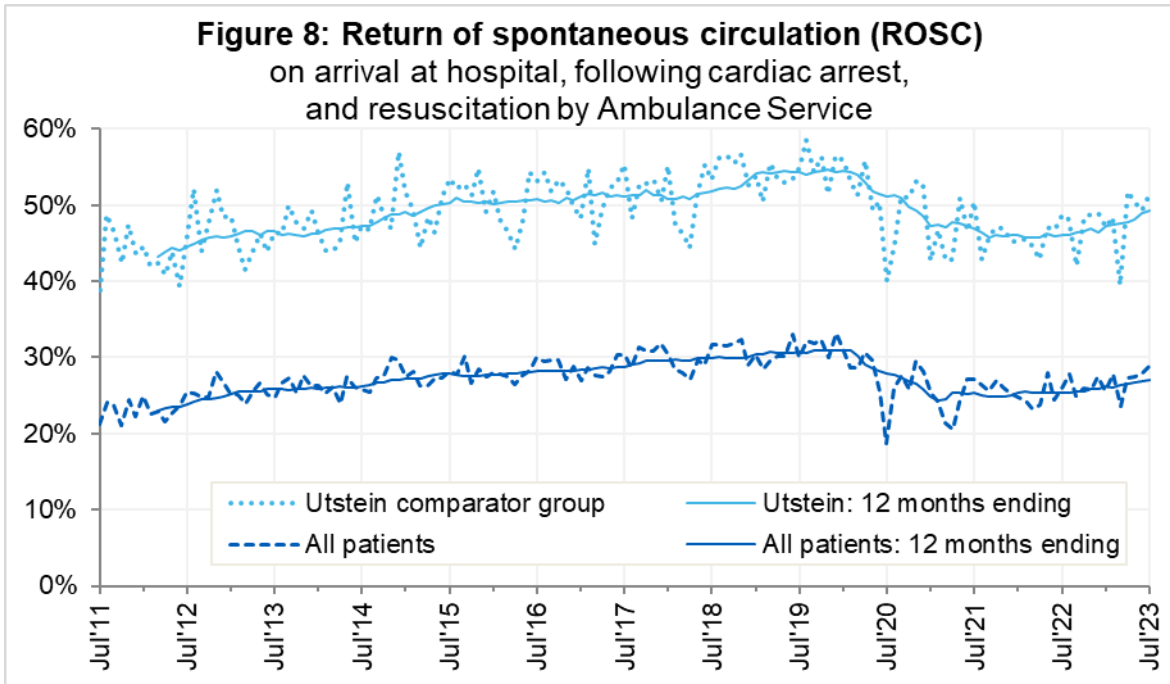
2. Ambulance Clinical Outcomes (AmbCO)

In these Statistical Notes, we continue to summarise data for STEMI (a type of heart attack) and cardiac arrest when we publish January, April, July, or October data, and stroke data in the following month.

2.1 Return of spontaneous circulation (ROSC) after cardiac arrest (Figure 8)

For the 1,883 patients in July 2023 with cardiac arrest and resuscitation by an ambulance service in England where the outcome is known, 519 (28%) had ROSC on arrival at hospital, not significantly[2] more than the 2022-23 average (26%).

