

PRE-HOSPITAL TIMINGS FOR EMERGENCY STROKE PRESENTATIONS IN THE UK: ARE NATIONAL FAST CAMPAIGNS WORKING?

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BACKGROUND

Although 75% of stroke admissions in the UK arrive by ambulance, stroke presentations via emergency 999 calls represent only 2-3% of overall ambulance activity, and research into the components of the pre-hospital elements of the whole pathway is rare. Some small regional UK studies have previously looked at single components of the prehospital pathway such as the pre-hospital clinicians time on scene ¹. **This comprehensive nationwide study investigated the patient journey from onset of symptoms to arrival at hospital (figure 1), including observations of the timing and impact of the public education Face Arm Speech Time (FAST) campaigns.**

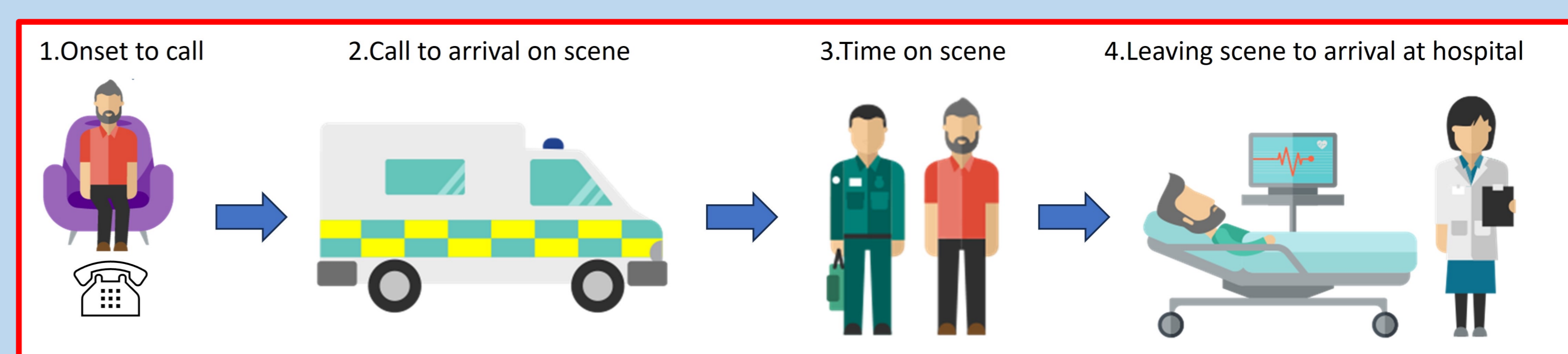


Figure 1: Breakdown of the pre-hospital pathway elements

METHODS

Median pre-hospital pathway timings

Quarterly changes over time (April 2019-March 2023)

