

# Key statistics from the Case Mix Programme

— adult, general critical care units

1 January 2019 to 31 December 2021

## Critical care units in the Case Mix Programme

Between 1 January 2019 and 31 December 2021, there were a total of 278 NHS adult critical care units in England, Wales and Northern Ireland participating in the Case Mix Programme with at least six months' validated data.

The breakdown of units and admissions by unit type is shown below:

NHS units	Number of adult critical care units	Number of admissions		
		2019	2020	2021†
Adult general ICUs and ICU/HDUs*	197	150,089	130,917	127,628
Combined general/neurosciences critical care units*	20	22,191	21,579	20,202
Specialist neurosciences critical care units	9	7,933	7,471	7,078
Specialist cardiothoracic critical care units	26	32,026	26,781	26,367
Specialist liver critical care units	1	787	1,022	1,022
Standalone high dependency units	25	18,087	10,869	12,317

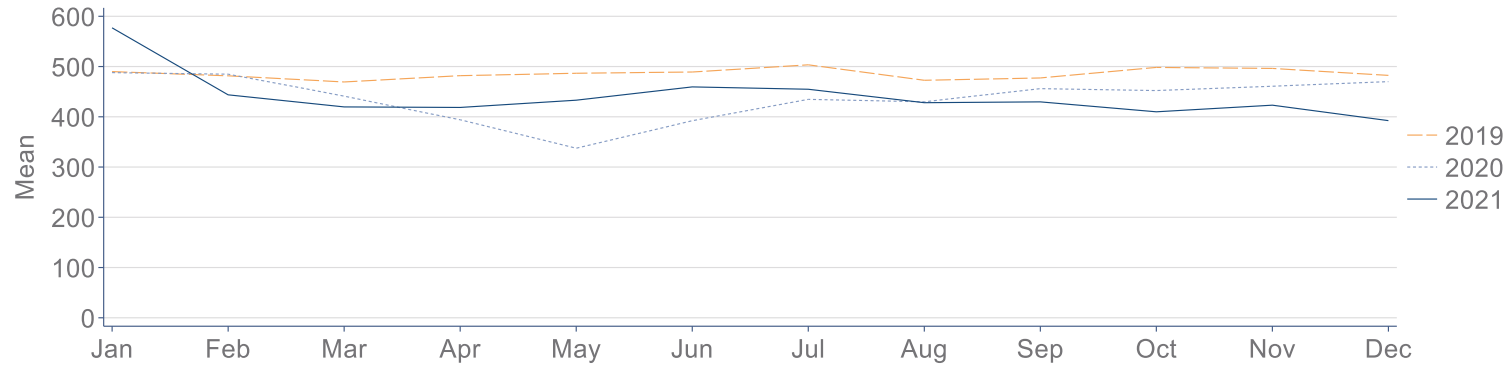
\*In this report, these two categories are combined as adult, general critical care units

† As data submission for Oct-Dec 2021 is still ongoing with further data expected from approximately 30 units at the time of writing, the actual number of admissions in 2021 is expected to be slightly higher

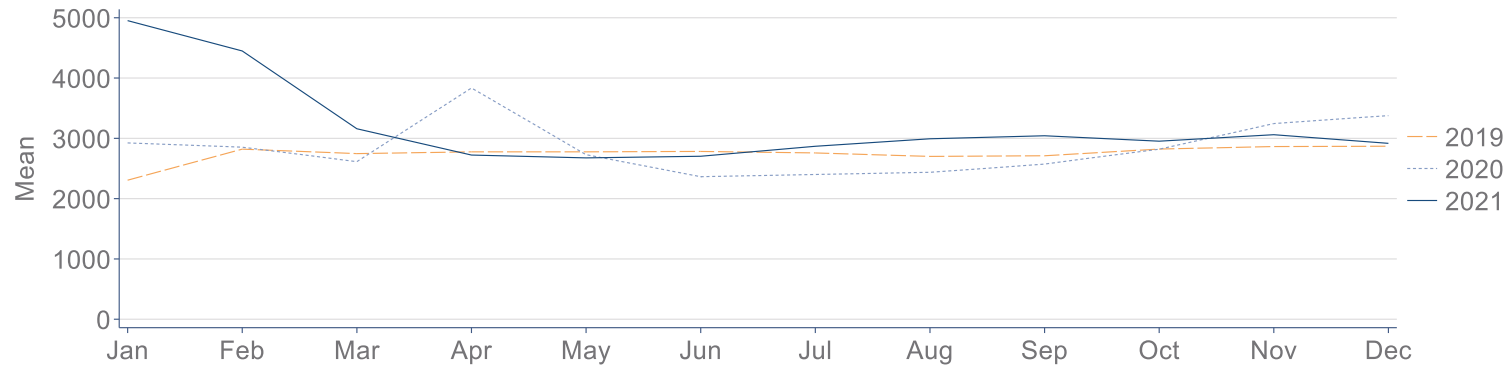
This report includes admissions to NHS adult, general critical care units. Please note that COVID-19 surge areas are not included as separate units in the count of critical care units but data from these areas are included in the report, where available

