

NHS Pharmacy Forecasting

Description

This is ongoing work with Nottinghamshire Healthcare NHS Foundation Trust. The current goal is to forecast demand for drugs within the Trust. The Trust are hoping to improve inventory management practices which are at present manually intensive.

Motivation

I share this dataset with the group in order to stimulate interest in this area and generate early ideas for the Trust. I also thought it would be a fun dataset for the group to have a look at as part of our ongoing range of QFF activities. In the upcoming QFF, we will set aside about 40 minutes to discuss the dataset. To make this process more useful, the dataset is made available prior to the session to facilitate prior exploration, benchmarking, etc. Your ideas and recommendations will be passed to the Trust at the next advisory meeting. If having worked on the dataset you have a further interest, and a unique idea for further consideration, I am open to discussing potential collaboration.

What is required in advance of the QFF?

The goal of the QFF session will be to obtain your perspectives on the dataset and the forecasting of this data. There are no limitations on what you can do. Imagine that what you come up with, will feed into a presentation to the NHS Foundation Trust Project Advisory Group. The project team doing the forecasting is small and have little to no experience in the 'art' of forecasting.

So should you decide to accept this mission, your task is simple:

1. Explore the data to the extent you wish, and from your unique research perspective. In doing so, consider the parameters of the data and task, e.g. predictions required at site level, forecast horizon of 6 weeks ahead, and forecasts required at daily and weekly level.
2. Provide some output in the form of a word document summary (including any other additional resources e.g. code used)
3. Be prepared to discuss your findings at the QFF

To allow for sufficient time at the QFF, do advise me via email at d.k.barrow@bham.ac.uk whether you plan to share some specific findings on the dataset. However I encourage everyone to have a scan of the data, so that we can all be involved. I appreciate there will be some overlap in the work, so the format of the session will be a moderated discussion.

Data

The dataset consists of a small subset of drugs used by the hospitals of the Trust fitting different profiles based on clinical risk, and the nature of demand distributions, including seasonal variation. The data consists of historic dispensed quantities for the subset of drugs across different hospital sites and individual wards. It covers the period 01 April 2014 to 31 July 2020. The Trust is initially interested in forecasting 6 weeks ahead at the Site level, considering both weekly and daily forecasts.

Files

The complete sample dataset is provide in the csv file "drug_orders.csv".

Columns

Date – date on which order was requested

Quantity – Quantity of drug requested

NSVCode – Drug type

Ward – Ward to which drug was assigned

Site1 – Site at which drug was requested

