

HDS assessment report

Abhinaya

2025-11-29

Aim

To examine the trend in age-sex standardised Coronary Heart Disease hospitalisation rates in Scotland between 2016/17–2018/19 and 2021/22–2023/24 according to the rolling averages”

Research Question

“How have age-sex standardised CHD hospitalisation rates in Scotland changed between 2016/17–2018/19 and 2021/22–2023/24 according to the rolling averages”

```
##Load Packages
```

```
library(tidyverse)
```

```
## Warning: package 'tidyverse' was built under R version 4.5.2
```

```
## Warning: package 'ggplot2' was built under R version 4.5.2
```

```
## Warning: package 'tibble' was built under R version 4.5.2
```

```
## Warning: package 'tidyr' was built under R version 4.5.2
```

```
## Warning: package 'readr' was built under R version 4.5.2
```

```
## Warning: package 'purrr' was built under R version 4.5.2
```

```
## Warning: package 'dplyr' was built under R version 4.5.2
```

```
## Warning: package 'forcats' was built under R version 4.5.2
```

```
## Warning: package 'lubridate' was built under R version 4.5.2
```

```
## -- Attaching core tidyverse packages ----- tidyverse 2.0.0 --
```

```
## v dplyr     1.1.4     v readr     2.1.6
```

```
## v forcats   1.0.1     v stringr   1.5.2
```

```
## v ggplot2   4.0.1     v tibble    3.3.0
```

```
## v lubridate 1.9.4     v tidyr    1.3.1
```

```
## v purrr    1.2.0
```

```
## -- Conflicts ----- tidyverse_conflicts() --
```

```
## x dplyr::filter() masks stats::filter()
```

```
## x dplyr::lag()   masks stats::lag()
```

```
## i Use the conflicted package (<http://conflicted.r-lib.org/>) to force all conflicts to become errors
```

```

library(readr)
library(tidyr)
library(dplyr)
library(here)

## Warning: package 'here' was built under R version 4.5.2

## here() starts at C:/Users/abhih/OneDrive/Documents/GitHub/Rstudioreport-Abhinaya

```

Read in data

The dataset used for the study is the coronary heart disease (CHD) patient hospitalisations, in Scotland, for the years 2006-2022, from the Scottish Public Health Observatory Online profiles Tool.

Numerator= Number of patients admitted due to coronary heart disease each year Denominator = Total population each year. Measure = Rate of admissions per 100,000 persons in the population.

```

CHD_total <- read_csv("ScotPHO_CHD_total.csv")

## Rows: 20 Columns: 12
## -- Column specification -----
## Delimiter: ","
## chr (7): area_code, area_type, area_name, period, type_definition, indicator...
## dbl (5): year, numerator, measure, upper_confidence_interval, lower_confiden...
##
## i Use `spec()` to retrieve the full column specification for this data.
## i Specify the column types or set `show_col_types = FALSE` to quiet this message.

glimpse(CHD_total)

## Rows: 20
## Columns: 12
## $ area_code          <chr> "S00000001", "S00000001", "S000~"
## $ area_type          <chr> "Scotland", "Scotland", "Scotland", "Scotlan~"
## $ area_name          <chr> "Scotland", "Scotland", "Scotland", "Scotlan~"
## $ year               <dbl> 2003, 2004, 2005, 2006, 2007, 2008, 2009, 20~
## $ period              <chr> "2002/03 to 2004/05 financial years; 3-year ~"
## $ type_definition    <chr> "Age-sex standardised rate per 100,000", "Ag~"
## $ indicator          <chr> "Coronary heart disease (CHD) patient hospit~"
## $ numerator          <dbl> 27182.0, 26465.0, 25603.3, 24778.3, 23717.0, ~
## $ measure             <dbl> 637.6, 614.5, 587.3, 561.0, 529.3, 500.4, 47~
## $ upper_confidence_interval <dbl> 645.6, 622.2, 594.8, 568.3, 536.4, 507.2, 48~
## $ lower_confidence_interval <dbl> 629.8, 606.8, 579.8, 553.8, 522.4, 493.7, 47~
## $ data_source         <chr> "Public Health Scotland (SMR01)", "Public He~

view(CHD_total)

```

Select relevant columns (year, period, numerator, measure)

```
CHD_tidy <- CHD_total %>% select (year, period, numerator, measure) %>% filter( year >= 2017) %>% rename
```

