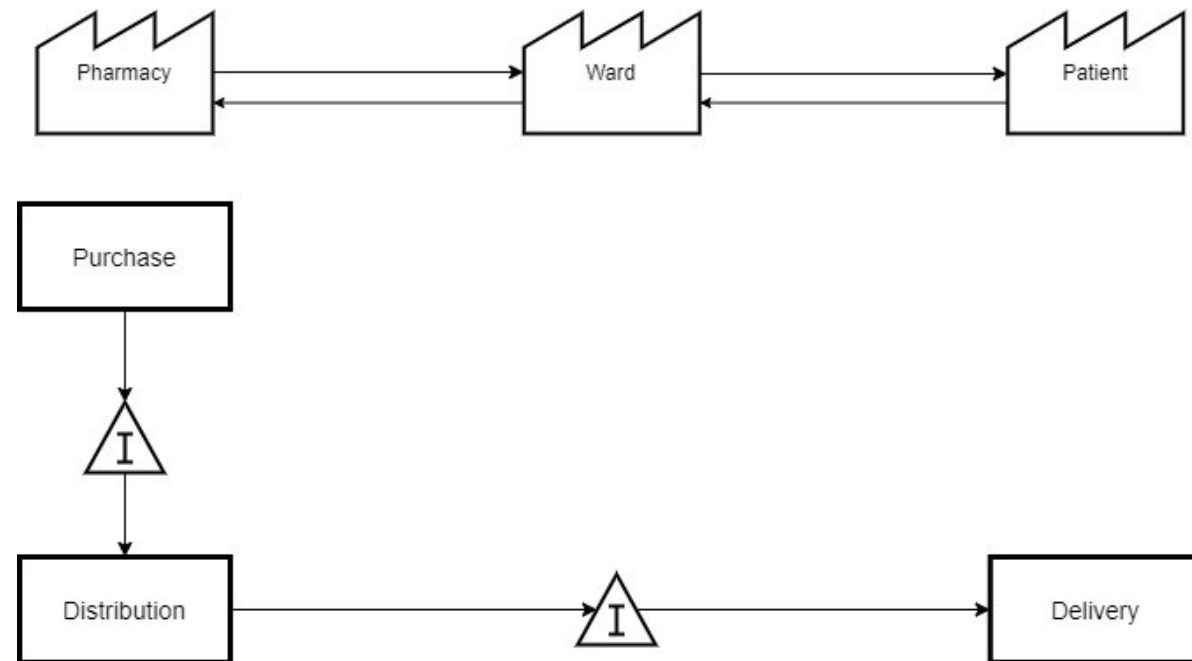


NHS Drug Forecasting

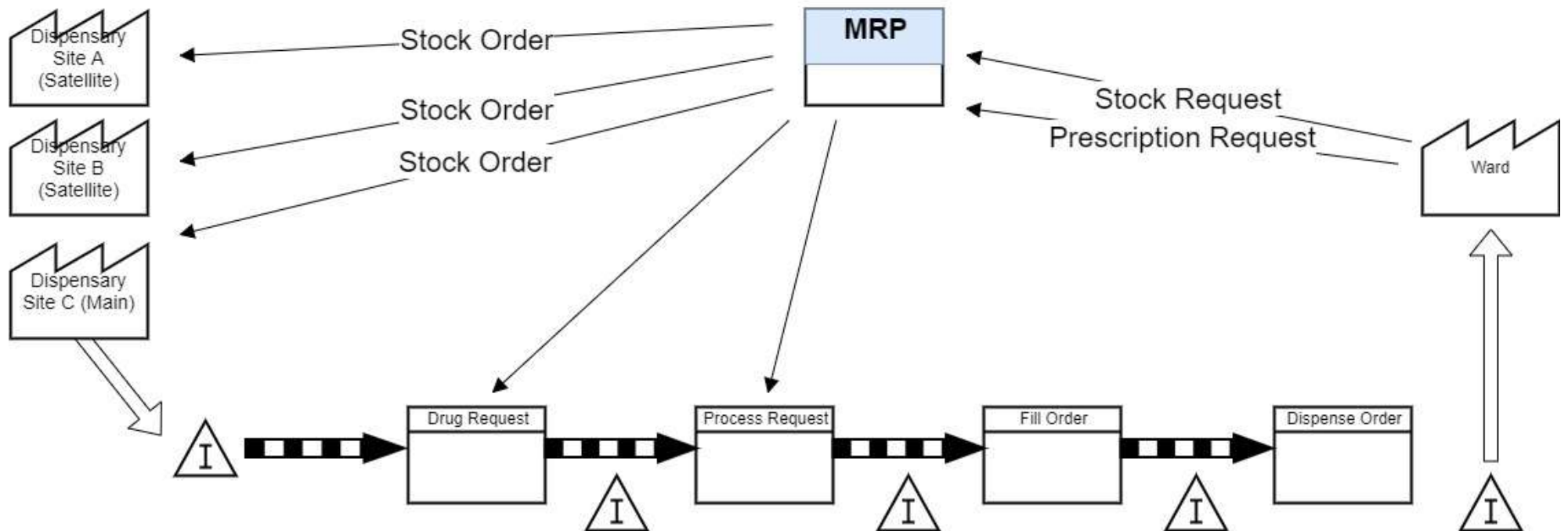
