Statistical Note: Ambulance Quality Indicators (AQI)

For the average C1 and C2 ambulance response times in England (and the average 999 call answer time), in the last two years, only April 2023 had shorter times than the latest month, August 2023.

Following cardiac arrest and resuscitation by an ambulance service, survival at 30 days appears a little higher in 2023 so far than twelve months earlier.

## 1. Ambulance Systems Indicators (AmbSYS)

1.1 Response times

For England, the mean average response time in August 2023 for the most urgent Category, C1, was 8 minutes 17 seconds. The 90th centile time was 14:46, so this standard[1] was met for only the fourth month in two years (Figure 1).

For C1T (time to the arrival of the transporting vehicle for C1 incidents), the average was 10:26, and the 90th centile 19:11.
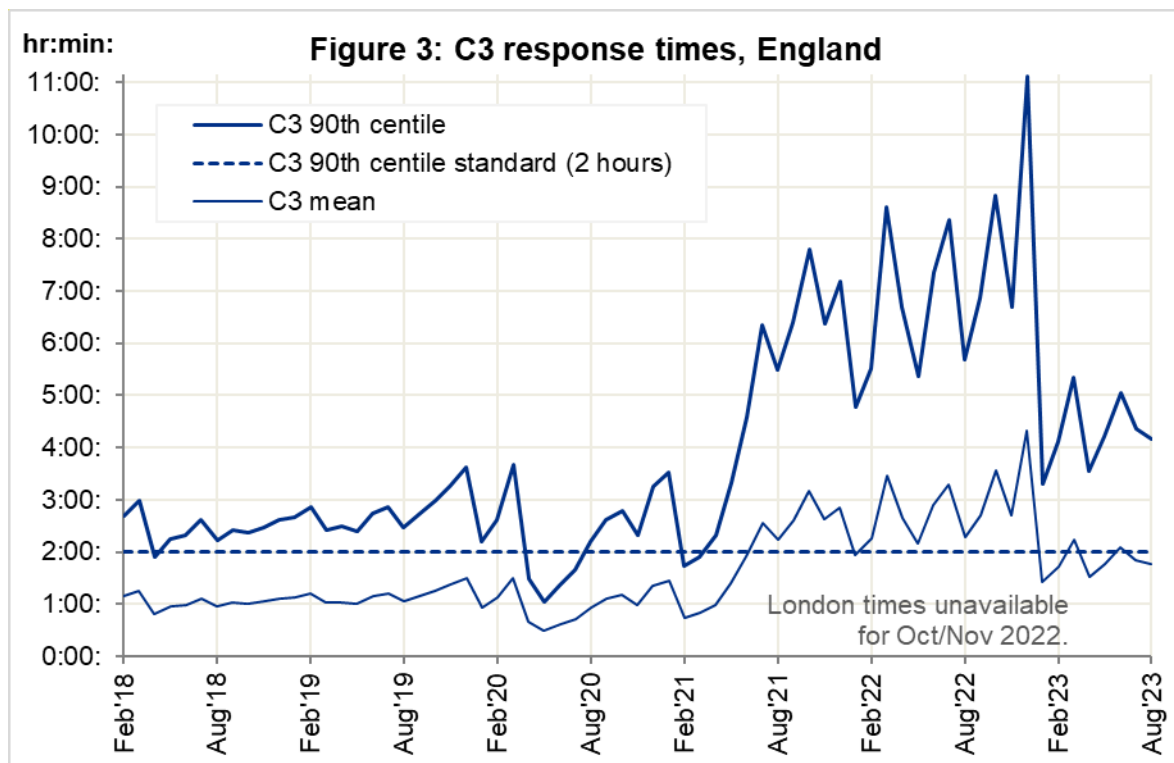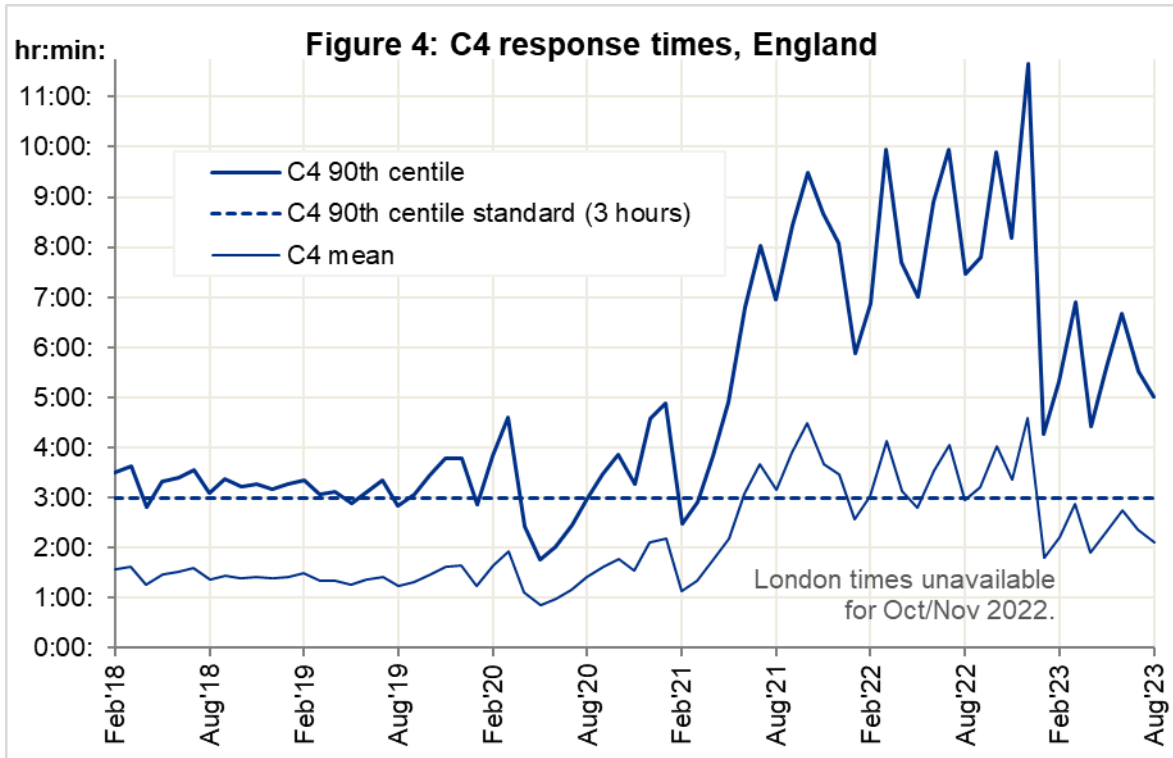

