Statistical Note: Ambulance Quality Indicators (AQI)

This note uses the revised Ambulance Systems Indicators (AmbSYS) data from October 2019 to April 2021 that we are publishing today.

The latest AmbSYS data for May 2021 shows that the number of 999 calls answered per day was the highest since March 2020; and Category 4 response times were the highest since the category was introduced in 2017.

Today's publication also includes, in place of the previous measure of survival to discharge from hospital after a cardiac arrest, the first data for survival at 30 days.

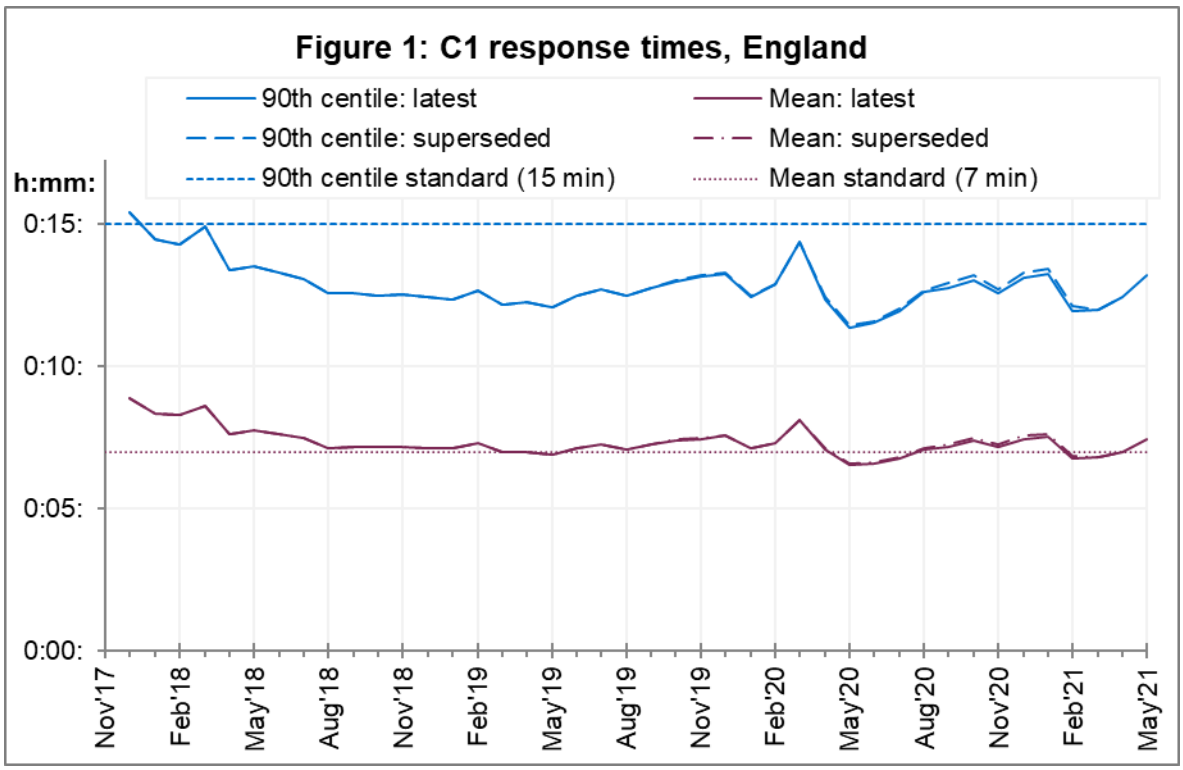
1. Ambulance Systems Indicators

1.1 Response times

In May 2021, the mean average C1 response time for England was 7 minutes 25 seconds, and the C1 90th centile response time was 13:11, so the 7-minute mean standard in the NHS Constitution[1] was not met, but the 15-minute 90th centile was.