Features and considerations



The pharmacy logistics process



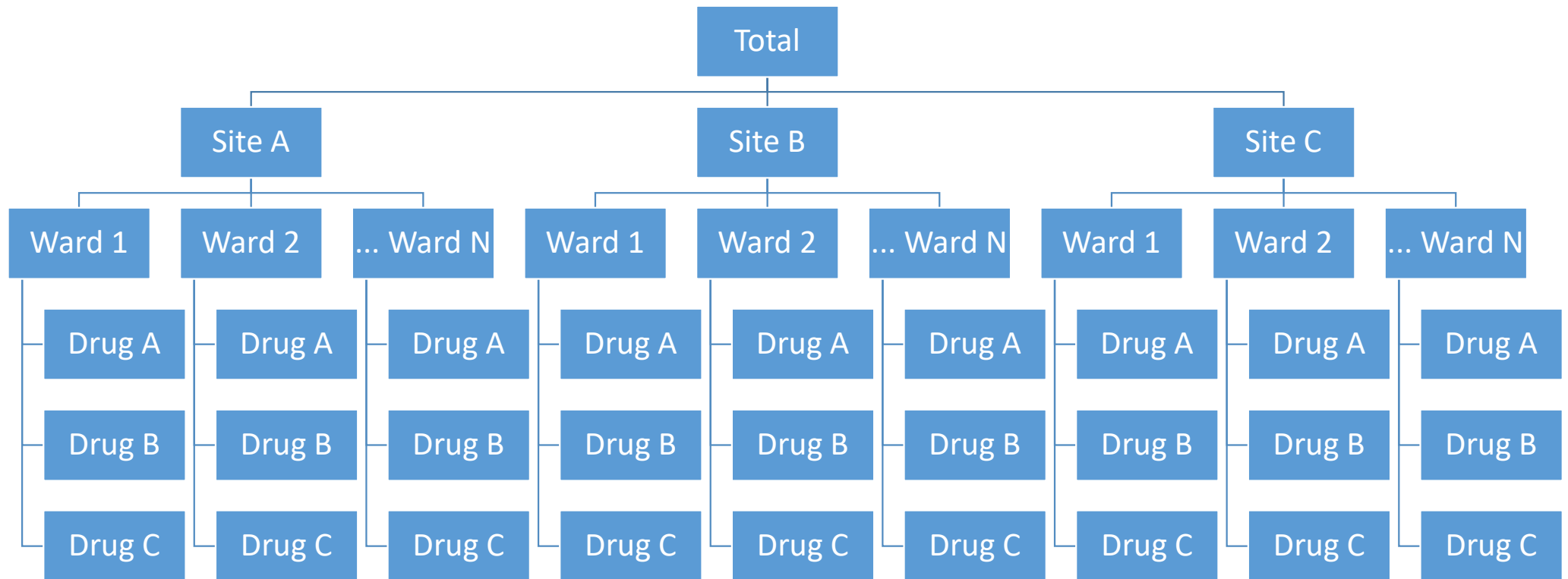
The pharmacy value stream



