Project Exeunt - end of project report

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The Problem

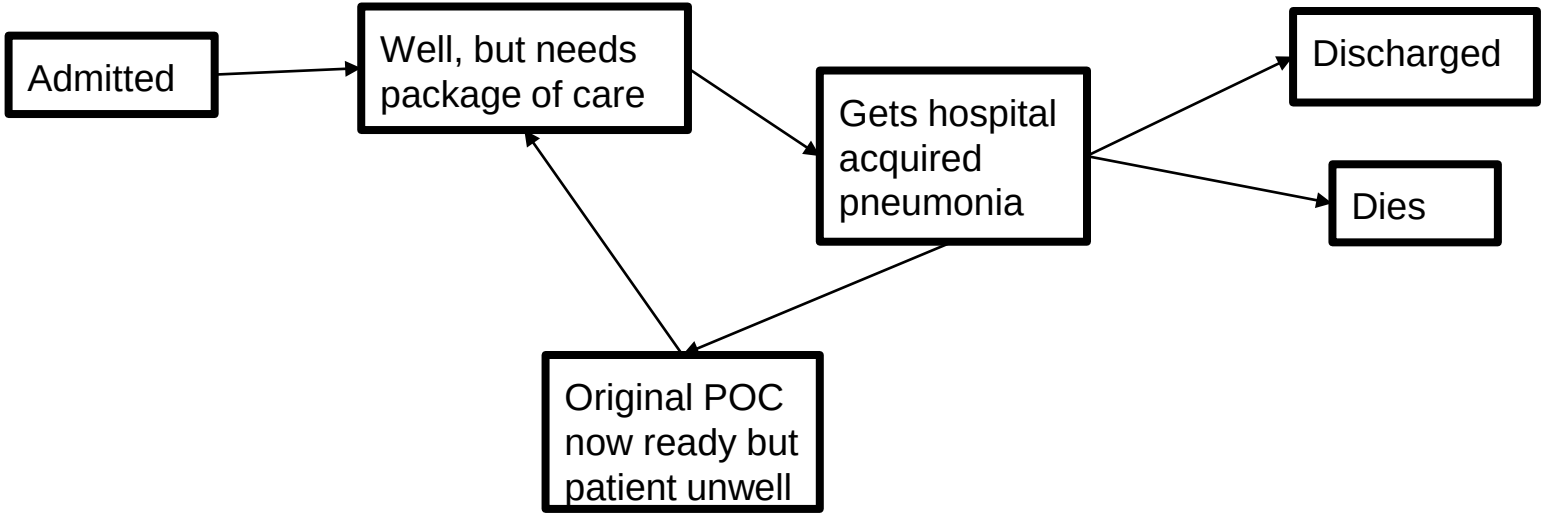
The hospital is under ever-increasing bed pressures

At any one time, over 100 medically fit patients can be waiting for discharge

Some of this delay is due to provision of social care

Some of this delay is due to ongoing rehabilitation (physio/occupational therapy workup)