Figure 1: C1 response times, England

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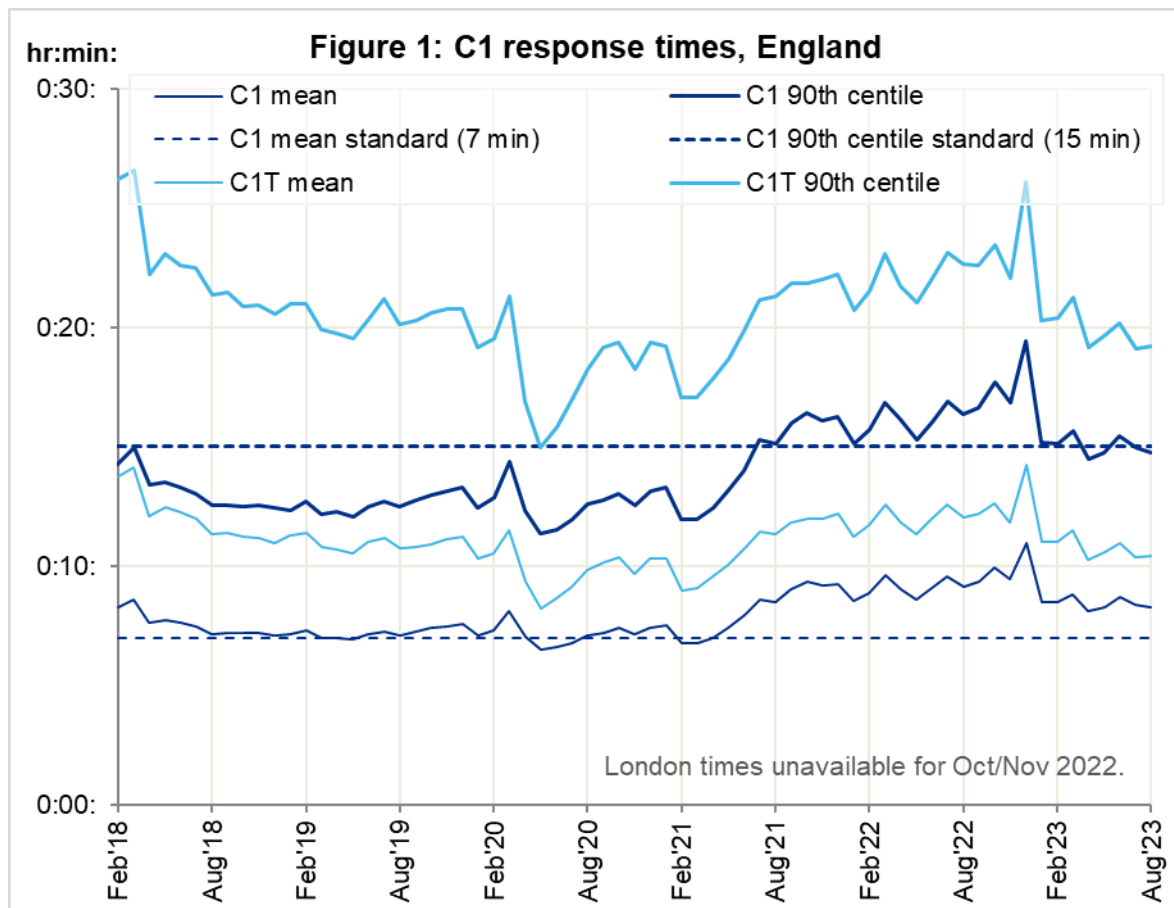
[1] Standards in the NHS Constitution Handbook: www.gov.uk/government/publications/supplements-to-the-nhs-constitution-for-england/the-handbook-to-the-nhs-constitution-for-england

The C2 average for England in August 2023 was 31:30, and the 90th centile was 1:07:21, each the shortest for two years, apart from April 2023 (Figure 2).