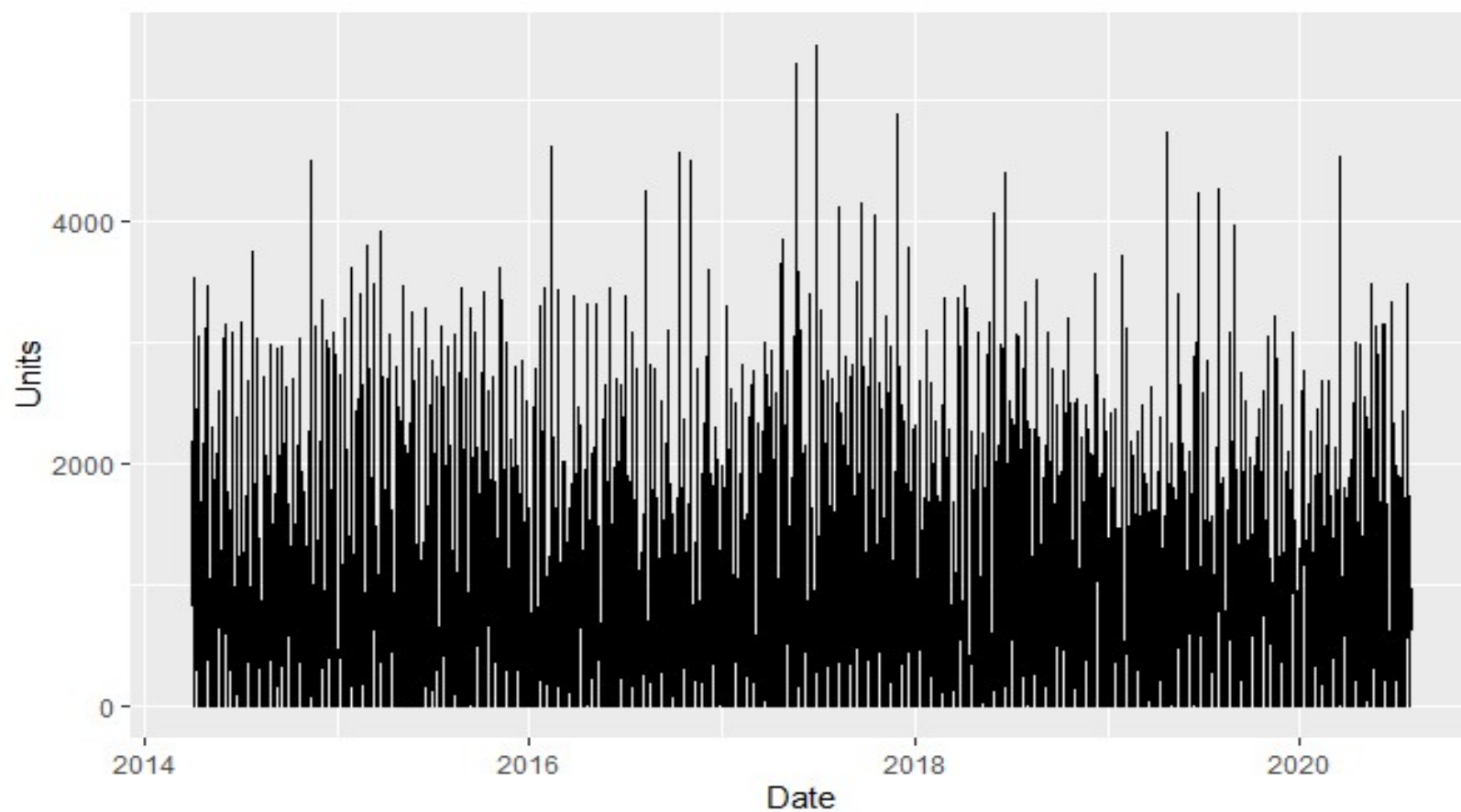
The data

- 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.