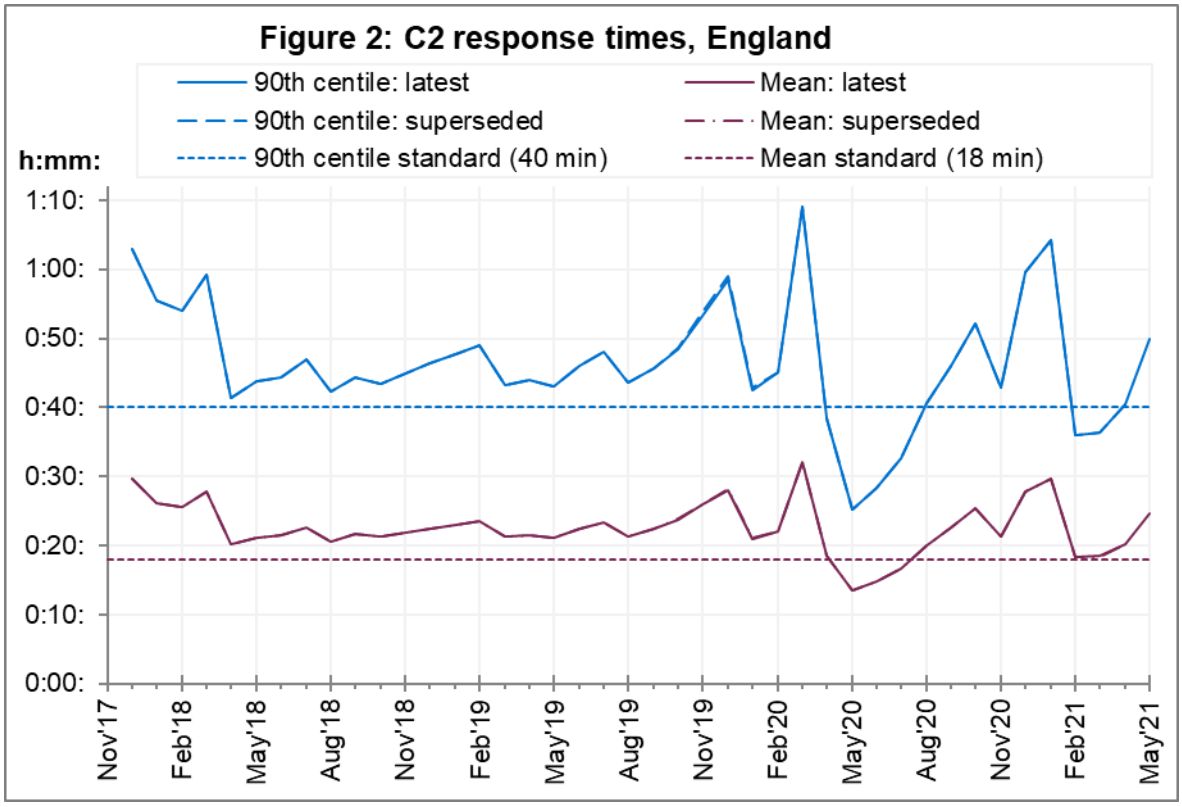
The largest revision to England C1-C4 response times is 1.8%, for the December 2020 C1 mean average, from 7:33 to 7:25. (Figure 1)

