

Relationship between time spent in emergency departments, employment, and hospitalisation, England: 2021 to 2025

The relationship between total time spent in emergency departments, post-discharge employment, and risk of hospitalisation.

Contact:
National Statistician's Analysis
Unit
NSO_Analysis_Unit@ons.gov.uk
+44 1329 444110

Release date:
16 September 2026

Next release:
To be announced

Table of contents

1. [Main points](#)
2. [Data on relationship between time spent in emergency departments, employment, and hospitalisation](#)
3. [Glossary](#)
4. [Data sources and quality](#)
5. [Related links](#)
6. [Cite this statistical bulletin](#)

1 . Main points

- Among working-age employees who attended a type 1 emergency department (ED), including accident and emergency, in England between 1 April 2021 and 31 March 2023, 21.9% left employment within two years of their ED attendance, and 37.0% were hospitalised more than one day after being discharged from the ED.
- Spending longer in the ED was associated with both a higher risk of being admitted to hospital more than one day after attendance and of leaving employment.
- After adjusting for clinical and demographic confounders, the rate of hospital admission after discharge from the ED for individuals who spent two to under four hours in the ED was 6.0% higher, compared with those who spent under two hours in the ED; this was 95.0% higher for individuals who spent 12 hours or more in the ED, compared with those who spent under two hours in the ED.
- After adjusting for clinical and demographic confounders, the rate of leaving employment for individuals who spent two to under four hours in the ED was 4.0% higher, compared with those who spent under two hours in the ED; this was 21.0% higher for individuals who spent 12 hours or more in the ED, compared with those who spent under two hours in the ED.

Our findings describe associations and not causal relationships. Therefore, they should not be interpreted as evidence that longer time spent in the ED necessarily causes people to be hospitalised or leave employment. This is because other factors, which our data might not have captured, may partly explain these relationships.

2 . Data on relationship between time spent in emergency departments, employment, and hospitalisation

[Relationship between time spent in emergency departments, employment, and hospitalisation](#)

Dataset | Released 16 September 2026

The relationship between total time spent in emergency departments, post-discharge employment, and risk of hospitalisation.

3 . Glossary

Cox proportional hazards model

The Cox proportional hazards regression model is a multiple regression procedure that estimates the association between a time-to-event outcome variable (such as leaving employment or being admitted to hospital) and an exposure variable of interest (such as time spent in an emergency department). It also adjusts for other characteristics expected to be associated with both the outcome and the characteristic of interest (such as demographic and clinical variables).

Hazard ratio

A hazard ratio (HR) is a measure of the relative difference in the instantaneous rate of an outcome (such as leaving employment or being admitted to a hospital) between exposure groups (such as spending a long versus a short period of time in the emergency department).

An HR greater than 1 indicates that the rate of the outcome is higher in the exposure group under study compared with a reference exposure group. An HR less than 1 indicates that the rate of the outcome is lower in the exposure group under study compared with a reference exposure group. For our modelling results, we report the hazard ratios multiplied by 100.

4 . Data sources and quality

Study data

We created a person-level dataset by linking the NHS Emergency Care Dataset (ECDS) on emergency department (ED) attendances with:

- Census 2021 data
- NHS Hospital Episode Statistics (HES) Admitted Patient Care (APC) and Outpatient (OP) datasets
- Office for National Statistics death registration data
- HM Revenue and Customs (HMRC) Pay As You Earn (PAYE) Real Time Information (RTI), [calendarised to monthly observations](#)

The Census 2021 data were linked to the 2019 NHS Personal Demographics Service (PDS) to retrieve NHS numbers of census respondents, with a [linkage rate of 95.8%](#). The HES and death registrations datasets were subsequently linked to the census data using NHS numbers. The census data were linked to HMRC information through our Demographic Index, with a [linkage rate of 96.7%](#).

The study population included 3,347,008 individuals, who:

- were counted in Census 2021 as usual residents of England
- could be linked to NHS and HMRC information
- attended a type 1 ED (consultant-led 24-hour services with full resuscitation facilities, such as accident and emergency) at least once during the study period, from 1 April 2021 to 31 March 2023
- did not die during their ED attendance (including those who returned home or were admitted to a hospital for inpatient care)
- had an ECDS record that was populated with both a non-immediate acuity level (low, standard, urgent, very urgent) and a chief complaint (reason for attending ED)
- were aged 25 to 64 years on the date of their attendance
- were payrolled employees on the date of their attendance, according to HMRC PAYE records

Records deemed unreliable were excluded from the analyses, including those with:

- a departure date occurring before the arrival date
- missing information on arrival date, departure date or location
- missing information on method of arrival and admittance
- time spent in the ED exceeding 48 hours, as these records are likely to be incorrect

For individuals who attended the ED more than once during the study period, we used their first attendance that met the previously described criteria.