## Admissions – trends

Mean daily admissions



Mean daily number of patients in critical care



## Case mix (i)

	2019	2020	2021
Age (years), mean (SD)	60.6 (17.8)	59.7 (16.9)	59.0 (16.9)
Male, n (%)	91,528 (55.6%)	84,847 (58.1%)	81,706 (57.9%)
Ethnic group, n (%)			
White	141,275 (85.8%)	118,738 (81.3%)	112,880 (80.0%)
Mixed/multiple ethnic groups	1143 (0.7%)	1234 (0.8%)	1284 (0.9%)
Asian/Asian British	7011 (4.3%)	8817 (6.0%)	8473 (6.0%)
Black/African/Caribbean/Black British	4358 (2.6%)	5109 (3.5%)	5048 (3.6%)
All other	3339 (2.0%)	4229 (2.9%)	4374 (3.1%)
Not stated	7531 (4.6%)	7839 (5.4%)	9112 (6.5%)
Index of Multiple Deprivation (IMD) quintile *, n (%)			
1 (least deprived)	25,741 (15.9%)	22,050 (15.4%)	21,030 (15.2%)
2	29,574 (18.3%)	25,111 (17.5%)	24,204 (17.5%)
3	32,361 (20.0%)	28,446 (19.9%)	27,047 (19.5%)
4	35,229 (21.8%)	31,817 (22.2%)	30,997 (22.4%)
5 (most deprived)	38,783 (24.0%)	35,663 (24.9%)	35,174 (25.4%)

\*Index of Multiple Deprivation (IMD) is based on the patient's usual residential postcode (assigned at the level of Lower Layer Super Output Area) according to: English Index of Multiple Deprivation 2019 for postcodes in England; Welsh Index of Multiple Deprivation 2019 for postcodes in Wales; Northern Ireland Multiple Deprivation Measure 2017 for postcodes in Northern Ireland.

SD – standard deviation

## Case mix (ii)

	2019	2020	2021
Severe conditions in the past medical history, n (%)			
Severe liver disease	4243 (2.6%)	3523 (2.4%)	3561 (2.5%)
Severe respiratory disease or home ventilation	4220 (2.6%)	2664 (1.8%)	2380 (1.7%)
Haematological malignancy	3400 (2.1%)	2807 (1.9%)	2848 (2.0%)
Metastatic disease	6111 (3.7%)	4918 (3.4%)	4659 (3.3%)
Immunocompromise*	12,871 (7.8%)	10260 (7.1%)	9962 (7.1%)
Prior dependency, n (%)			
Able to live without assistance with daily activities	125,330 (76.3%)	115,999 (79.9%)	113,605 (80.8%)
Some (minor/major) assistance with daily activities	36,885 (22.5%)	27,837 (19.2%)	25,585 (18.2%)
Total assistance with all daily activities	1966 (1.2%)	1357 (0.9%)	1345 (1.0%)
CPR within 24 hours prior to admission, n (%)			
Community CPR	6218 (3.8%)	5097 (3.5%)	4983 (3.5%)
In-hospital CPR	4372 (2.7%)	3310 (2.3%)	3607 (2.6%)

\*Daily high-dose steroid treatment, chemotherapy, radiotherapy, congenital immunohumoral or cellular immune deficiency state, or AIDS