Figure 1: C1 response times, England

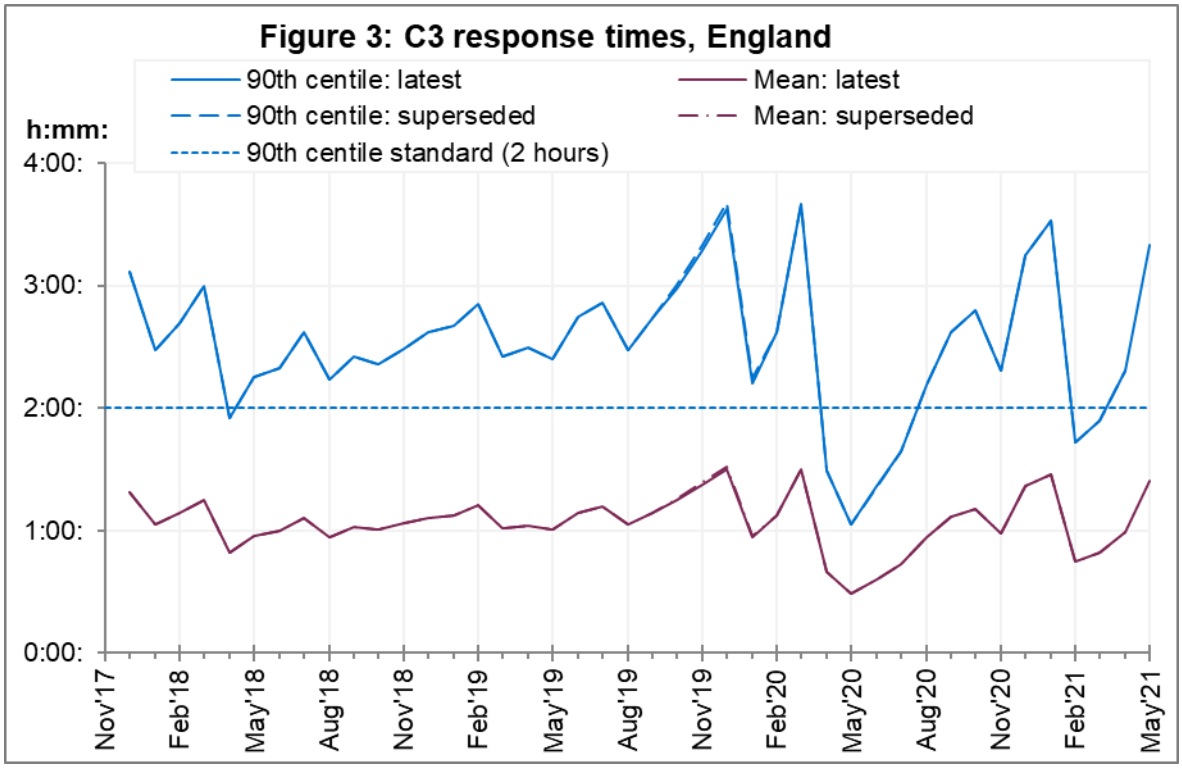


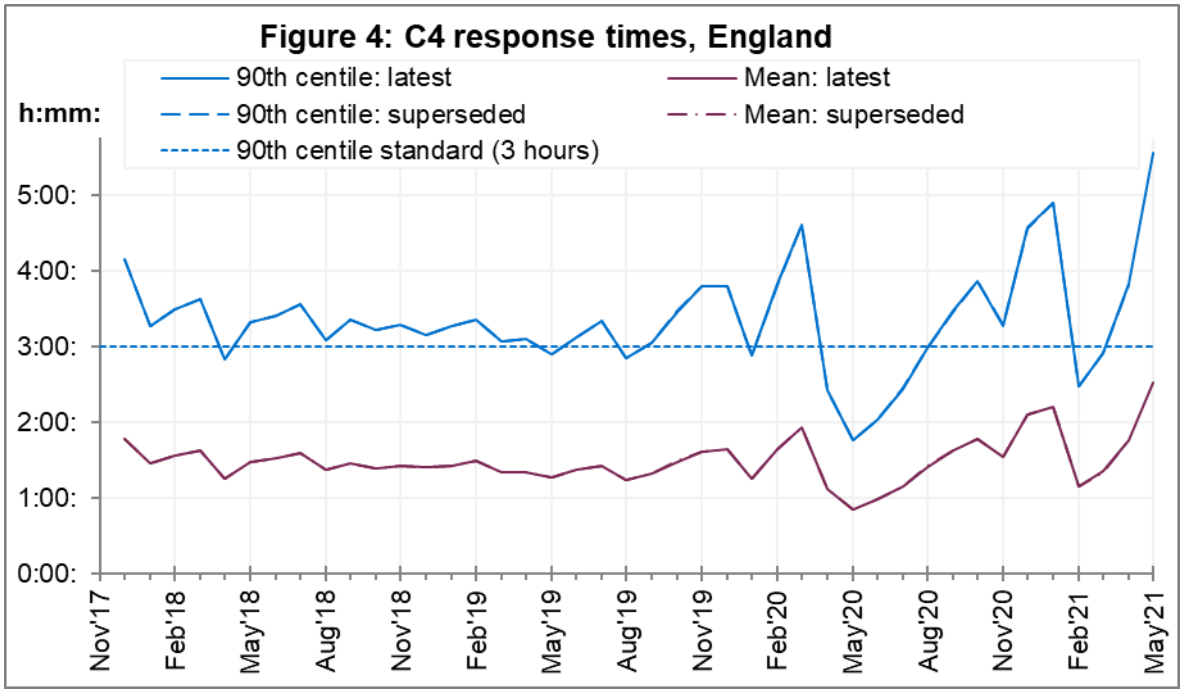
For C1T (response times for arrival of transporting vehicle, for C1 patients transported), the mean was 9:47, and the 90th centiles averaged 18:18.

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



For C2 (Figure 2) in May 2021, the mean average response time was 24:35 for England, and the 90th centiles averaged 49:58 across England, so the 18- and 40-minute standards were not met. For C3 (Figure 3), the mean was 1:24:22 and the 90th centile 3:19:51; and for C4 (Figure 4), the mean was 2:31:44 and the 90th centile 5:33:19, so the 2-hour and 3-hour standards were also not met.