**Figure 2: C2 response times, England**
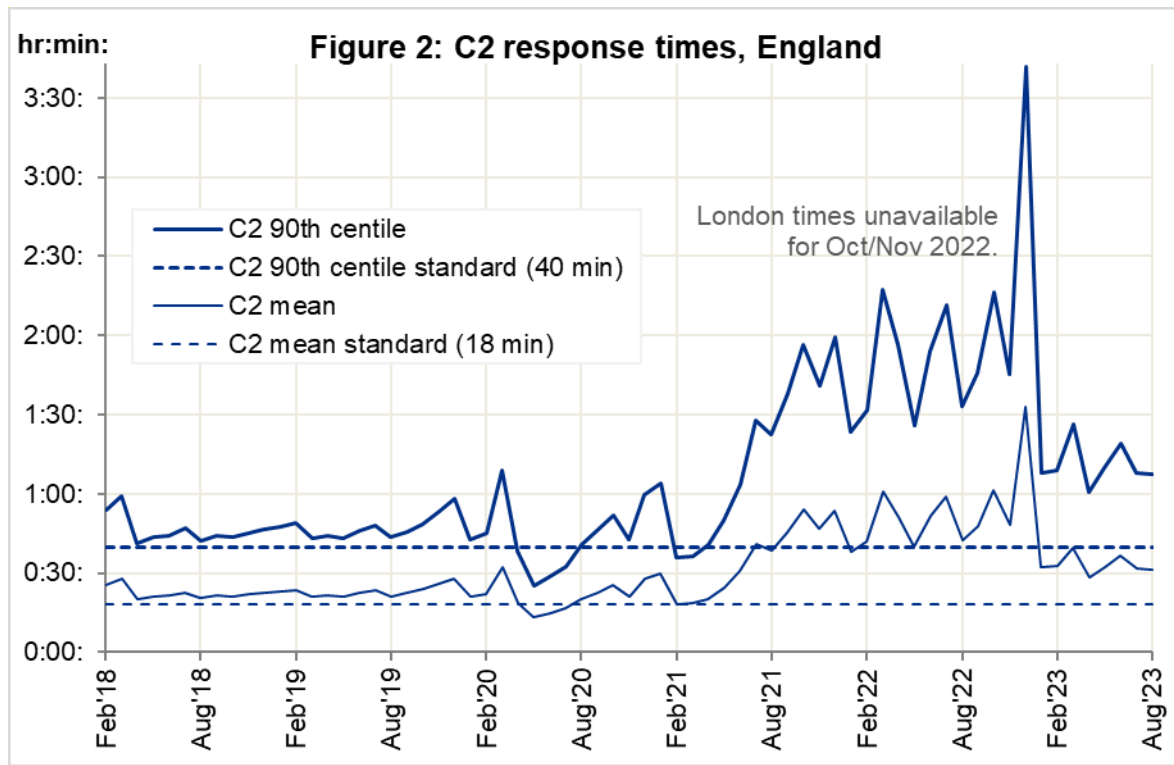
The C3 average was 1:45:27 and the 90th centile was 4:09:35 were each the fourth shortest times in the last two years (Figure 3). The C4 average of 2:07:18 and 90th centile of 5:00:31 were each the third shortest times in the last two years (Figure 4).

Figure 3: C3 response times, England

Figure 4: C4 response times, England

London times unavailable for Oct/Nov 2022.

1.2 Other Systems Indicators

In August 2023, the average (8 seconds) 999 call answer time, and the 90th, 95th, and 99th centiles (23, 47, and 108s) were each the second shortest since May 2021.