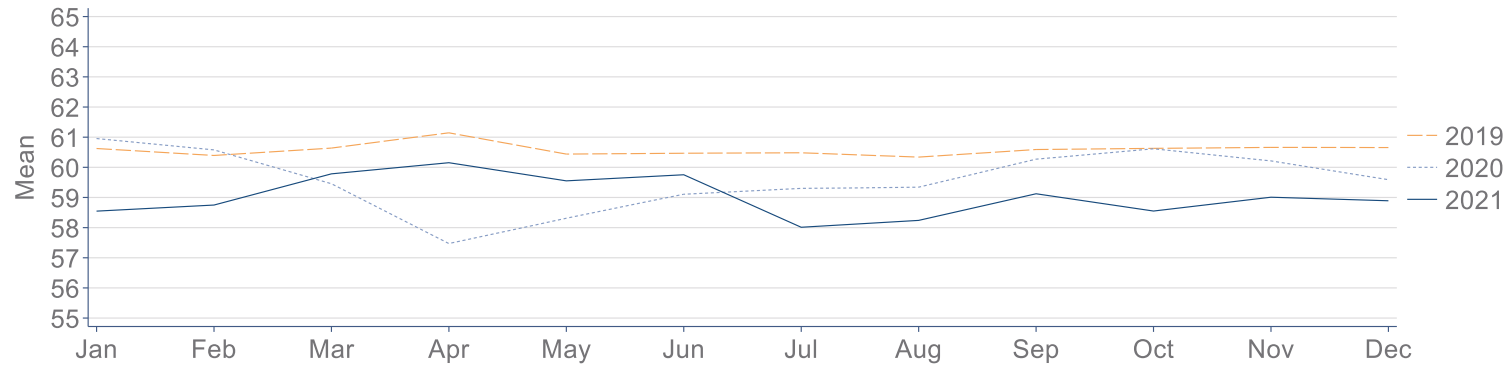
## Case mix (iii)

	2019	2020	2021
Source of admission, n (%)			
Emergency department or not in hospital – unplanned admission	49,089 (29.8%)	45,491 (31.2%)	42,230 (29.9%)
Emergency department or not in hospital – planned admission	812 (0.5%)	698 (0.5%)	780 (0.6%)
Theatre – planned admission following elective/scheduled surgery	32,306 (19.6%)	22,071 (15.1%)	19,812 (14.0%)
Theatre – unplanned admission following elective/scheduled surgery	5427 (3.3%)	3433 (2.4%)	3472 (2.5%)
Theatre – admission following emergency/urgent surgery	31,604 (19.2%)	25,845 (17.7%)	24,615 (17.4%)
Ward or intermediate care area	39,004 (23.7%)	41,033 (28.1%)	41,479 (29.4%)
Other critical care unit – repatriation	884 (0.5%)	665 (0.5%)	664 (0.5%)
Other critical care unit – planned or unplanned transfer	4407 (2.7%)	5635 (3.9%)	6822 (4.8%)
Other acute hospital (not critical care)	1124 (0.7%)	1095 (0.8%)	1297 (0.9%)
Severity scores, mean (SD)			
ICNARC Physiology Score	16.2 (8.8)	16.8 (8.7)	17.1 (8.6)
APACHE II Acute Physiology Score	10.9 (5.7)	10.9 (5.5)	10.9 (5.5)
APACHE II Score	15.1 (6.6)	14.9 (6.4)	14.9 (6.3)

