

Title: Understanding the impact of age demographics on hospital admissions in Scotland

Academic team:

Industrial Collaborators: Public Health Scotland; Contacts: Filip Zmuda, Ken Nicholson and Scott Heald

Subject areas: Data Science; Statistical Modelling; Healthcare.

Project Description: (300 max)

Public Health Scotland is Scotland's lead national agency for improving and protecting health and wellbeing of all of Scotland's people. One of Public Health Scotland's goals is the use of intelligence and data to support the system and improve the experience we will have with the system.

The demographic shift caused by the baby boom of the 1950s and 60s will have a major impact on the demand for services in the coming years. It will be one of the main challenges to supporting the system. The amount of data available to understand drivers and the demand for services is variable across the health and social care system.

The data available comes from the NHS Open Data platform. There is a specific set of data files that we have from our Open Data platform for this challenge. There is however further open data that can be used in combination with this data, e.g. Statistics.gov. This can involve linking to population data to standardise data between geographical areas.

The aim of this project is to present information and intelligence that enables people to further understand the age demographic driver of the future and when the demand will ease. Thus, making it possible to re-design services to be more effective or to look at means of prevention to stop the demand in the first place.

A wide range of statistical methods could be used to understand the data in the first place and to link to other open data. It would be sensible to focus in on particular issues or cohorts of individuals whether by area or demographics. Using classification (SVM, random forest) or clustering (k-means, DBSCAN) methods to find the patterns that sit within the data and then using regression or other means to understand the future demand.

References:

Public Health Scotland <https://www.publichealthscotland.scot/our-organisation/a-scotland-where-everybody-thrives-public-health-scotland-s-strategic-plan-2020-23/>

Public Health Scotland Waiting Times Reports
<https://publichealthscotland.scot/publications/?q=&fq=topics%3AWaiting+times%23>

NHS Open Data <https://www.opendata.nhs.scot/>

Scottish Government Open Data <https://statistics.gov.scot/home>