The Utstein comparator group comprises patients with an out-of-hospital cardiac arrest of presumed cardiac origin, where the initial rhythm was Ventricular Fibrillation or Ventricular Tachycardia, and the arrest was bystander witnessed. This group therefore have a better chance of survival. In July 2023, of the 1,883 cardiac arrest patients, 289 met these criteria, of which 151 (52%) had ROSC on arrival at hospital; but this was not significantly more than the 2022-23 average (48%).
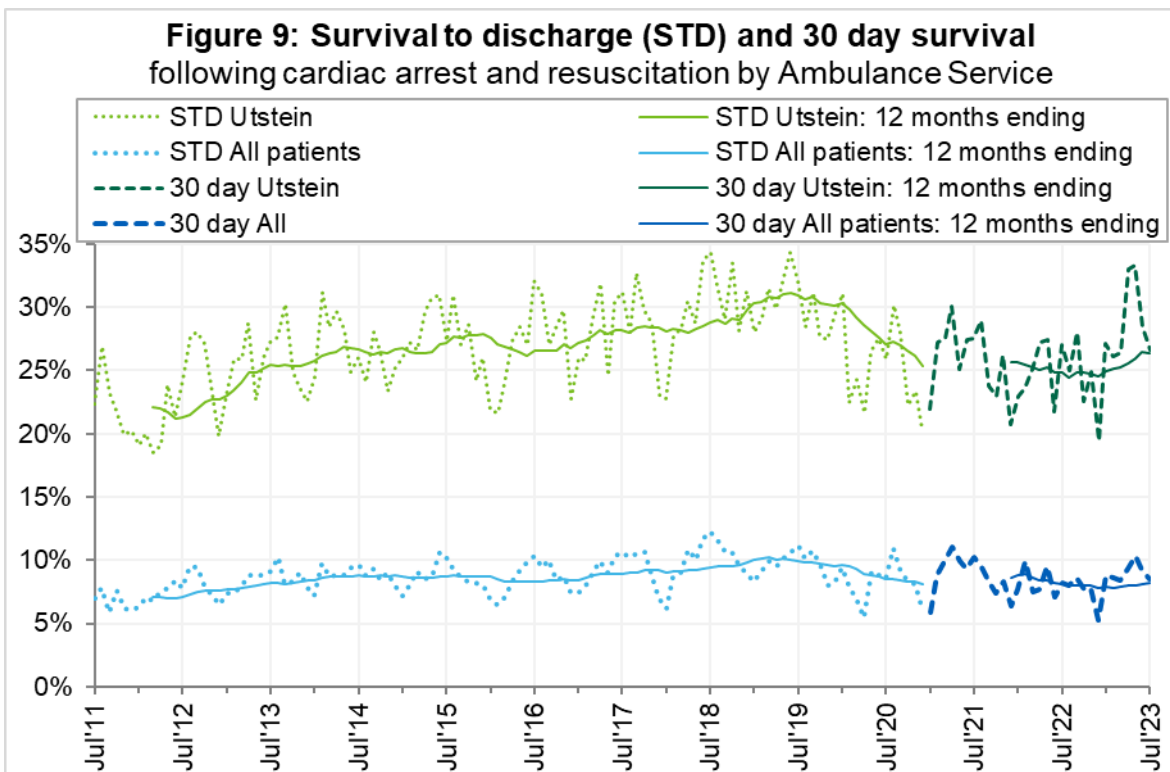
---

[2] Calculated using Student's t-test with 95% significance.

Figure 8: Return of spontaneous circulation (ROSC)
on arrival at hospital, following cardiac arrest, and resuscitation by Ambulance Service

Legend:
- Utstein comparator group (dotted)
- Utstein: 12 months ending (solid)
- All patients (dashed)
- All patients: 12 months ending (solid)

2.2 Survival following cardiac arrest (Figure 9)

For the 1,854 resuscitated cardiac arrest patients in England in July 2023 where survival at 30 days is known, 157 (9%) survived, which was not significantly different to the 2022-23 average (8%). For the Utstein group, 74 of 278 (27%) survived for 30 days. This was not significantly more than the 2022-23 average (25%).

Figure 9 shows that survival from cardiac arrest is higher in summer.

Figure 9: Survival to discharge (STD) and 30 day survival
following cardiac arrest and resuscitation by Ambulance Service

Legend:
- STD Utstein (dotted)
- STD All patients (dotted)
- 30 day Utstein (dashed)
- 30 day All (dashed)
- STD Utstein: 12 months ending
- STD All patients: 12 months ending
- 30 day Utstein: 12 months ending
- 30 day All patients: 12 months ending

2.3 Cardiac arrest care bundle (Figure 10)

In July 2023, there were 674 cardiac arrest patients resuscitated by an ambulance service in England who had return of spontaneous circulation on scene (not necessarily on arrival at hospital).

Of these, data show that 487 (72%) received the appropriate care bundle. This apparent decrease compared to the 2022-23 average (77%) was primarily due to recording difficulties, following a July 2023 software outage affecting three trusts.

**Figure 10**: patients receiving Post-ROSC care bundle
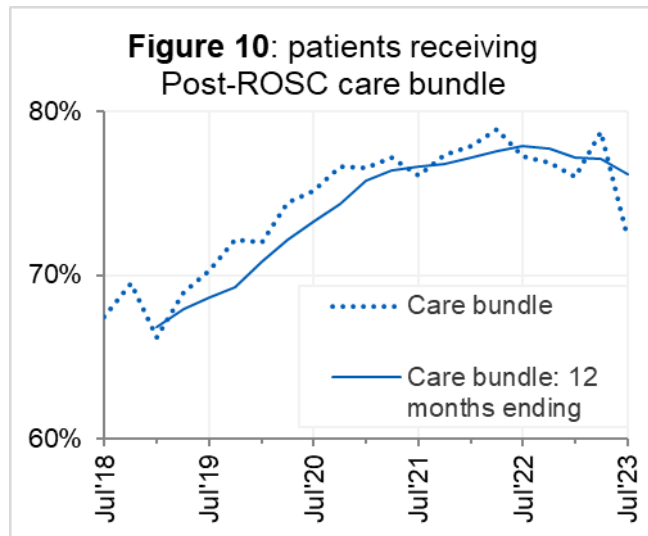
## 2.4 ST-segment elevation myocardial infarction (STEMI)

STEMI is a type of heart attack, determined by an electrocardiogram (ECG) test. Early access to reperfusion, where blocked arteries are opened to re-establish blood flow, and other assessment and care interventions, are associated with reductions in STEMI mortality and morbidity.