1.2 Annual comparisons

Our published incident counts (indicator A7) are 8,395,133, 8,783,181, and 8,650,698 for 2018-19, 2019-20, and 2020-21 respectively. (Figure 5 shows that after a rise in March 2020 in the early days of the covid-19 pandemic, there were fewer incidents, and far fewer calls, in the next few months.)

To compare years, we should use the respective per day figures (23,000, 23,998, and 23,701) because 2019-20 was a leap year. The number of incidents per day in 2020-21 was 1.2% fewer than in 2019-20, which in turn had 4.3% more incidents per day than 2018-19.

Comparisons of years should also consider any discontinuities in footnotes in our time series spreadsheet. There are none for the total incident counts above, but for calls answered (A1), there is one for Yorkshire from November 2019, so we should exclude it when comparing before and after that date. That gives call per day values for the rest of England in 2018-19 and 2019-20 of 21,931 and 23,184, showing an increase of 5.7%.

Comparisons with 2020-21 call counts should similarly consider a small discontinuity in West Midlands in November 2020, but as it happens, whether or not this is excluded from the rest of England along with Yorkshire, the decrease in calls per day from 2019-20 to 2020-21 remains 11.8%.

For incidents featuring conveyance to ED, when comparing before and after July 2019, footnotes in our time series spreadsheet show that we should exclude West Midlands, which leaves 11,922 incidents per day in 2018-19 and 12,026 in 2019-20, an increase of 0.9%; and for before and after April 2020, we should also exclude East Midlands, giving 10,735 incidents per day with conveyance to ED in 2019-20 and 9,720 in 2020-21, a decrease of 9.5%.

1.3 Other Systems Indicators and revisions

Most trusts have revised some call counts. The number of calls answered in January 2021 in England on 999 telephone lines was 767,828, or 24,769 per day, which is 314 fewer per day than originally published. The totals for October-December 2019 are also now more than 250 fewer per day (Figure 5, blue lines).

Nearly all trusts have revised their incident counts. However, at England level, the largest revision for incidents with transport to ED (indicator A53) was 84 per day in November 2019, from 430,684 (14,356 per day) to 433,202 (14,440 per day). The revisions to the all incident count (indicator A7) were smaller still.

In May 2021, per day, there were (Figure 5):

- 25.8 thousand calls to 999 answered, 12% more than in April 2021;
- 25.8 thousand incidents that received a response (whether on the telephone or on the scene) from an ambulance service, 4% more than in April;
- 13.9 thousand incidents where a patient was conveyed to an Emergency Department (ED), 4% more than in April.