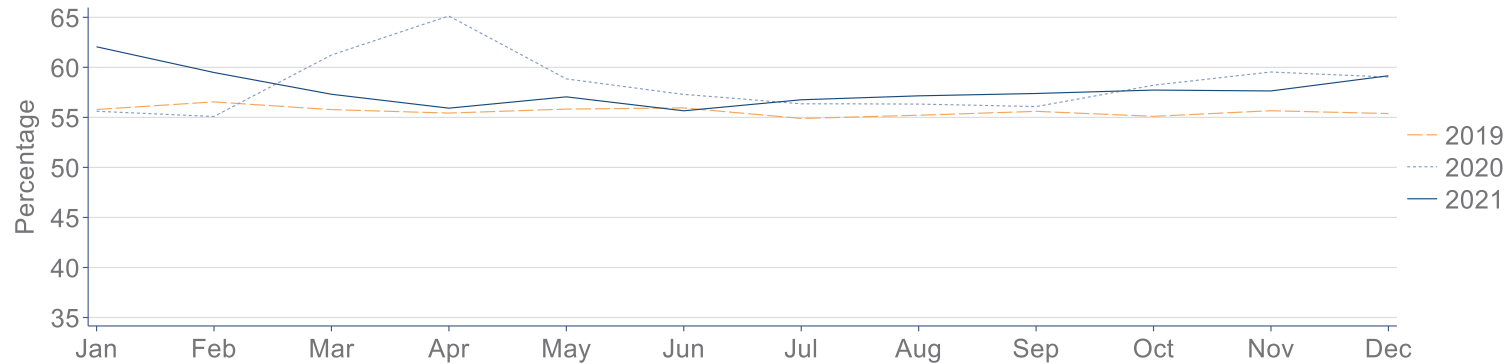
SD – standard deviation

## Case mix – trends (i)

### Mean age

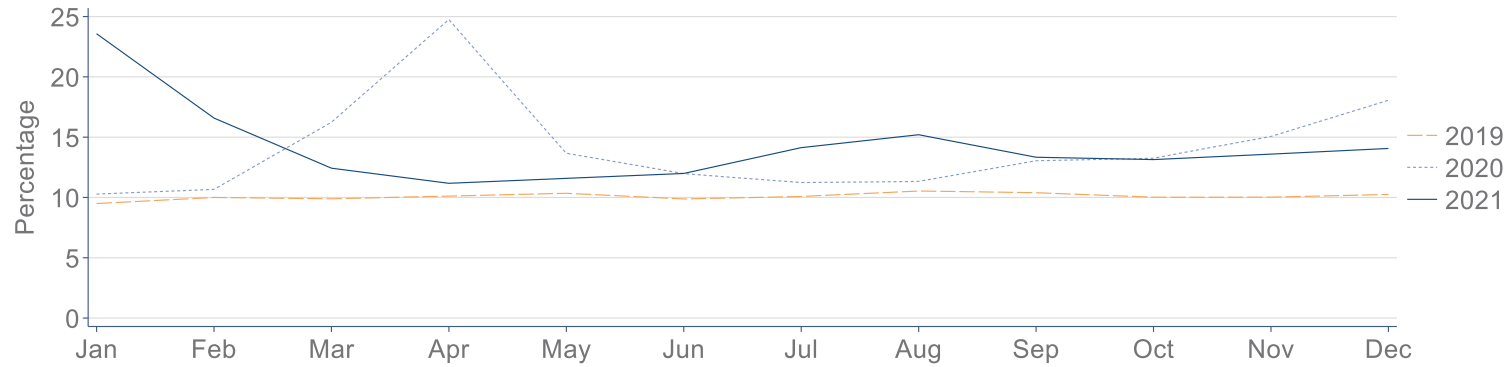


### Percentage male

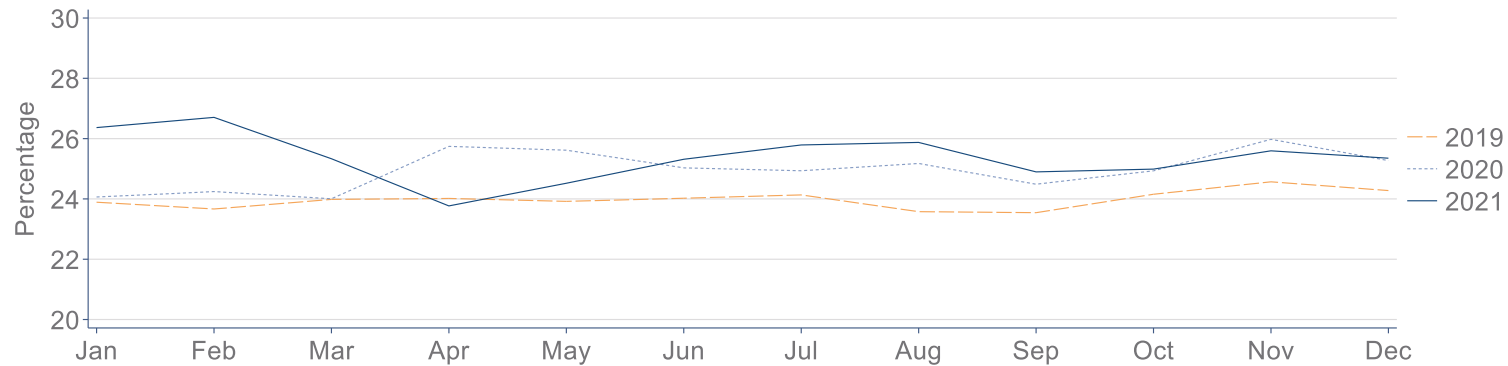