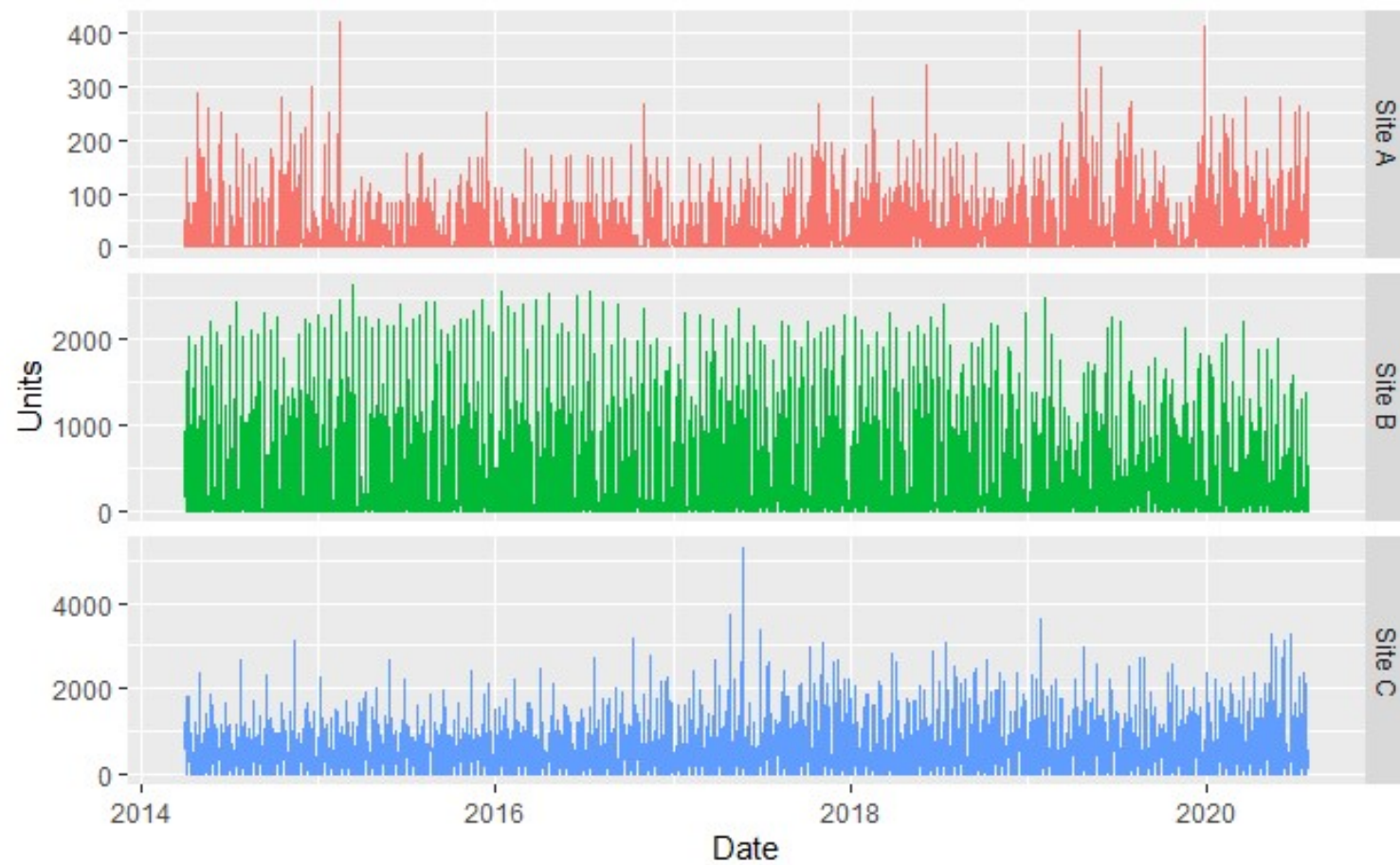
Pharmacy drug demand hierarchy



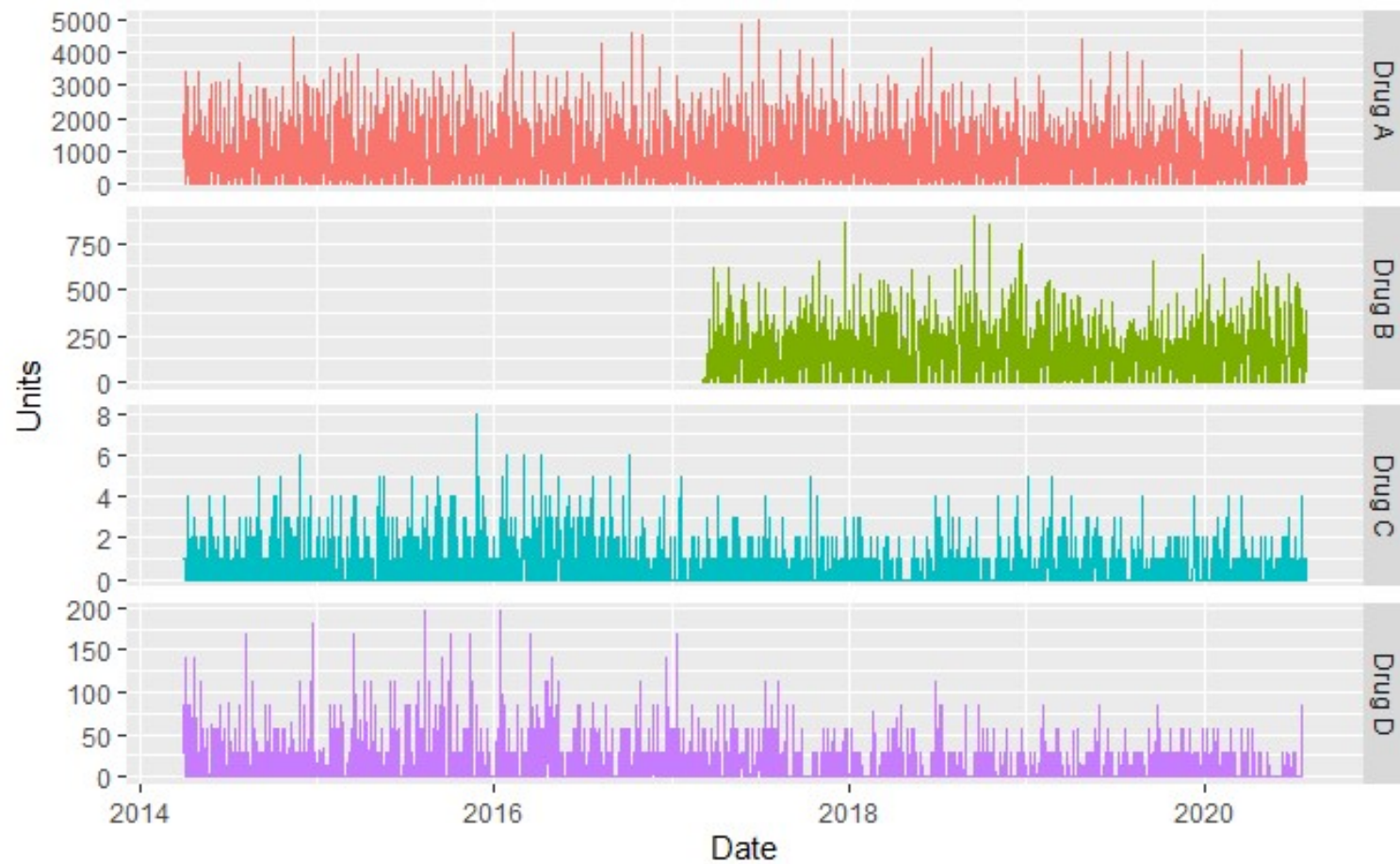
Total drug demand across all sites



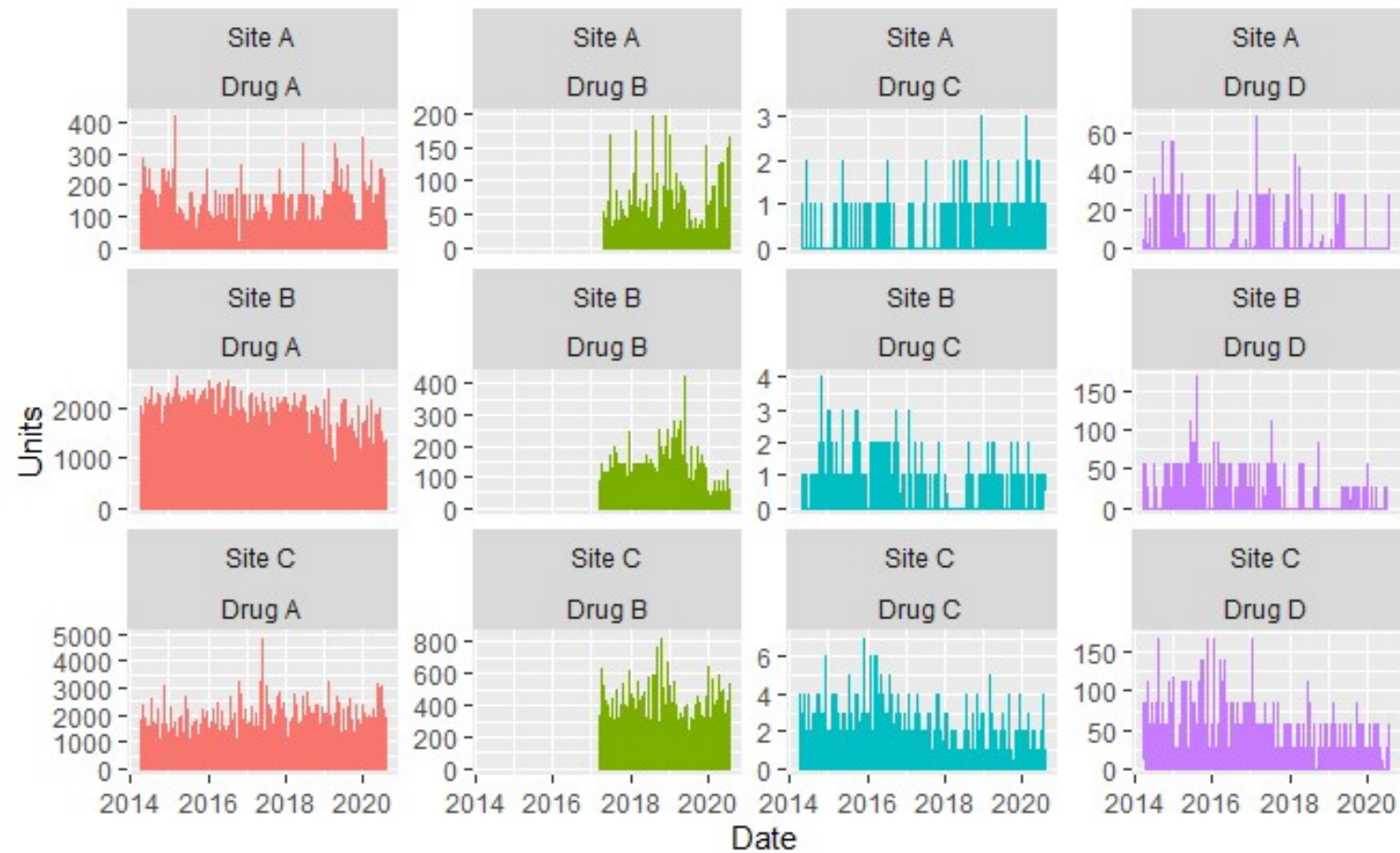