Figure 5: Call answer times, England
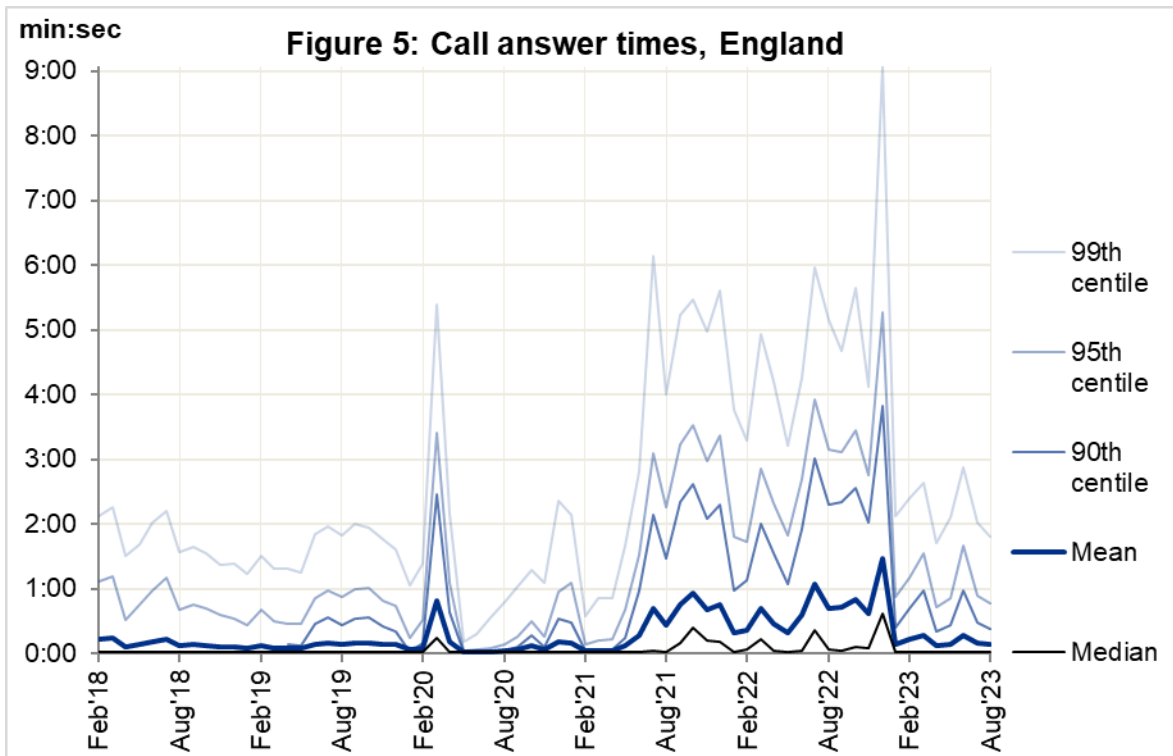
The count of 999 calls answered was 770,251 in August 2023. This was 24,847 per day which was about average for 2023-24 so far, but nearly 3,000 fewer than the average for 2022-23. (Figure 6)

There were 706,639 incidents in August 2023, or 22,795 per day, of which 368,781, or 11,896 per day, had conveyance to ED, each about the average per day for 2023-24 so far.

Figure 6: Calls, incidents, convey to ED, England, per day
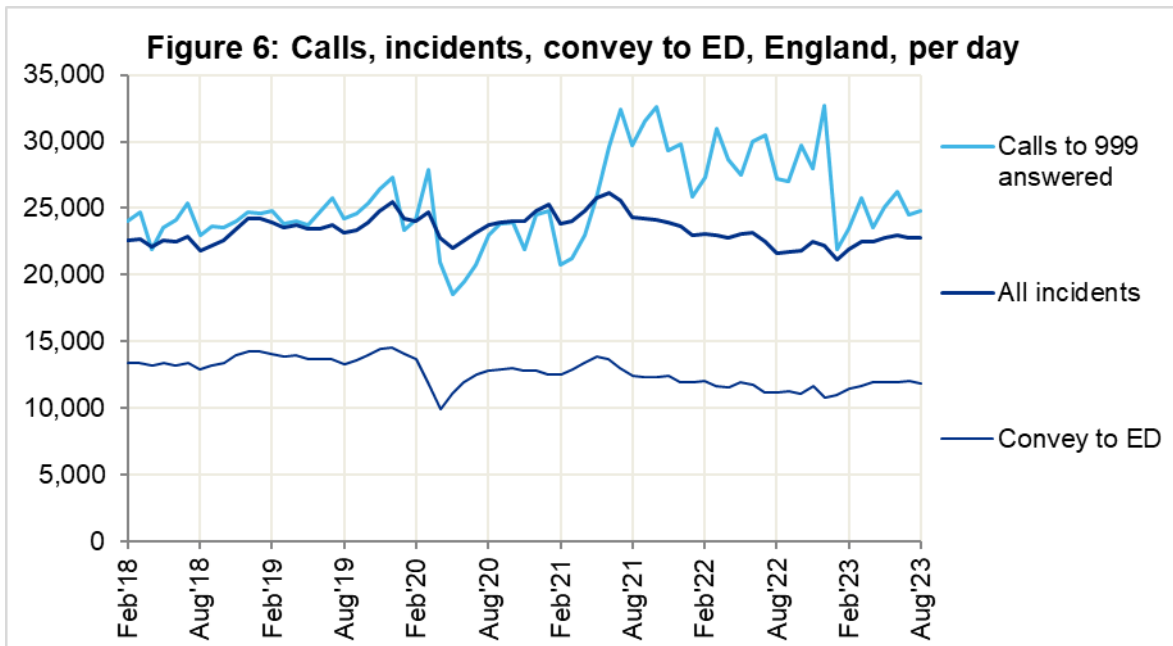
Of all August 2023 incidents in England, 11.8% were resolved on the telephone (Hear & Treat), 31.3% were resolved on the scene (See & Treat), 52.2% had conveyance to an emergency department (ED), and the other 4.7% had conveyance to non-ED. Compared with 2019-20, this is an increase of nearly 5 percentage points for Hear & Treat, with conveyance to ED decreasing similarly, but the other two proportions have changed by less than one percentage point. (Figure 7)