## Case mix –trends (ii)

Percentage in all ethnic groups other than White



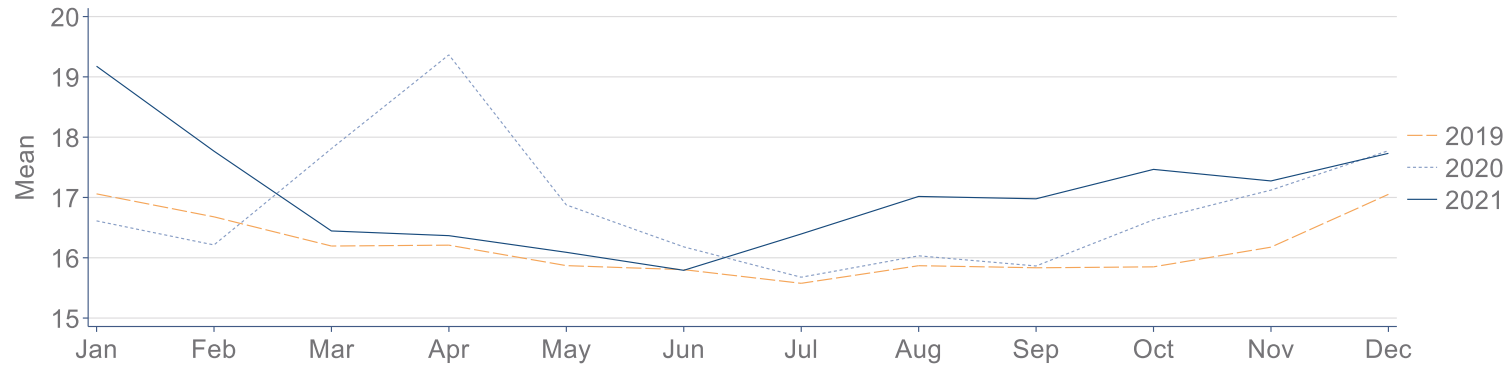
Percentage from most deprived quintile of IMD