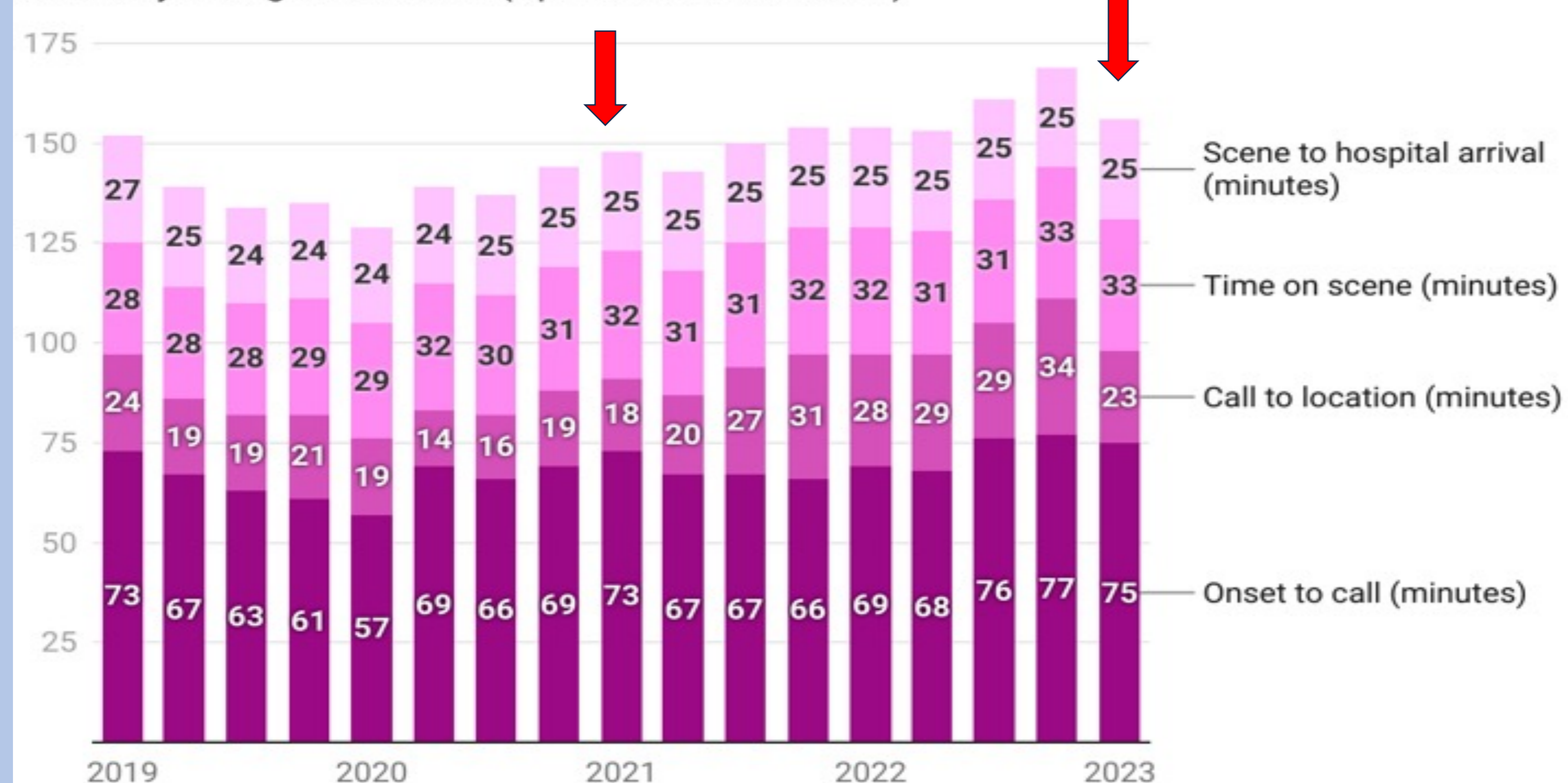


Figure 2: Quarterly Median National Pre-hospital pathway timings (April 2019-December 2023)

We performed a retrospective observational time series study investigating onset to emergency call, call to arrival on scene, time on scene and leaving scene to arrival at hospital.

197,808 Stroke records between April 2019-March 2023 for the 11 ambulance services covering England were extracted and analysed from the Sentinel Stroke National Audit Programme (SSNAP). These 11 services provide a comprehensive and whole population coverage.

Multiple linear regression was used to examine temporal trends in each component of the pre-hospital pathway throughout the study period. Both quarterly and monthly data were completed to allow for more detailed analysis and noticeable impacts of the 2 National Public Health England (PHE) FAST campaigns dated 9th March 2021 for 6 weeks & 13th February 2023 for 6 weeks (highlighted in both figure 2 & 3 with red arrows). UK FAST national media campaigns are public facing in the form of television, radio and poster advertisements.

RESULTS

Between 2019 and 2023 the median onset to arrival time increased from 160 (IQR 91-417) to 185 minutes (IQR 105-475) ($p < 0.05$).

- All component timings within the pathway increased significantly over this period ($p < 0.05$).
- Prominently, median time from onset to emergency call increased from 78 (IQR 61-104) to 84 minutes (IQR 64-114), and call to arrival at incident increased from 18 (IQR 11-32) to 26 minutes (IQR 15-47).
- Median times at incident (27-32 minutes) and incident to hospital (16 minutes), while statistically significant, increased to a lesser extent.
- There were no discernible changes in these temporal trends at or immediately after the public FAST campaigns.**

Median pre-hospital pathway timings

Monthly national changes over time (April 2019 - March 2023)

