

Challenge theme:

Transformation of Healthcare

Helping hands: evaluating mental healthcare takeup and dropout

Problem statement

Mental health services are a vital part of our public healthcare provision and represent a significant fraction of all healthcare expenditures. However, provision of services across the country can be uneven, and not all patients referred to existing resources are able to take up the help on offer, either due to service constraints such as waiting lists, or social factors such as inability to travel, alterations in living circumstances, or change in the severity of symptoms.

Data scientists can contribute towards addressing these issues in several ways: first, determining the factors that contribute towards a person failing to take up help on offer; second, evaluating the information available to clinical providers and suggesting ways to measure the scale of need versus the level of provision; and third, suggesting new ways to gather a holistic view of the patient experience and catch potential dropout before it happens.

This challenge would involve participants using healthcare data and service usage records to evaluate the factors at play, as well as suggesting ways to link other datasets such as demographic and census information and generate new insights through novel methods, such as health tracking apps. The overall goal is to communicate this to clinical professionals and health service planners to better allocate resources, enhance service takeup, and deliver effective care.

Data description

Data in this challenge would be drawn from a research databank such as the [CPRD GOLD](#) practice-level dataset. This would include patient, clinical, and referral records. Data schema can be [found here](#). Bear in mind that field entries might be hard to interpret, given the complex coding system being compressed into integer values; consider how you might deal with missing values or ambiguity.

Sample rows

patient.csv

Patient Identifier	Patient Gender	Birth Year	Birth Month	Marital Status	Family Number	CHS Registered	First Registration Date	Current Registration Date
10ac8cc3-7ae2-4c79-800a-1ef972bbb826	1	1984	4	0	123456	0	01/02/2020	01/02/2020
eaf907a5-39fa-4559-901f-09a2d3717b78	0	1976	1	1	654321	0	01/01/1997	04/05/2018

refererral.csv

Patient Identifier	Event Date	Medical Code	Staff Identifier	Source	NHS Speciality	In Patient	Attendance Type	Urgency
10ac8cc3-7ae2-4c79-800a-1ef972bbb826	01/08/2019	ANX140	123456	1	13	0	1	0
10ac8cc3-7ae2-4c79-800a-1ef972bbb826	12/09/2019	ANX141	123456	1	13	1	2	1

Considerations

Dealing with medical data means grappling with deep ethical and privacy concerns, even when attempts are made to pseudonymise identifying factors. How should this affect the direction of any research, and what effects would that have on the utility of any outputs? What level of tradeoff between personal privacy and potential benefit would be acceptable in this case?

Audience roles

- Clinical professionals – interested in casual factors in dropout, areas of over-/under-provision
- Healthcare decision makers – interested in improving resource allocation, overall service provision levels, eliminating potential inefficiencies
- Patients – interested in getting the most efficient access to the services they require, knowing how resources are being allocated, and how equitable the arrangements are

Suggested outputs

Some potential routes for expressing findings that you may wish to consider:

- Interactive dashboards: how do we present complex datasets and conclusions to a general audience, and which key takeaways are right for each audience?
- Natural language recommendations: can we take key points from the data and translate into effective prose communication?
- Novel metrics: can we point out anomalies and trends in service user behaviour/service provision to spot problems before they become endemic?
- Data-driven apps: is there the potential to present patient, clinical, or decision maker information in a more dynamic way?
- Plans for linking with other datasets to produce wider population metrics: how do other social factors affect service takeup?