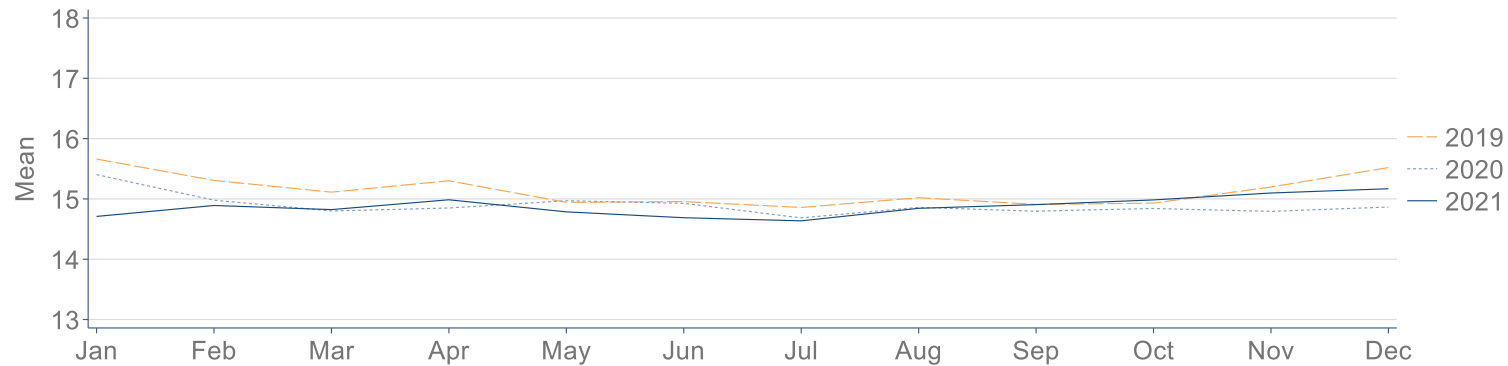


## Severity at admission – trends (iii)

Mean ICNARC physiology score



Mean APACHE II score



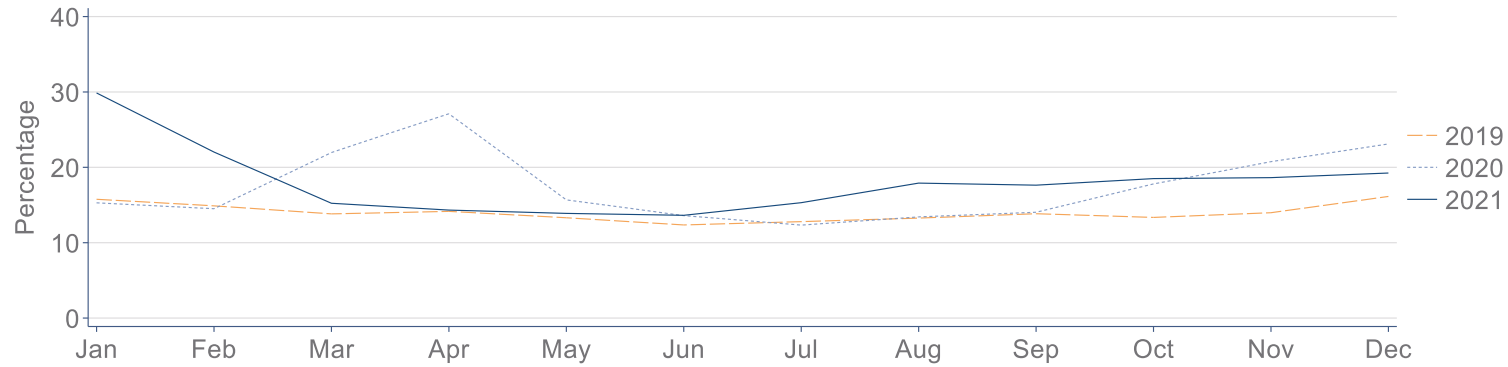
## Outcomes

	2019	2020	2021
Outcome at end of critical care, n (%)			
Survived	141,320 (86.0%)	120,124 (82.5%)	114,449 (81.7%)
Died	22,944 (14.0%)	25,459 (17.5%)	25,666 (18.3%)
Outcome at end of acute hospital stay, n (%)			
Survived	132,686 (80.9%)	111,716 (76.9%)	105,614 (75.8%)
Died	31,326 (19.1%)	33,569 (23.1%)	33,725 (24.2%)
Duration of critical care in days, median (IQR)			
Survivors	3 (1, 5)	3 (1, 6)	3 (1, 7)
Non-survivors	3 (1, 7)	4 (1, 11)	5 (1, 13)
Duration of critical care in days, mean (SD)			
Survivors	5.4 (14.0)	6.4 (11.7)	7.2 (19.3)
Non-survivors	5.8 (10.8)	8.1 (12.2)	9.4 (14.3)

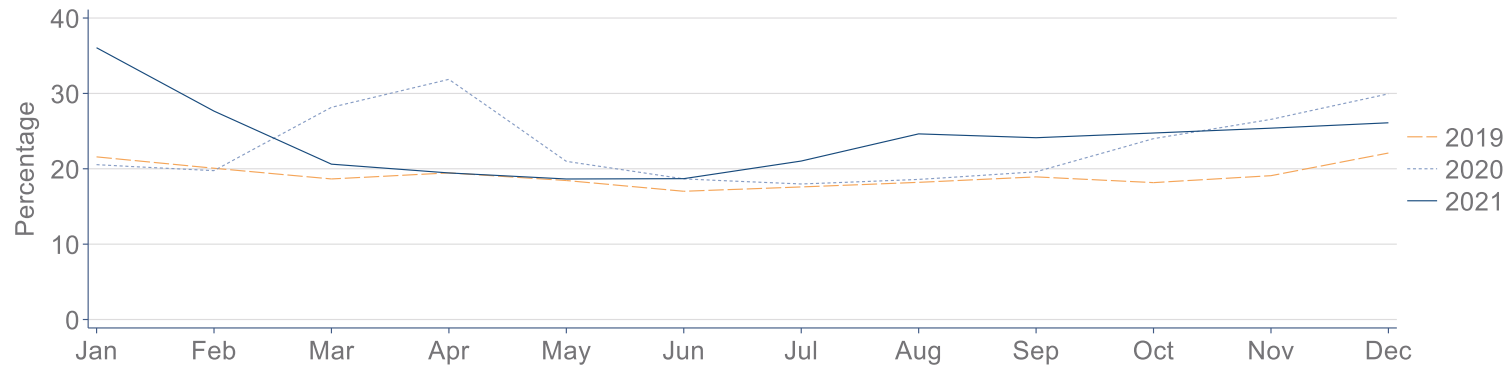
IQR – interquartile range; SD – standard deviation