Summary statistics of the data

```
summary(CHD_tidy)
```

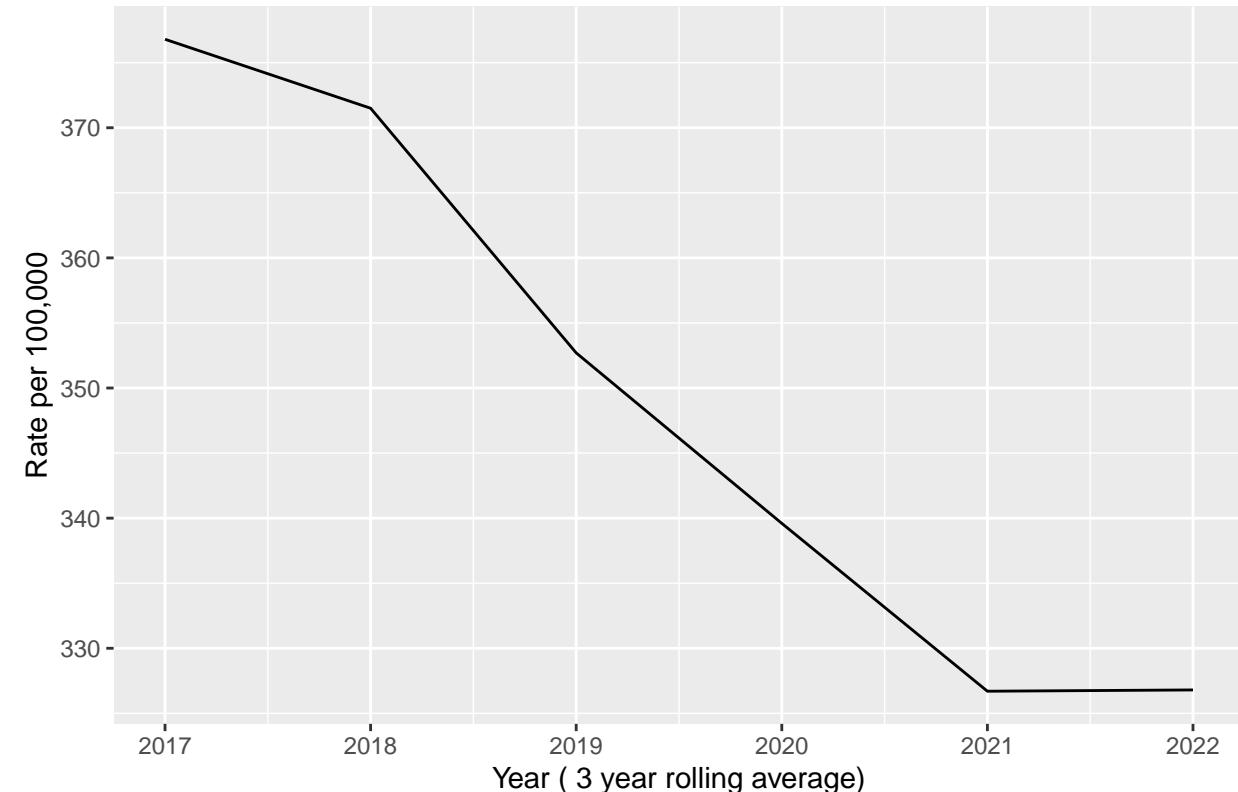
```
##          year        period      Hosp_per_year HospRate_100k
##  Min.   :2017   Length:6       Min.   :17952   Min.   :326.7
##  1st Qu.:2018   Class  :character  1st Qu.:18253   1st Qu.:330.0
##  Median :2020   Mode   :character  Median :18676   Median :346.1
##  Mean   :2020                    Mean   :18801   Mean   :349.0
##  3rd Qu.:2021                    3rd Qu.:19463   3rd Qu.:366.8
##  Max.   :2022                    Max.   :19667   Max.   :376.8
```

Plot line graph

Plotting a line graph to show the trend line of the change in hospitalisation rates over the years.

```
ggplot( CHD_tidy,aes(x=year, y=HospRate_100k )) + labs(title = "CHD Hospitalisation Rate in Scotland (2017–2022)", subtitle = "3 year rolling average")
```

CHD Hospitalisation Rate in Scotland (2017–2022)



Plot a bar graph

```
ggplot(CHD_tidy, aes(x= year, y= Hosp_per_year)) + geom_col(fill = "blue4") + labs( title="Rolling 3 ye
```