For STEMI patients, the Myocardial Ischaemia National Audit Project (MINAP) collects the time from ambulance call to insertion of a catheter for primary percutaneous coronary intervention (PPCI): inflation of a balloon inside a blood vessel to restore blood flow to the heart. (Figure 11)

In England in July 2023, the mean average time from 999 call to catheter insertion was 2 hours 23 minutes, and the 90th centile was 3 hours 20 minutes. The average was less than in each of the previous 24 months.

Figure 11: STEMI: from call to catheter insertion for PPCI
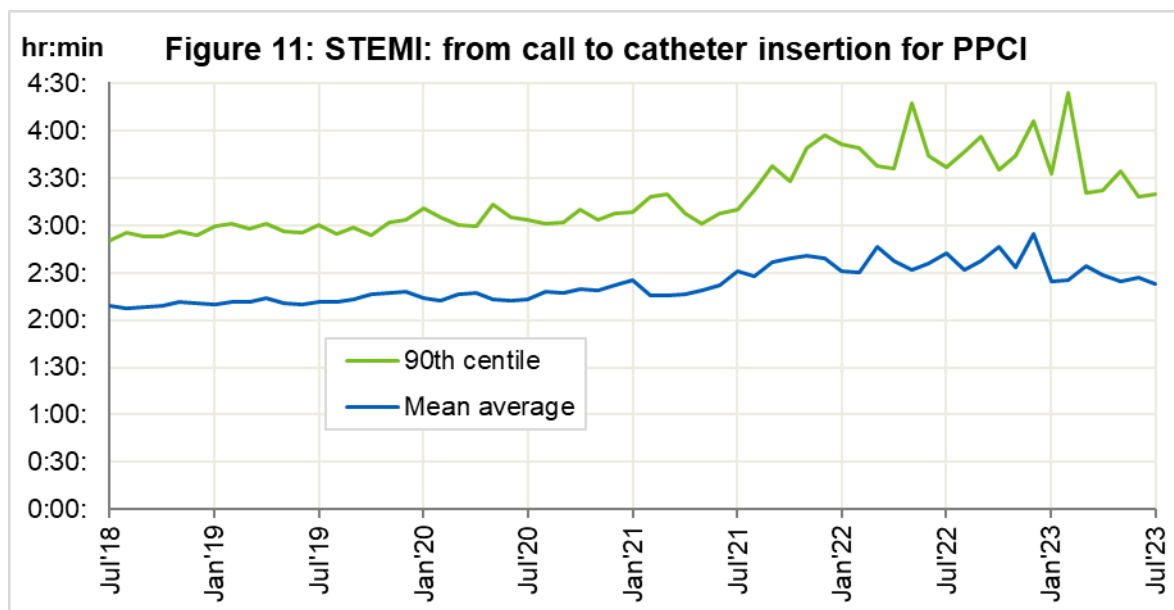
Of 1,495 patients with an acute STEMI in England in July 2023, 1,142 (76%) received an appropriate care bundle (Figure 12), significantly more than the 2022-23 average of 73%.

