

## Data sources

The data were collected for each year between 2013 and 2019 inclusive, with each year running from 1 January to 31 December. All the data were subsequently aligned by year.

### 1) Online patient feedback

There are two main platforms for patients in England to make public their narratives of patient care: the NHS website (formerly called NHS Choices) and Care Opinion. These platforms exchange reviews, making feedback available on both portals. We downloaded the reviews over several days, using Python to interface with the convenient Care Opinion API.

Link to data: <https://www.careopinion.org.uk/info/api>

Date of access: July 2020

### 2) Staff-reported safety incidents

Safety incidents are reported by NHS staff via the National Reporting and Learning System (NRLS) and published via NHS Digital as the NHS Outcomes Framework (NHS OF) Indicator 5.6. We obtained the number and rate (per 1,000 bed days) of (1) all safety incidents and (2) severe safety incidents, where the degree of harm was “severe or death.”

Link to data: <https://digital.nhs.uk/data-and-information/publications/statistical/nhs-outcomes-framework>

Date of access: 04/08/2020

### 3) Summary Hospital-level Mortality Indicator

The Summary Hospital-level Mortality Indicator (SHMI) is a ratio of the observed number of deaths to the expected number of deaths. The SHMI expected number of deaths is calculated from a risk-adjusted model based on patient classification, patient age, patient gender, admission method, primary diagnosis, secondary diagnosis, comorbidity issues, treatment duration, and the specialism of the consultant.

Link to data: <https://digital.nhs.uk/data-and-information/publications/ci-hub/summary-hospital-level-mortality-indicator-shmi>

Date of access: 04/08/2020

### 4) Trust spells

Trust spells are the number of continuous patient stays using a hospital bed; it starts with admission and ends with discharge. Trust spells are reported as the denominator in the SHMI data.

Link to data: <https://digital.nhs.uk/data-and-information/publications/ci-hub/summary-hospital-level-mortality-indicator-shmi>

Date of access: 04/08/2020

### 5) Trust region

The geographic region for each NHS trust in the study was obtained using the NHS Organisation Data Service (ODS) database.

Link: <https://data.england.nhs.uk/dataset/ods-nhs-trusts-and-sites>

Date collected: 10/04/2020