# Mortality – trends

## Unadjusted critical care unit mortality

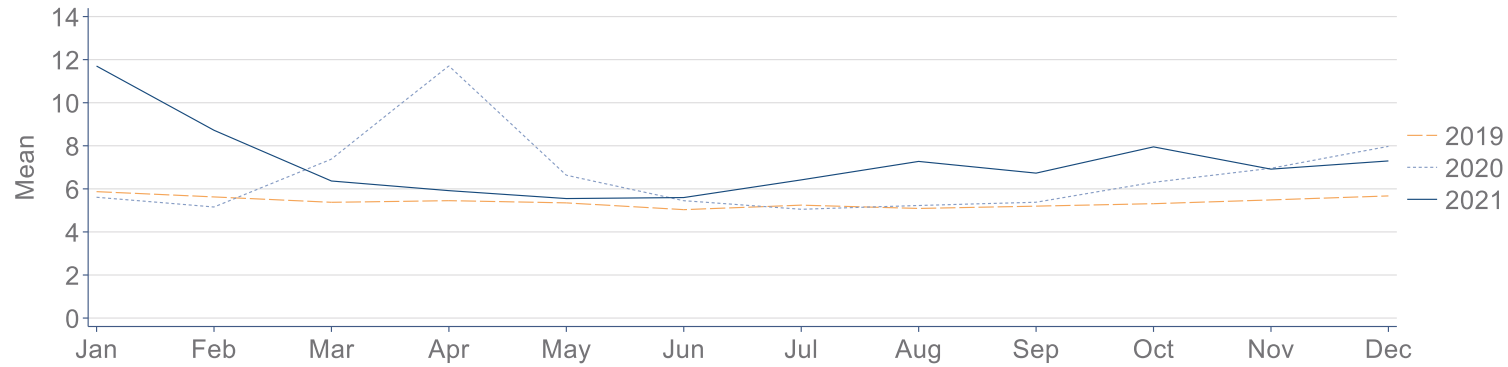


## Unadjusted acute hospital mortality

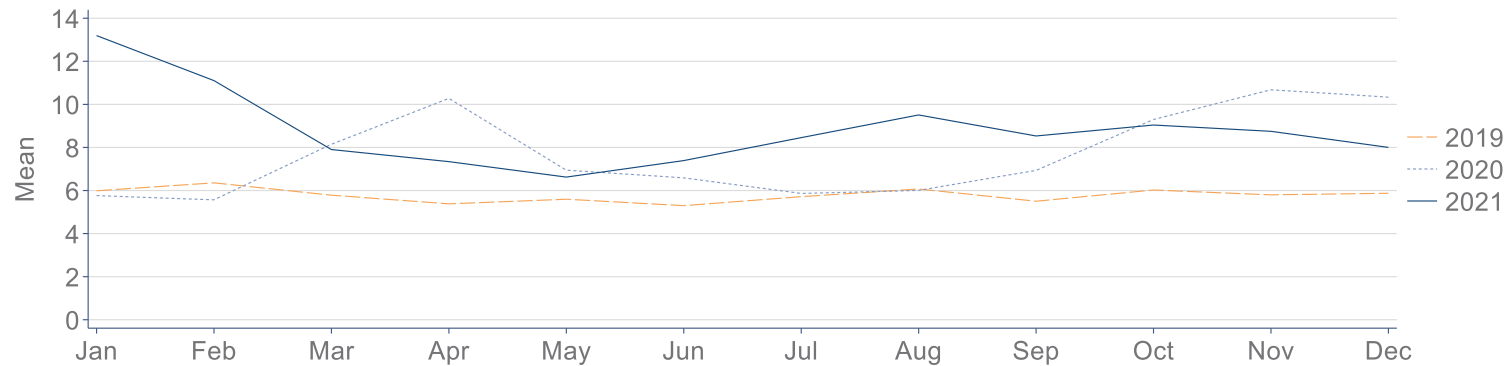


## Length of stay – trends

Mean duration of critical care (days) – survivors



Mean duration of critical care (days) – non-survivors



## Admission groups

	2019		2020		2021	
	Number of admissions (%)	Acute hospital mortality* (%)	Number of admissions (%)	Acute hospital mortality* (%)	Number of admissions (%)	Acute hospital mortality* (%)
Severe liver disease	4243 (2.6)	(36.7)	3523 (2.4)	(41.9)	3561 (2.5)	(43.9)
Haematological malignancy	3400 (2.1)	(40.6)	2807 (1.9)	(43.4)	2848 (2.0)	(44.0)
Metastatic disease	6111 (3.7)	(20.7)	4918 (3.4)	(19.6)	4659 (3.3)	(20.6)
Elective /scheduled surgery	37,733 (22.9)	(2.6)	25,504 (17.5)	(3.0)	23,284 (16.5)	(2.6)
Emergency/urgent surgery	31,604 (19.2)	(13.5)	25,845 (17.7)	(14.4)	24,611 (17.4)	(15.3)
Non-surgical	95,320 (57.9)	(27.4)	94,617 (64.8)	(30.7)	93,276 (66.1)	(31.5)
Trauma‡	13,038 (7.9)	(17.4)	10,178 (7.0)	(17.9)	8809 (6.2)	(18.4)
Pneumonia (not COVID-19)‡	19,961 (12.1)	(30.9)	10,590 (7.3)	(32.9)	8882 (6.3)	(34.9)
COVID-19‡	n/a		22,156 (15.2)	(41.5)	28,266 (20.0)	(37.5)
Mechanically ventilated§	58,238 (35.4)	(31.8)	55,856 (38.3)	(35.5)	54,716 (38.8)	(35.8)