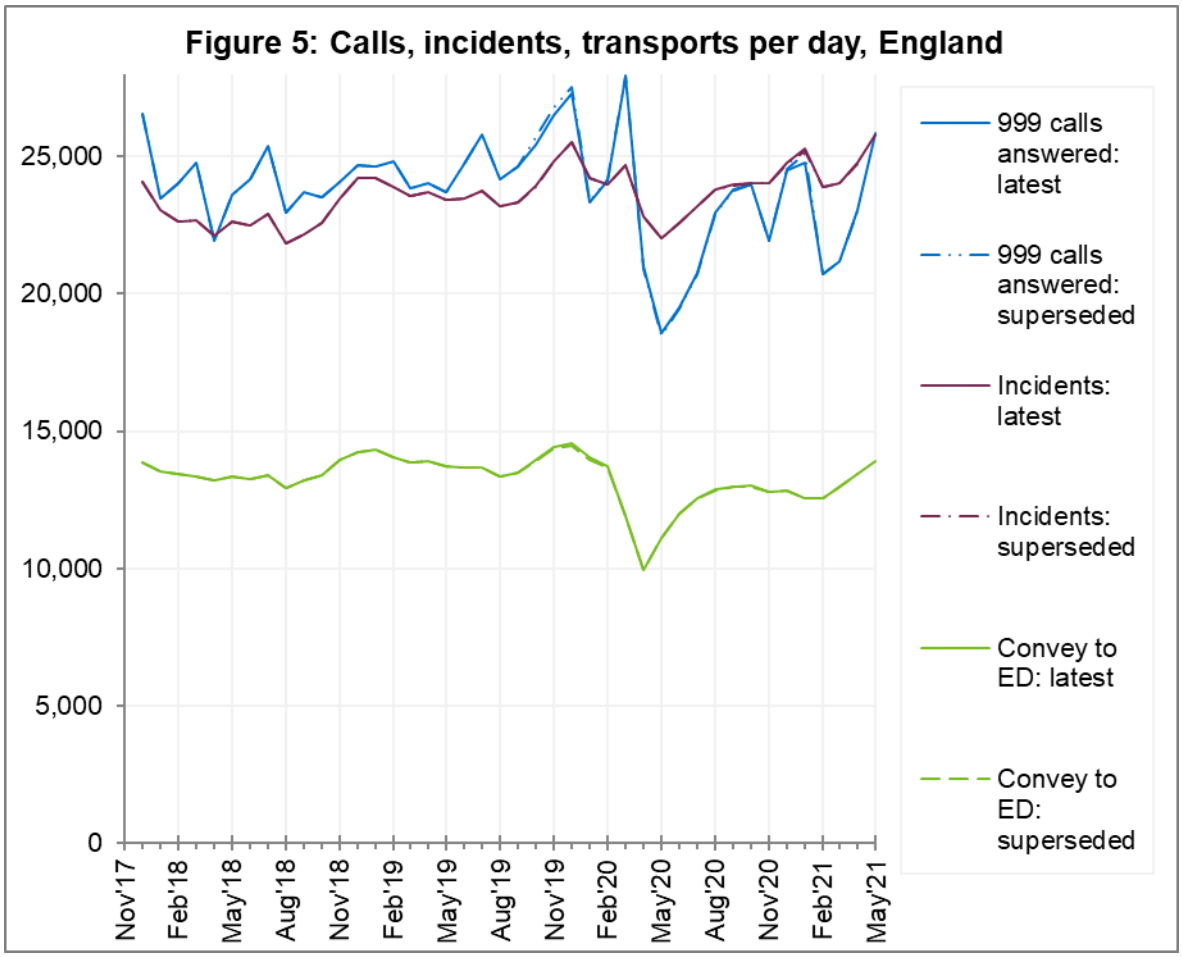
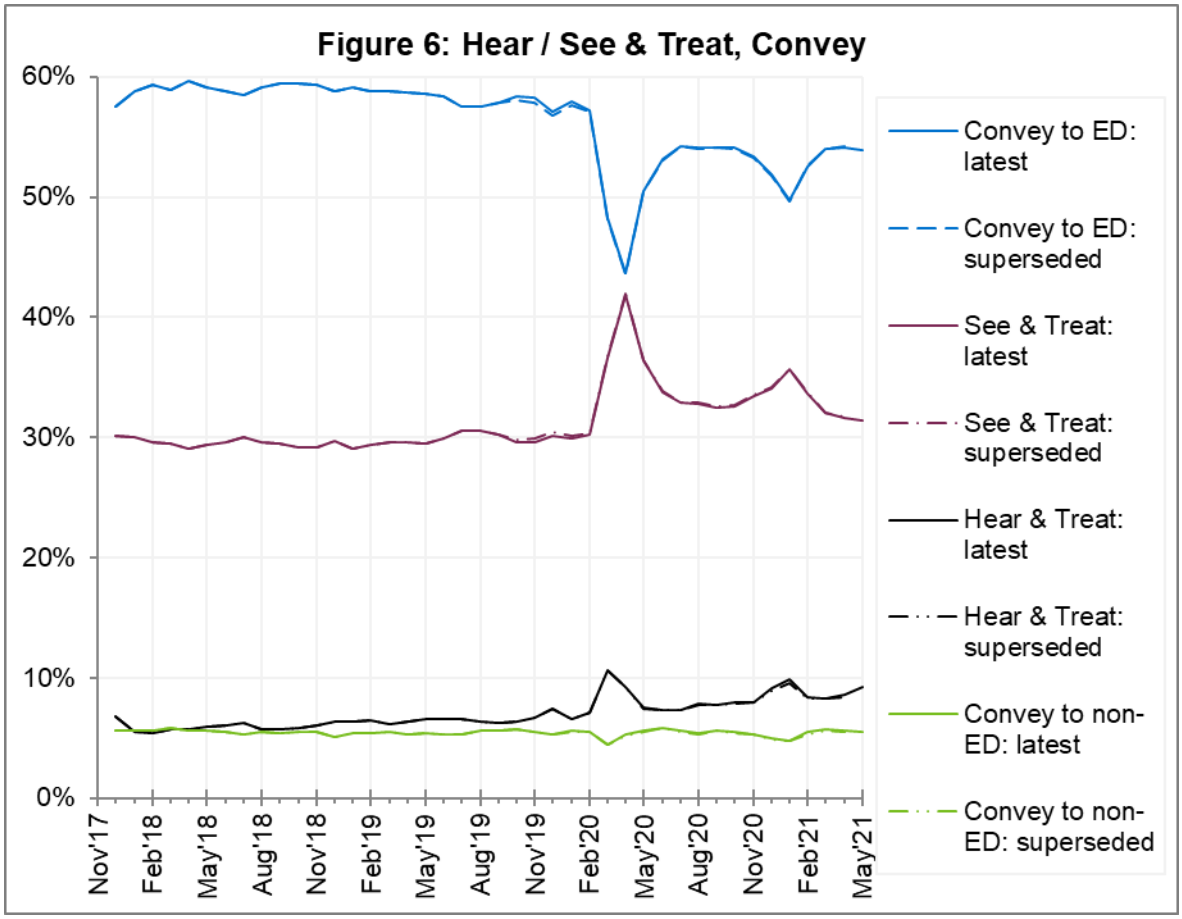