Drug demand by Site



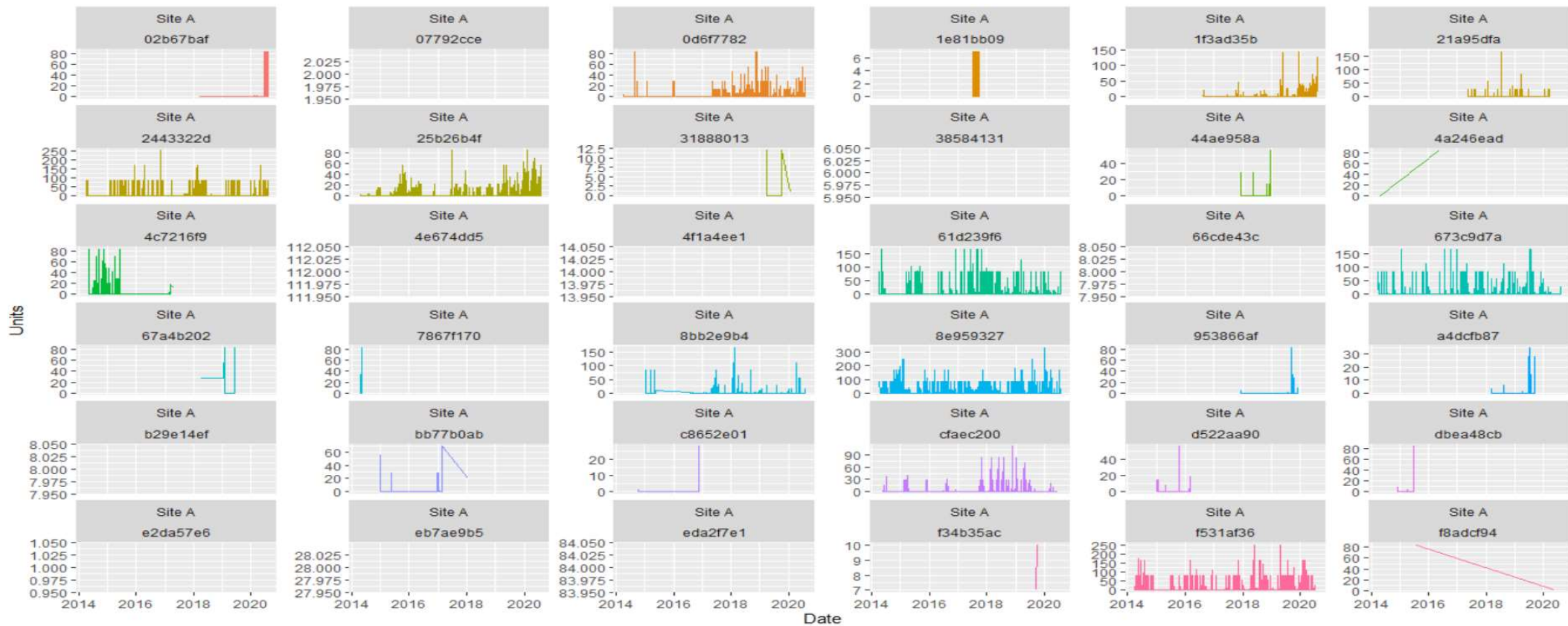
Drug demand by type



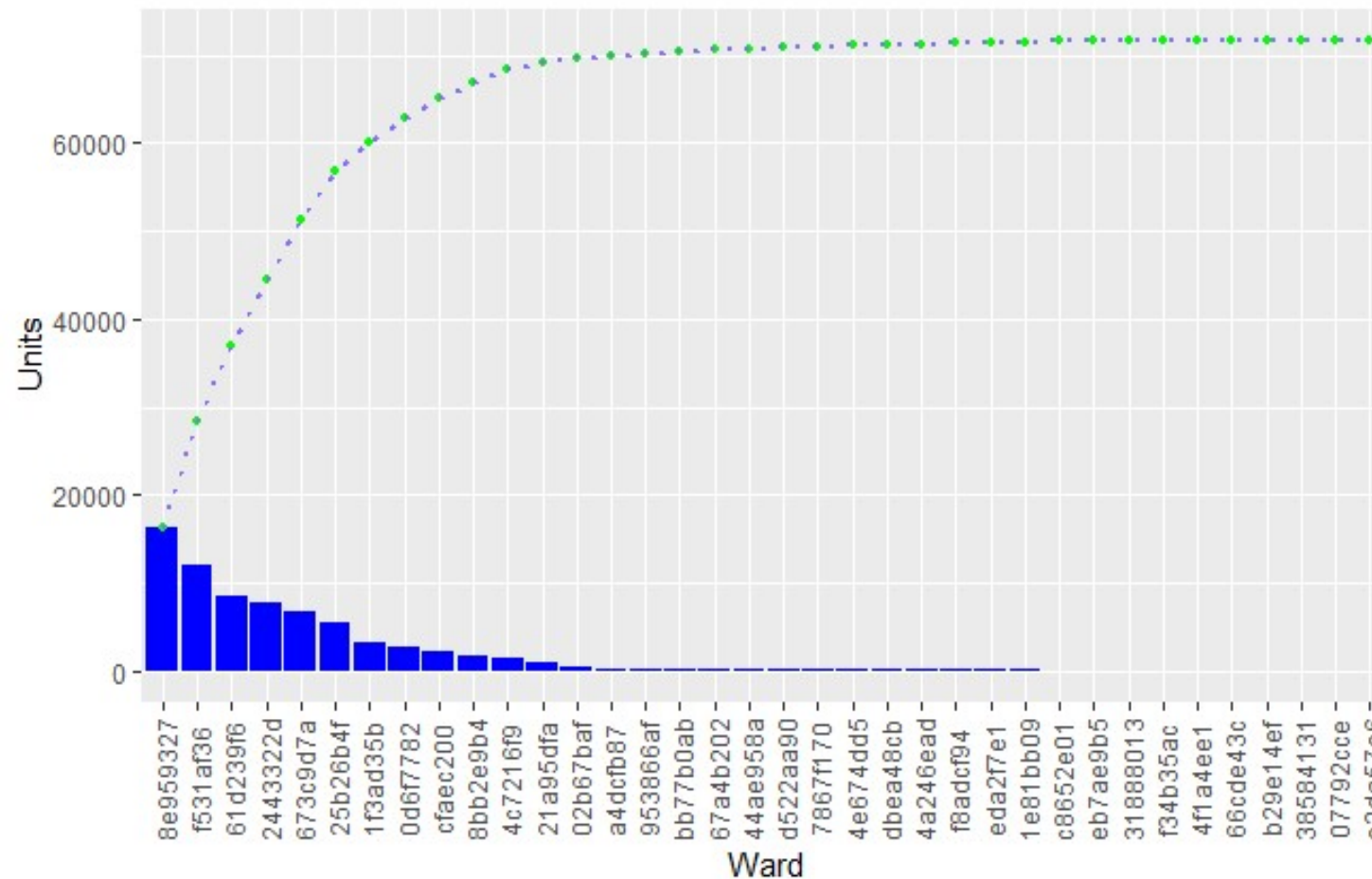
Drug demand by site and type



Drug demand at Site A by Ward



Drug demand at Site A by Ward



Your thoughts?

- 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.
- Provide some output in the form of a word document summary (including any other additional resources e.g. code used)
- Be prepared to discuss your findings at the QFF

Research questions

- How can hierarchical forecasting (temporal and cross-sectional) be used to improve forecasting accuracy and inventory decisions?
- What is the impact of hierarchical forecasting in overcoming intermittency in ward level demand?
- What is the impact of forecasting of replenishment orders on the bullwhip effect in product orders?