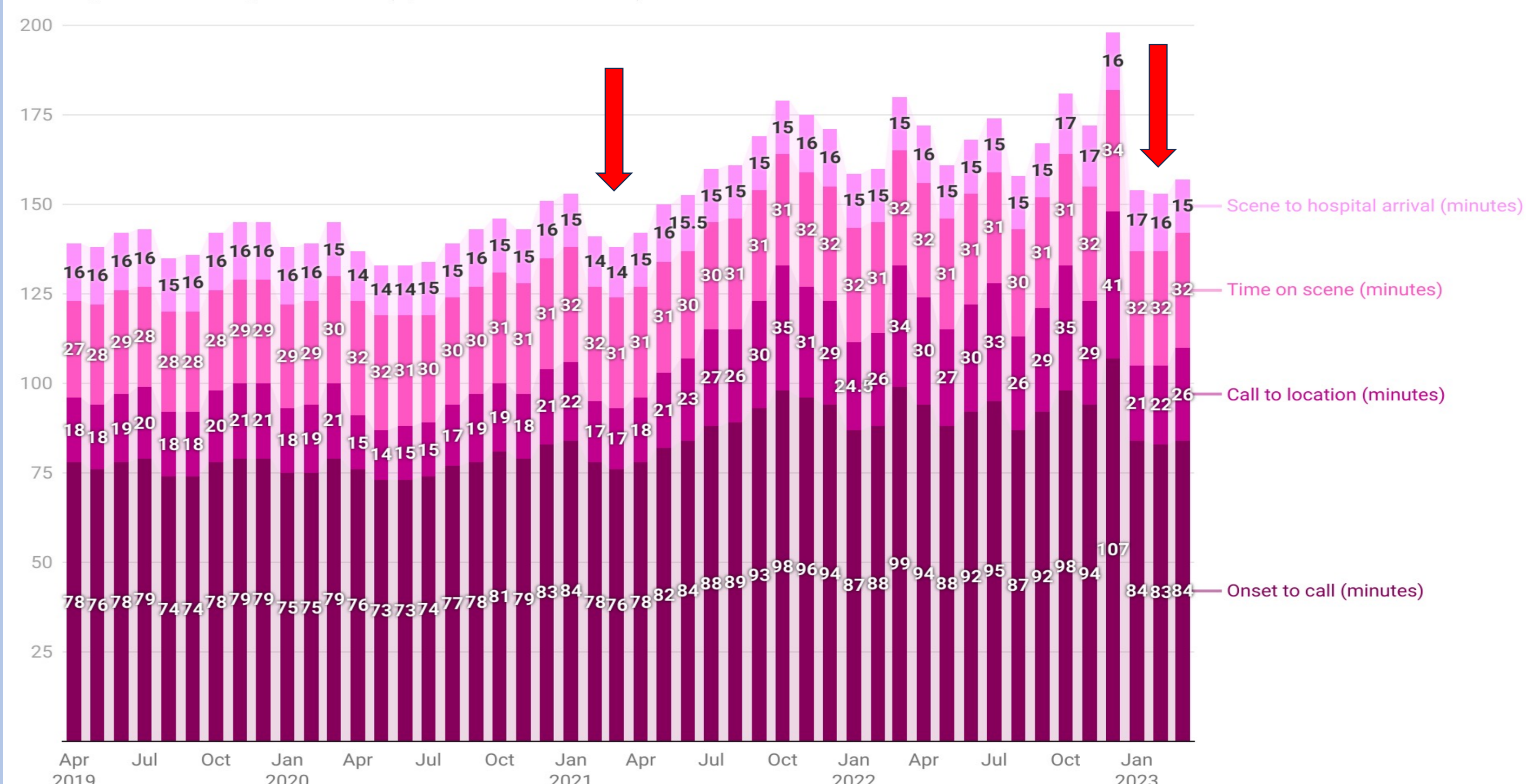


Figure 3: Monthly Median National Pre-hospital pathway timings (April 2019-December 2023)

CONCLUSION

Over the 4 years 2019-2023, overall onset to arrival times for emergency stroke calls in the UK have increased substantially, with potential adverse impacts on reperfusion eligibility and benefit. Notably, onset to call times during the 4 years have risen 6 minutes to 84 minutes despite national media campaigns promoting FAST. We did not detect any enduring reduction in onset to arrival times in the months following the FAST campaign in March-April 2021, and the early data following the FAST campaign in Feb-March 2023 also does not suggest a significant reduction, although more data from the following months is awaited.

Further research is needed to fully understand the impact of the FAST campaigns upon patient/bystander behaviour (in contacting emergency services) and to investigate any other variables (e.g. stroke type and severity, demographics and co-morbidities etc.) which may be affecting pathway components for stroke and other emergency conditions. Such analysis would be especially valuable when planning and targeting future public stroke awareness campaigns.

1. Haworth, D., & McClelland, G. (2019). Call to hospital times for suspected stroke patients in the North East of England: A service evaluation. *British Paramedic Journal*, 4(2), 31-36.