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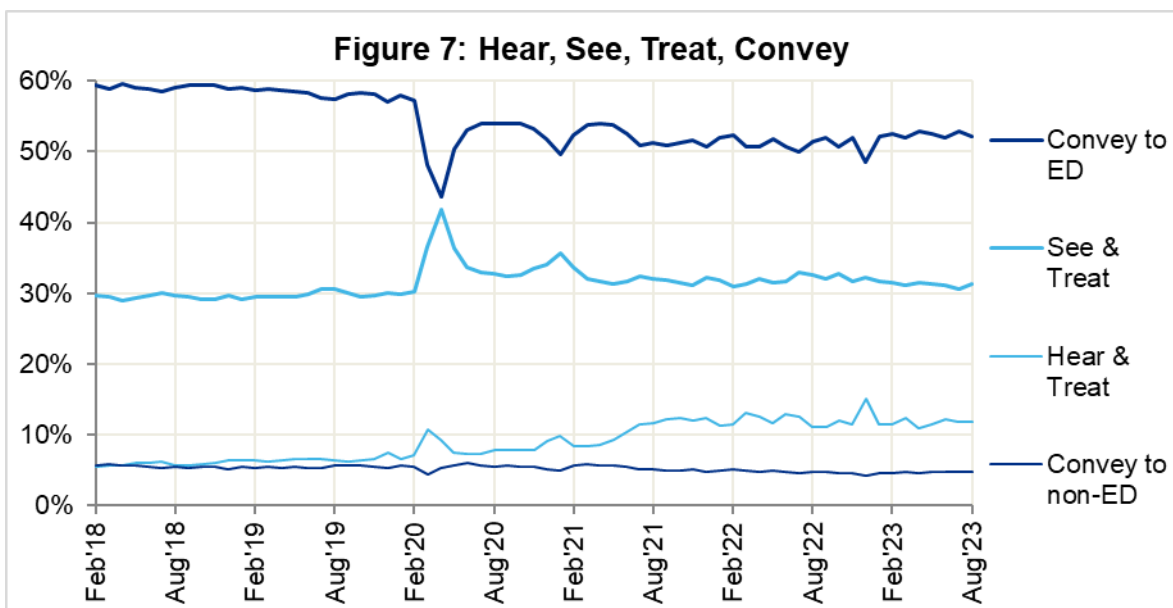
2. Ambulance Clinical Outcomes (AmbCO)

Today, alongside the AmbCO data for April 2023, we publish revisions to data from March 2022 to March 2023. We will describe the stroke data items, including revisions to them, next month.

Figures for March and April 2023 quoted below are incomplete. For South Central and Isle of Wight Ambulance Service, this was due to an 18 July cyber attack.

Ambulance Service:	North West	South Central	Isle of Wight
Cardiac arrest (indicators starting R)	No April	No April	No April
STEMI bundle (indicators M4b, M4n)		No April	No April
Stroke times to hospital arrival (indicators starting K1)		No March or April	