Analysis methods

We used a series of Cox proportional hazards models to assess the relationship between time spent in the ED and the risks of leaving employment and being hospitalised at least one day after being discharged. Age and calendar time (90-day intervals after the ED attendance) were modelled as restricted cubic splines. Because of computational constraints, we used a random 20% sample of the study population for the modelling.

We split time spent in the ED into seven categories:

- 0 to under 2 hours
- 2 to under 4 hours
- 4 to under 6 hours
- 6 to under 8 hours
- 8 to under 10 hours
- 10 to under 12 hours
- 12 hours or more

This was treated as a categorical variable in the modelling.

We then adjusted the models for the following Census 2021 variables, which may be related to both the time spent in the ED and the post-discharge outcomes of interest:

- sex
- ethnicity (White, Asian, Black, Mixed or Multiple Ethnic Group, Other)
- [Index of Multiple Deprivation quintile group](#)
- highest qualification (Level 1, Level 2, Level 3, Level 4 or above, Apprenticeship, No Qualifications)

We also adjusted for the following variables from the ECDS:

- age upon arrival at the ED
- chief complaint upon arrival at the ED ("General, minor or admin", "Airway or breathing", "Circulation or chest", "Environmental", "Eye", "Gastrointestinal", "Genitourinary", "Head and neck", "Neurological", "Obstetrics and gynaecology", "Psychosocial or behaviour change", "Skin", "Trauma or musculoskeletal")
- acuity level assigned during attendance
- healthcare provider for attendance

We adjusted for the following comorbidities, derived as binary variables ("Ever" or "Never") indicating whether the individual had a hospital record of the following conditions, using HES APC and OP records over the five years before 1 April 2021:

- coronavirus disease 2019 (COVID-19)
- cancer
- diabetes
- dementia
- serious mental illness
- autism
- neurological conditions
- epilepsy
- hypertension
- myocardial infarction
- ischaemic heart disease
- heart failure
- stroke
- other respiratory infections
- influenza and pneumonia
- asthma
- inflammatory bowel disease
- liver disease
- rheumatoid arthritis
- osteoarthritis
- osteoporosis
- kidney disease

We used Cox proportional hazards models to estimate adjusted hazard ratios (aHRs) for leaving employment and subsequent hospitalisation associated with different lengths of stay in the ED. The aHRs were compared with stays in the ED that were under two hours. Statistical uncertainty was quantified by 95% [confidence intervals](#) around the point estimates.

Strengths and limitations

Strengths of the analysis include the large size of the dataset, with near-complete population coverage, and the use of linked health and socio-demographic information. We performed data linkage successfully for nearly all Census 2021 respondents, with a high degree of accuracy, as reported in our [Census 2021 to Personal Demographics Service linkage report methodology](#) and our [2021 Census linkage to DWP master key and encrypted NINo methodology](#).

Although we adjusted for a broad range of socio-demographic and health-related factors, it is possible that not all sources of confounding between time spent in the ED and post-discharge outcomes were fully accounted for.

Our findings describe associations and not causal relationships. Therefore, they should not be interpreted as evidence that longer time spent in the ED necessarily causes people to be hospitalised or leave employment. This is because other factors, including comorbidity severity, and seriousness of condition, may also influence time spent in the ED and the chance of being hospitalised or leaving employment. Our findings' generalisability may also be limited because of the exclusion criteria we applied in our study design.

Additionally, our measure of total time spent in the ED does not distinguish between different stages of the attendance, such as waiting to be seen by a clinician, waiting for treatment, or waiting to be admitted to hospital. As a result, longer time spent in the ED may reflect a range of factors across the care pathway. Also, our analysis does not consider any time spent waiting for an ambulance before arriving at the ED.

5 . Related links

[Association between time spent in the emergency department and 30-Day mortality: a population-level observational study in England](#)

Journal article | July 2026

Research published in the Annals of Emergency Medicine exploring the associations between total time spent in the emergency department and 30-day post discharge mortality.

[Association between time spent in emergency care and 30-day post-discharge mortality, England: March 2021 to April 2022](#)

Bulletin | Released 17 January 2025

Relationship between time spent in A&E and the odds of 30-day, post-discharge, all-cause mortality, controlling for other factors.

6 . Cite this statistical bulletin

Office for National Statistics (ONS), released 16 September 2026, ONS website, statistical bulletin, [Relationship between time spent in emergency departments, employment, and hospitalisation, England: 2021 to 2025](#)