Figure 6 shows that in May 2021, 9.2% of incidents were resolved on the telephone (Hear & Treat), 31.4% were closed on scene (See & Treat), 53.9% had conveyance to ED, and 5.5% had conveyance elsewhere. These outcomes were all similar to April 2021, with the largest change for Hear & Treat, up from 8.6%.

The largest revision to these percentages at England level was from 57.88% to 58.22% for Convey to ED (blue lines) in November 2019.



2. Ambulance Clinical Outcomes (AmbCO)

2.1 Cardiac arrest

As announced in our 15 April 2021 Statistical Note, for patients with resuscitation commenced or continued by ambulance staff out of hospital, today we have replaced the measure on how many survive to discharge from hospital, with a measure of how many had survival at 30 days. The new measure should have fewer incidents where the outcome is not known. In England in January 2021, of the 3,537 such patients, 209 (5.9%) had survival at 30 days.

The Utstein comparator group[2] comprises patients with an out-of-hospital cardiac arrest of presumed cardiac origin, where the arrest was bystander witnessed, and the initial rhythm was Ventricular Fibrillation or Ventricular Tachycardia. This group therefore have a better chance of survival. In January 2021, of the 388 such patients, 85 (21.9%) had survival at 30 days.

[2] This definition was proposed at Utstein Abbey in Norway by an international group of cardiologists and other health professionals in 1990. http://circ.ahajournals.org/content/110/21/3385