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

For the 2,237 patients in April 2023 with cardiac arrest and resuscitation by an ambulance service in England where the outcome is known, 646 (29%) had ROSC on arrival at hospital, 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 April 2023, of the 2,237 cardiac arrest patients, 313 met these criteria, of which 161 (51%) had ROSC on arrival at hospital; but this was not significantly more than the 2022-23 average (48%).
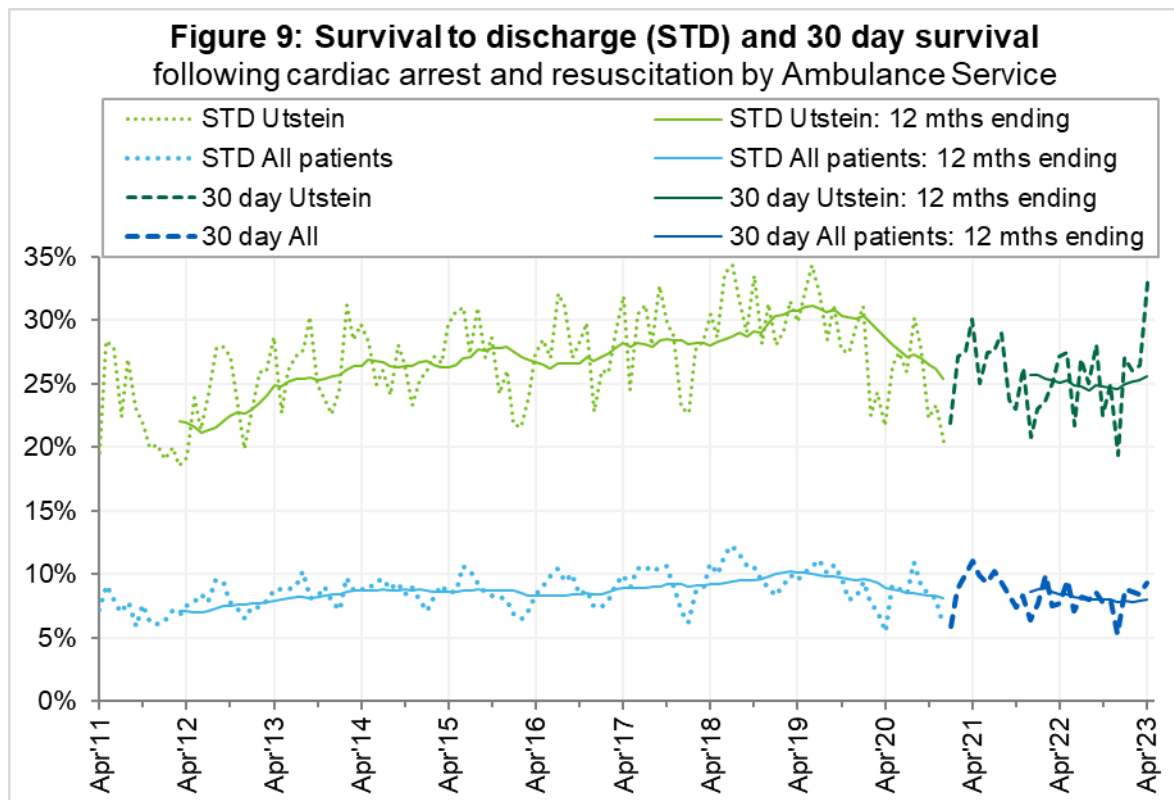

Figure 8: Return of spontaneous circulation (ROSC) on arrival at hospital, following cardiac arrest, and resuscitation by Ambulance Service

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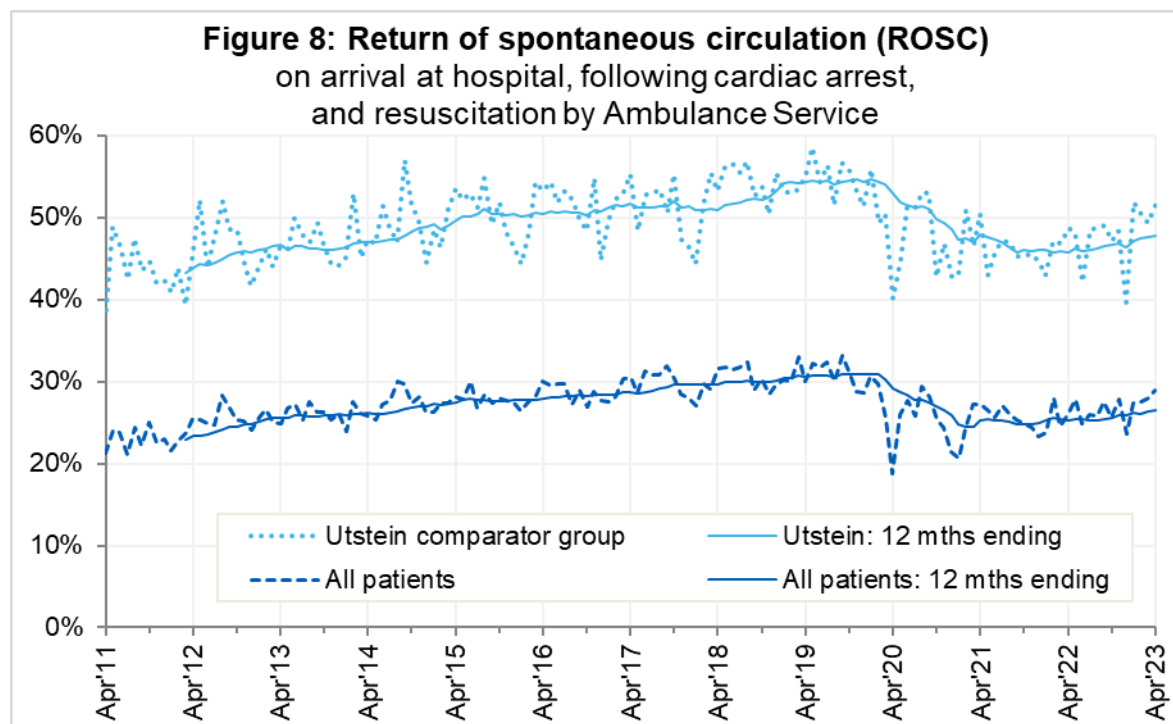
[2] Calculated using Student's t-test with 95% significance.

