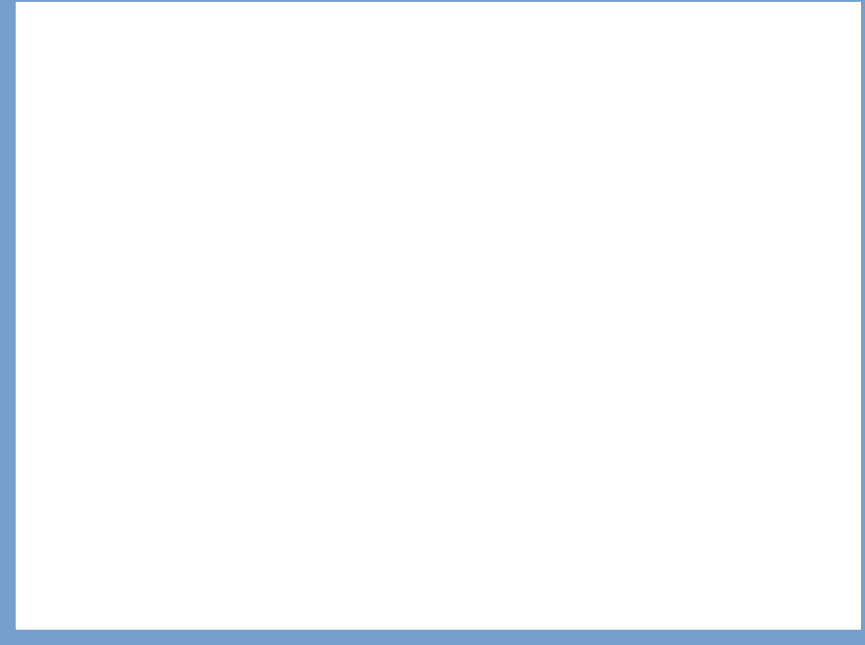


NuRS determining predictors of nurse retention via routinely collected operational data.

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Introduction

Nurses and midwives account for roughly a third of the NHS workforce¹ and form the lifeblood of health care delivery, yet study upon study reports that a shortage is looming^{2,3}. There are two clear paths to preventing a worker shortage, increase the supply of new staff through higher education and increase the retention of our current workforce. Qualitative research is typically relied upon to understand, and hence maximise, staff retention. But, to what extent can the wealth of operational data Trusts collect on a daily basis inform best practices?

Aim

This study aimed to extract, aggregate and analyse routinely collected data from two Acute and two Mental Health NHS Trusts to understand what operational patterns were linked to staff retention.

Ideally the analysis can be used to inform operational decisions to ensure improved staff retention and as a method for identifying retention 'hot spots' (i.e. wards with an unusually low rate of turnover) to learn best practices from.

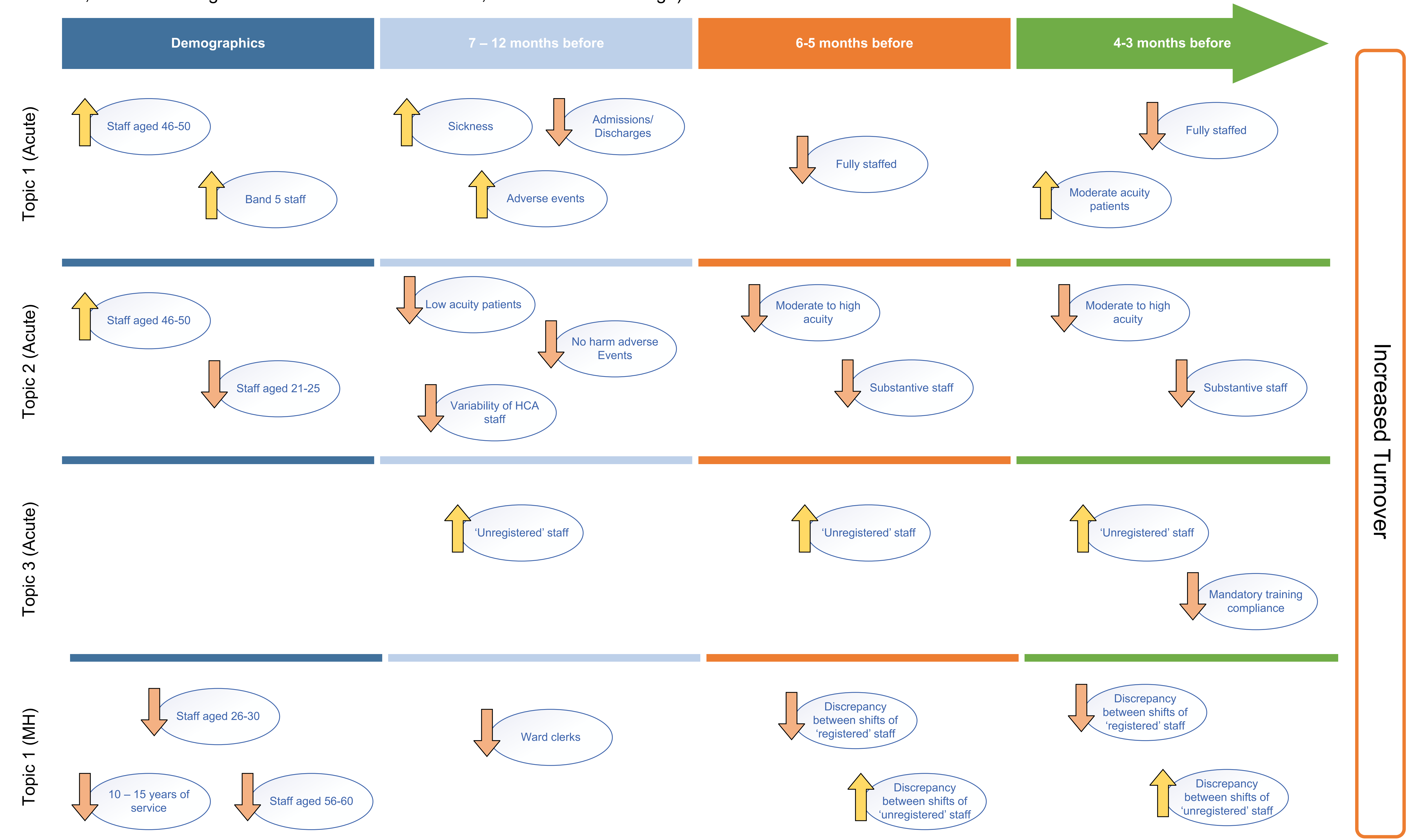
Method

Six data sets were extracted via a combination of custom-made SQL scripts, and Business Intelligence portals. The data sets were re-hosted within a custom-made data warehouse and alignment keys implemented to create a single interoperable data set.

From the data several features were constructed to represent the operational patterns (e.g. extent to which the ward went understaffed) across several time points leading up to windows of turnover. These features were orthogonalized via Principal Component Analysis (PCA) and Lasso Logistic Regression applied to determine predictors of turnover.

Results

The analytics result in 'Topics' associated with Turnover. Each 'Topic' is made up of features from the operational data and the logistic regression has identified which are indicative of increased/ reduced turnover. Here we present the highest contributory variable to the key Topics (NB: an upward arrow indicates increasing turnover as the value increases, and decreasing turnover as the value decreases, from the Ward average).



Conclusions

This work demonstrates the ability of routinely collected data to capture best practices. Due to the observational, operational nature of the system the behaviours are highly correlated and hence causal inference is complex. Given the zero-cost of producing the data, this is a promising method for the live observation of the Trust as data driven guidance.

Acknowledgments

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