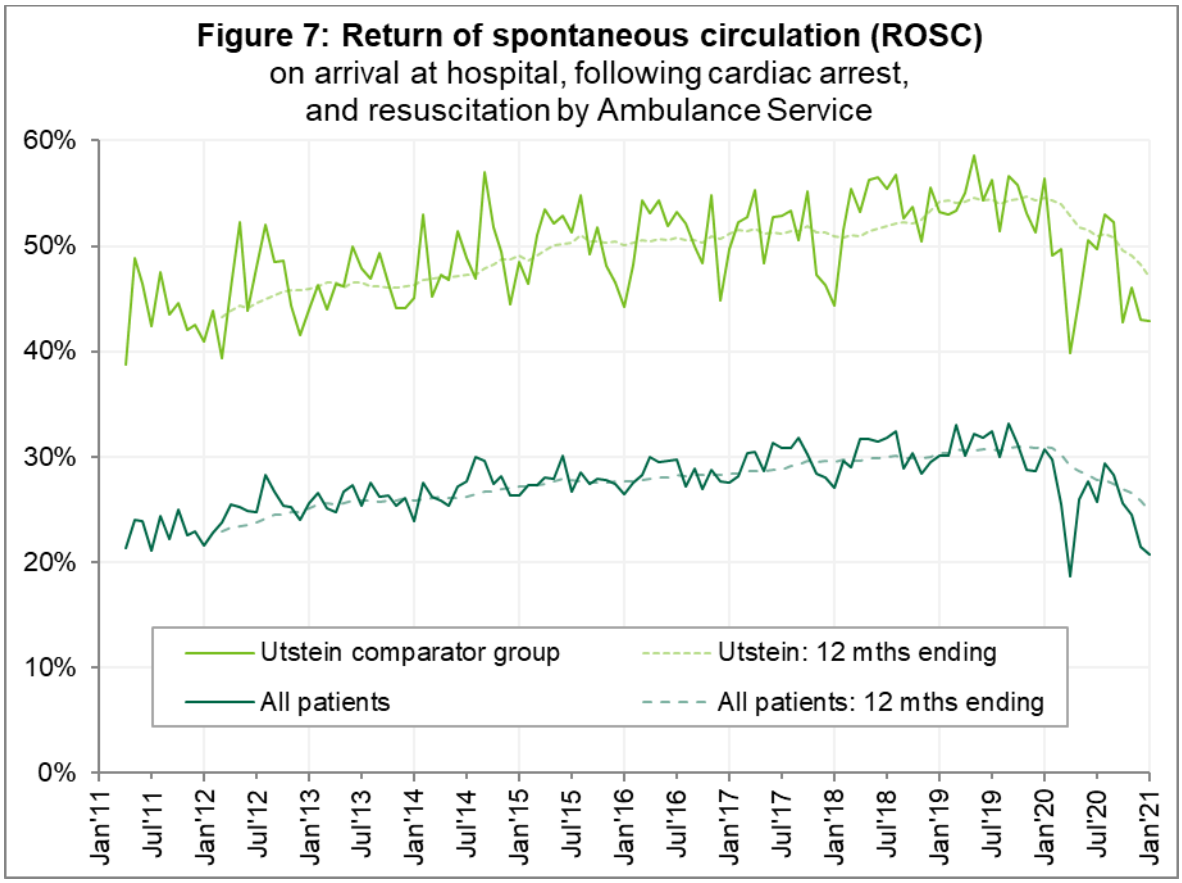
Some Ambulance Services are still producing, for internal reporting, data for the old cardiac arrest measure of survival to discharge. We have agreed with trusts to put any such data we receive into this Statistical Note, to help data users to compare the two measures, but it is entirely optional if trusts want to report the old measure. We will put a table in our September 2021 Statistical Note with any more such data.

January 2021	Ambulance Service:		East of England	Isle of Wight	North West	South East Coast	South Western	Yorkshire
			RYC	R1F	RX7	RYD	RYF	RX8
Resuscitated by Ambulance Service	All	R3n	397	10	302	294	293	325
	Utstein	R4n	34	0	42	35	47	42
Discharged from hospital alive	All	R3s	18	0	17	15	29	26
	Utstein	R4s	7	0	7	9	10	10

We continue to publish how many resuscitated cardiac arrest patients had return of spontaneous circulation (ROSC), with a pulse, on arrival at hospital. In January 2021, at England level, ROSC was 20.7%, significantly[3] less than the average for year ending September 2020 (27.4%), and the lowest for over six years except for 18.7% for April 2020 (Figure 7).

For the Utstein group, ROSC was 42.9% in January 2021, the lowest for over six years except for April and October 2020 (Figure 7).

Figure 7: Return of spontaneous circulation (ROSC) on arrival at hospital, following cardiac arrest, and resuscitation by Ambulance Service



[3] Significance tests in this document use Student's t-test with 95% significance.

For patients with ROSC on scene in January 2021, 75% received the appropriate care bundle, not significantly different to the year ending September 2020 (73%).