2.2   Survival following cardiac arrest (Figure 9)

For the 2,205 resuscitated cardiac arrest patients in England in April 2023 where survival at 30 days is known, 206 (9%) survived, which was not significantly different to the 2022-23 average (8%). For the Utstein group, 102 of 309 (33%) survived for 30 days, 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

2.3   Cardiac arrest care bundle (Figure 10)

In April 2023, there were 815 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, 642 (79%) received the appropriate care bundle, similar to the 2022-23 average (77%).

Figure 10: patients receiving Post-ROSC care bundle
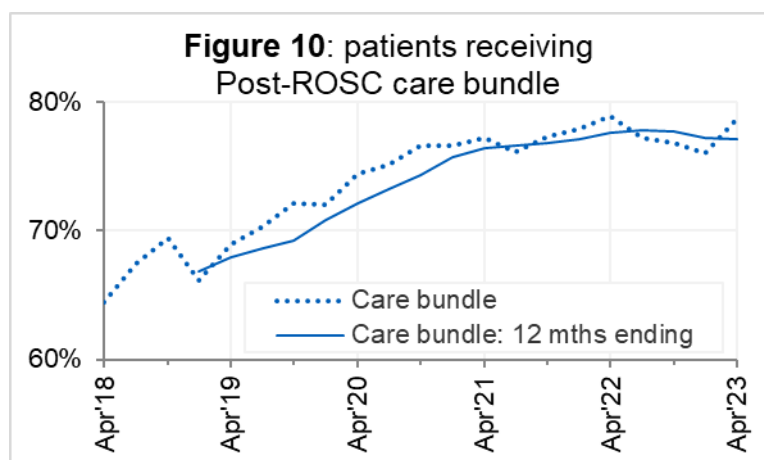
The largest revision to the cardiac arrest proportions for England in Sections 2.1 to 2.3 is for the February 2023 Utstein group survival rate, from 25.3% to 26.1%. The largest downward revision is also for the Utstein group survival rate, but for November 2022, from 25.1% to 24.9%.

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 April 2023, the mean average time from 999 call to catheter insertion was 2 hours 28 minutes, and the 90th centile was 3 hours 18 minutes, both shorter than in every month of 2022.

As with previous revisions to PPCI times, the count of incidents contributing to these times for England has been revised up a lot, most of all from 596 to 808 in October 2022. However, revisions to the actual times are smaller, with the largest revision for September 2022, from 3:50 to 3:44.

Figure 11: STEMI: from call to catheter insertion for PPCI
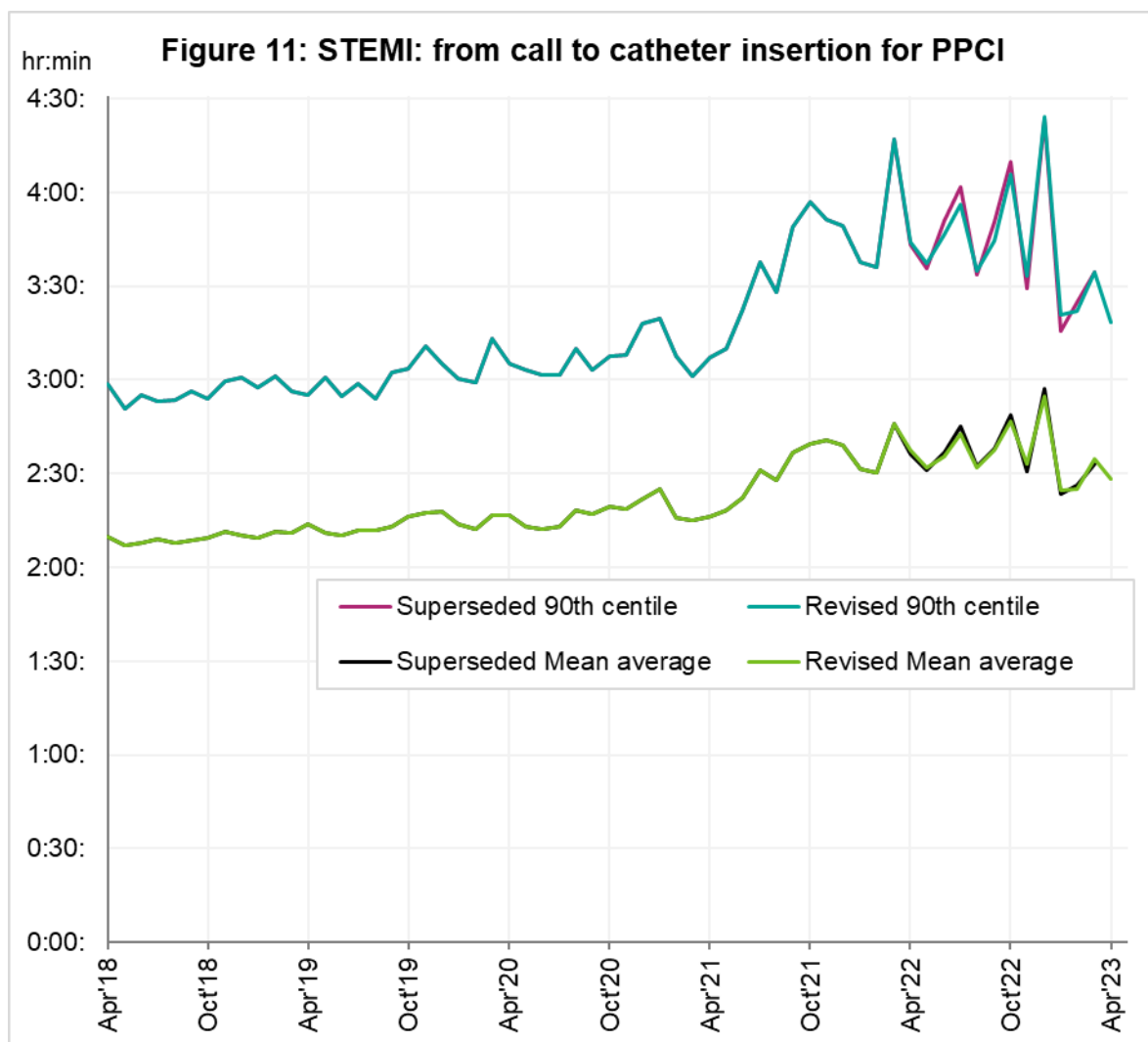
Of 1,534 patients with an acute STEMI in England in April 2023, 1,152 (75%) received an appropriate care bundle (Figure 12), not significantly different to the 2022-23 average of 73%. Revisions to this indicator are negligible.