Figure 12: Of STEMI patients, proportion who received an appropriate care bundle
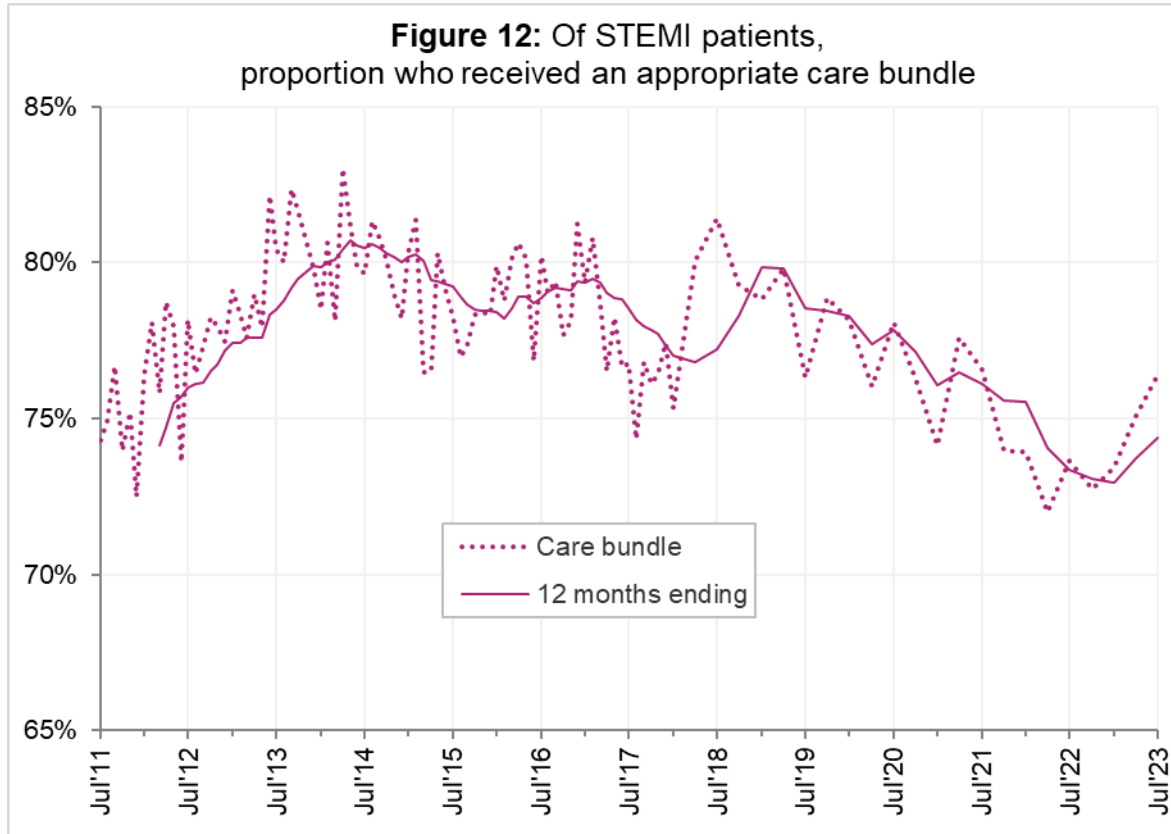
3. Further information on AQI

3.1 The AQI landing page and Quality Statement

www.england.nhs.uk/statistics/statistical-work-areas/ambulance-quality-indicators, or http://bit.ly/NHSAQI, is the AQI landing page, and it holds:

- a Quality Statement for these statistics, which includes information on relevance, accuracy, timeliness, coherence, and user engagement;
- the specification guidance documents for those who supply the data;
- timetables for data collection and publication;
- time series spreadsheets and csv files from April 2011 up to the latest month;
- links to individual web pages for each financial year;
- contact details for the responsible statistician (also in section 3.5 below).

Publication dates are also at www.gov.uk/government/statistics/announcements?keywords=ambulance.

The web pages for each financial year hold:

- separate spreadsheets of each month's data;
- this Statistical Note, and equivalent versions from previous months;
- the list of people with pre-release access to the data.

3.2   Related statistics

NHS England publishes ambulance handover delays at hospital during winter 2012-13 to 2014-15 and winter 2017-18 to 2022-23 at www.england.nhs.uk/statistics/statistical-work-areas/uec-sitrep.

The Quality Statement described in section 3.1 includes information on:

- the "Ambulance Services" publications by what became NHS Digital https://digital.nhs.uk/data-and-information/publications/statistical/ambulance-services, with data from before 2000, to 2014-15;
- a dashboard with an alternative layout for AQI data up to April 2016;
- the comparability of data for other countries of the UK:

Wales:	https://easc.nhs.wales/asi
Scotland:	See Quality Improvement Indicators (QII) documents at www.scottishambulance.com/TheService/BoardPapers.aspx
Northern Ireland:	www.health-ni.gov.uk/articles/emergency-care-and-ambulance-statistics

3.3   AQI Scope

The AQI include calls made by dialling either the usual UK-wide number 999 or its international equivalent 112. As described in the specification guidance in section 3.1, incidents resulting from a call to NHS 111 are included in all AmbSYS indicators, except the counts of 999 calls (indicators A1, A124, and A125) and answer times (A2 to A6 and A114).

3.4   Centiles

The centile data for England in this document, also published in spreadsheets alongside this document, are not precise centiles calculated from national record-level data. Instead, they are the centiles calculated from each individual trust's record-level data, weighted by their incident count, and averaged across England. So, if England only had two trusts, with centiles of 7:10 and 7:40, and the former had twice as many incidents as the latter, the England centile would be 7:20.

3.5   Contact information

Media: NHS England Media team, nhsengland.media@nhs.net, 0113 825 0958.

The person responsible for producing this publication is Ian Kay, Performance Analysis Team, Transformation Directorate, NHS England, 0113 825 4606, england.nhsdata@nhs.net.

3.6   Accredited official statistics

These accredited official statistics were independently reviewed by the Office for Statistics Regulation in May 2015. They comply with the standards of trustworthiness, quality and value in the Code of Practice for Statistics and should be labelled "accredited official statistics".