2.2 ST-segment elevation myocardial infarction (STEMI)

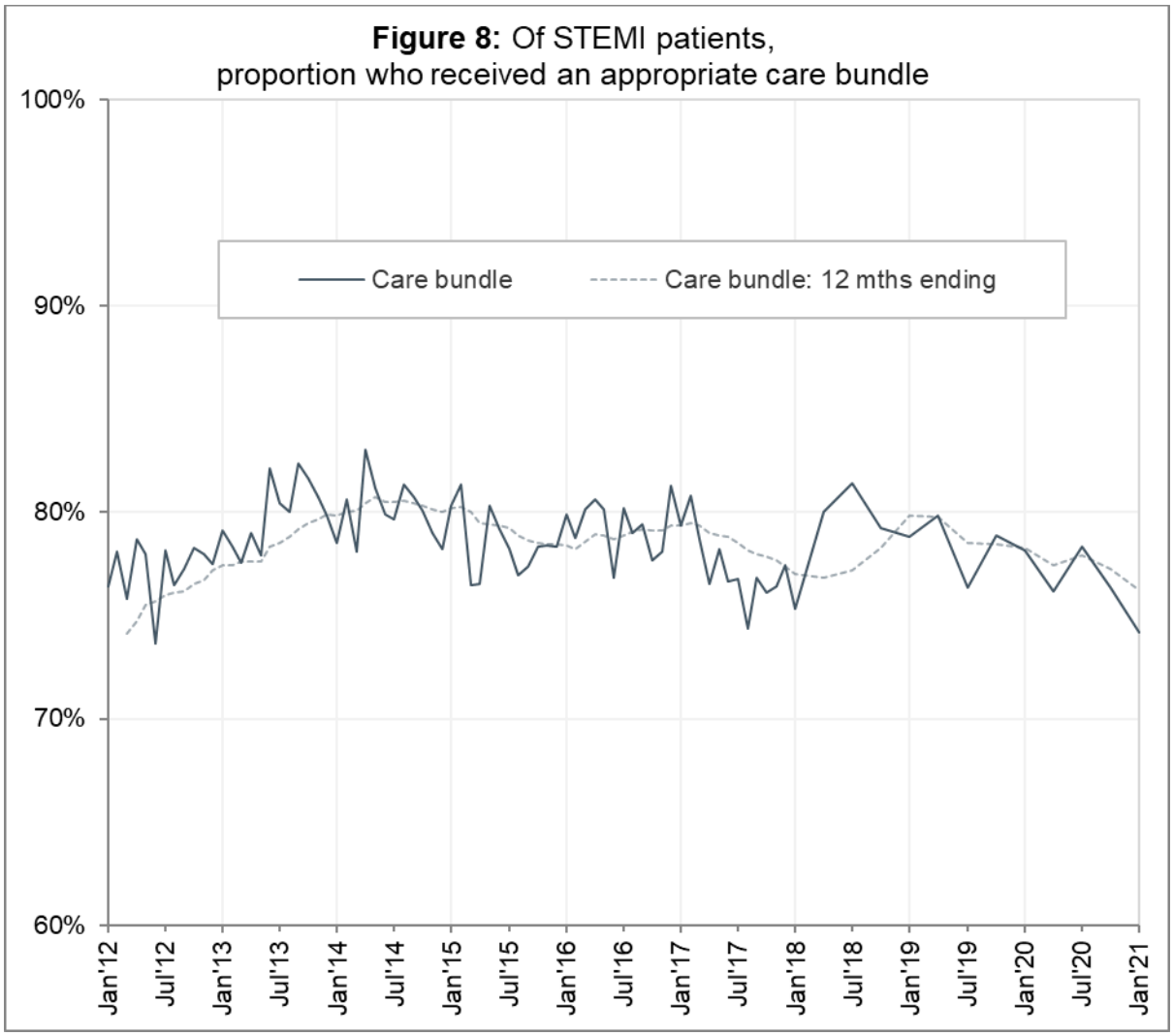
STEMI is a type of heart attack, determined by an electrocardiogram (ECG) test. Early access to reperfusion, where blocked arteries are opened to re-establish blood flow, and other assessment and care interventions, are associated with reductions in STEMI mortality and morbidity.

For STEMI patients, ambulance services measure 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.

In England in January 2021, for time from call to catheter insertion, the mean average was 2 hours 25 minutes, and the 90th centiles averaged 3 hours 23 minutes. Both were the longest since they were first collected in November 2017.

Figure 8 shows that of patients with an acute STEMI in England in January 2021, the proportion that received an appropriate care bundle was 74%, significantly lower than the average for the year ending September 2020 (78%).

Figure 8: 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 3.4 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 mentioned in section 3.1, incidents resulting from a call to NHS 111 are included in all Systems Indicators the except the call indicators, A1 to A6 and A114.

3.3 Related statistics

Ambulance handover delays of over 30 minutes at each Emergency Department are published by NHSEI during winter 2012-13, 2013-14, 2014-15, 2017-18, 2018-19, and 2019-20, at www.england.nhs.uk/statistics/statistical-work-areas/winter-daily-sitreps.

The Quality Statement described in section 3.1 includes information on:

- the "Ambulance Services" publications by 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://statswales.gov.wales/Catalogue/Health-and-Social-Care/NHS-Performance/Ambulance-Services
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 Contact information

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

The person responsible for producing this publication is Ian Kay; Performance Analysis Team; Finance, Performance and Planning Directorate; NHS England and NHS Improvement (NHSEI); england.nhsdata@nhs.net; 0113 825 4606.

3.5 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.