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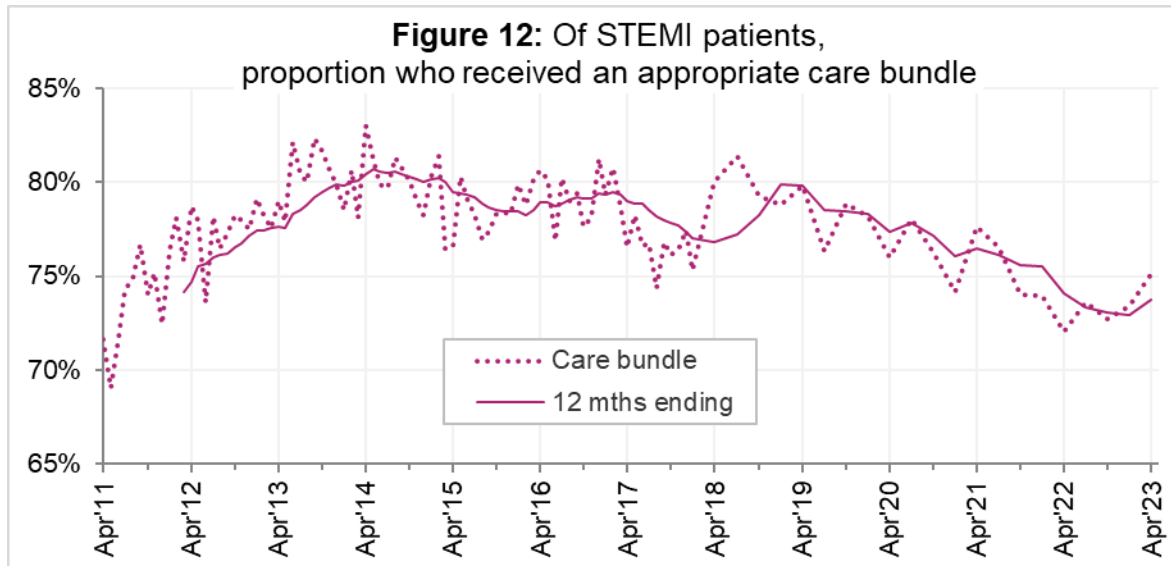
3. Further information on AQI

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 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 the AQI, except the counts of 999 calls (indicators A1, A124, and A125) and answer times (A2 to A6 and A114).

3.3   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

3.4   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   National Statistics

The UK Statistics Authority has designated these statistics as National Statistics, in accordance with the Statistics and Registration Service Act 2007 and signifying compliance with the Code of Practice for Official Statistics.

Designation can be broadly interpreted to mean that the statistics:

- meet identified user needs;
- are well explained and readily accessible;
- are produced according to sound methods; and
- are managed impartially and objectively in the public interest.

Once statistics have been designated as National Statistics it is a statutory requirement that the Code of Practice shall continue to be observed.