Title: Understanding the waiting times landscape in Scotland: finding key drivers and forecasting demand

Academic team:

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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. Waiting Times have always been a key policy driver for the health and social care system. 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 main challenges to supporting the system around waiting times is to fully understand the situation. The amount of data available to understand drivers and the demand for services is variable across the health and social care system. There are a number of waiting times covering different parts of the system from A&E to Cancer to Diagnostics and the 18 weeks to treatment.

The data available comes from the NHS Open Data platform. For each of the different waiting times the data includes health board, time of year, speciality or diagnostic information, and numbers for each waiting time category. Additionally, the open data can be used in combination with other open data platforms, 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 waiting times drivers and future demand. 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/

NHS Waiting Times Open Data https://www.opendata.nhs.scot/dataset?groups=waiting-times

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