Sepsis (Sepsis-3)§	48,835 (29.7)	(26.6)	55,378 (37.9)	(33.0)	56,681 (40.2)	(32.7)
Sepsis (0 organ dysfunctions)	4169 (2.5)	(7.0)	3360 (2.3)	(8.4)	3001 (2.1)	(8.0)
Sepsis (1 organ dysfunction)	19,530 (11.9)	(14.9)	22,648 (15.5)	(21.8)	25,129 (17.8)	(22.3)
Sepsis (2 organ dysfunctions)	14,043 (8.5)	(29.5)	17,250 (11.8)	(36.9)	17,243 (12.2)	(37.8)
Sepsis (3 organ dysfunctions)	7489 (4.5)	(45.3)	8466 (5.8)	(50.5)	8036 (5.7)	(50.3)
Sepsis (4 or more organ dysfunctions)	3604 (2.2)	(63.1)	3654 (2.5)	(65.1)	3272 (2.3)	(65.3)
Septic Shock§	7637 (4.6)	(52.9)	7079 (4.8)	(58.1)	7322 (5.2)	(58.5)
Acute kidney injury (all)§	94,143 (57.2)	(24.9)	84,759 (58.1)	(28.9)	82,883 (58.7)	(29.4)
Acute kidney injury (KDIGO stage I)	28,945 (17.6)	(17.6)	25,574 (17.5)	(22.3)	24,748 (17.5)	(23.4)
Acute kidney injury (KDIGO stage II)	43,833 (26.6)	(22.4)	40,609 (27.8)	(27.3)	39,883 (28.3)	(27.6)
Acute kidney injury (KDIGO stage III)	21,365 (13.0)	(40.1)	18,576 (12.7)	(41.5)	18,252 (12.9)	(41.3)

\* Excluding readmissions to the same critical care unit of the same patient within the same acute hospital stay

‡ Primary or secondary reason for admission § During the first 24 hours following admission

KDIGO – Kidney Disease: Improving Global Outcomes