Example patient



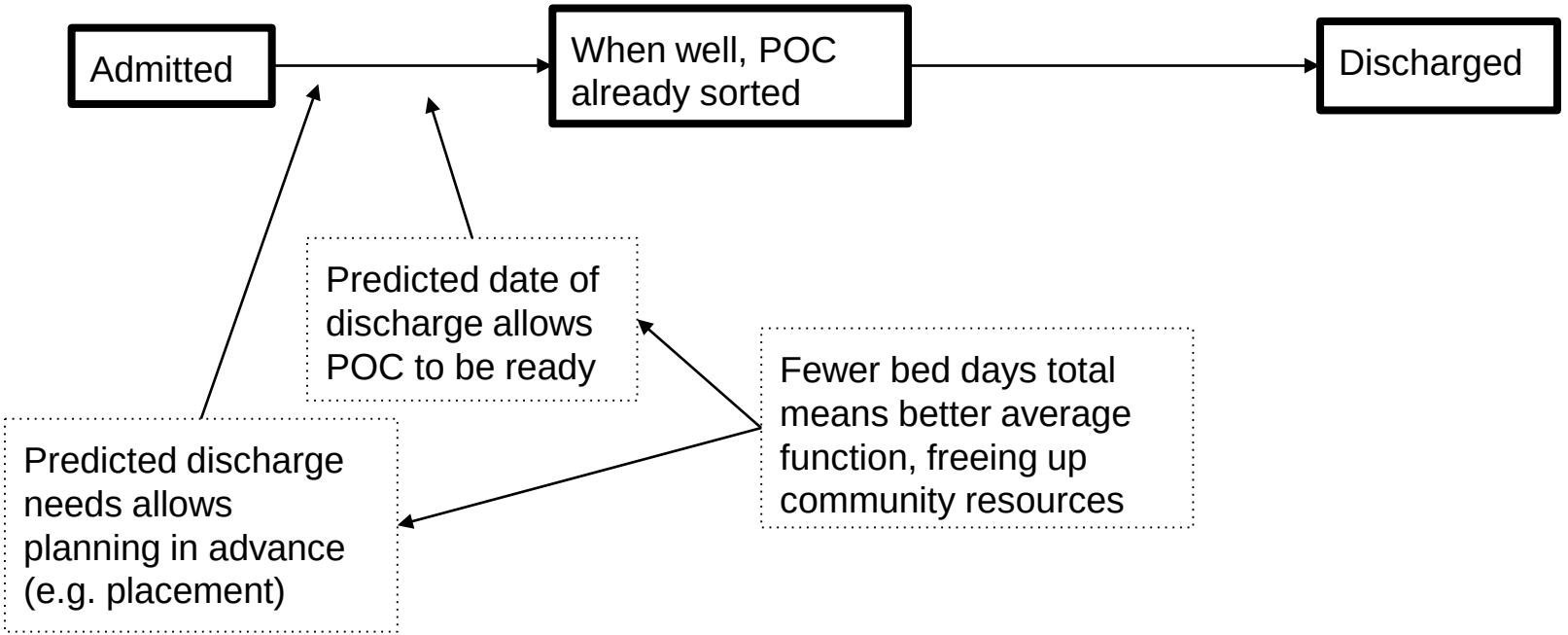
The plan

I was aiming to create a model that showed a patient's length of stay (LOS)

The distribution of the LOS was to be based on patient demographics, comorbidities and previous admission history

Can we estimate LOS? Can we predict social care need?

What we want to achieve



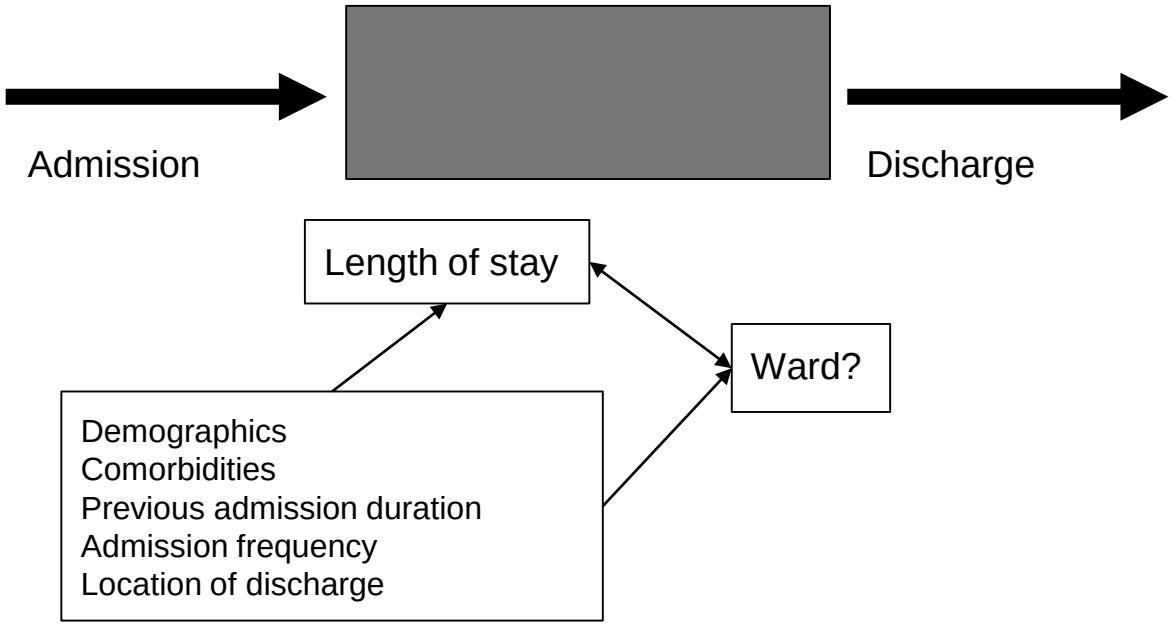
What is being done towards this currently?

EDD - predicted by consultant/registrar at board round

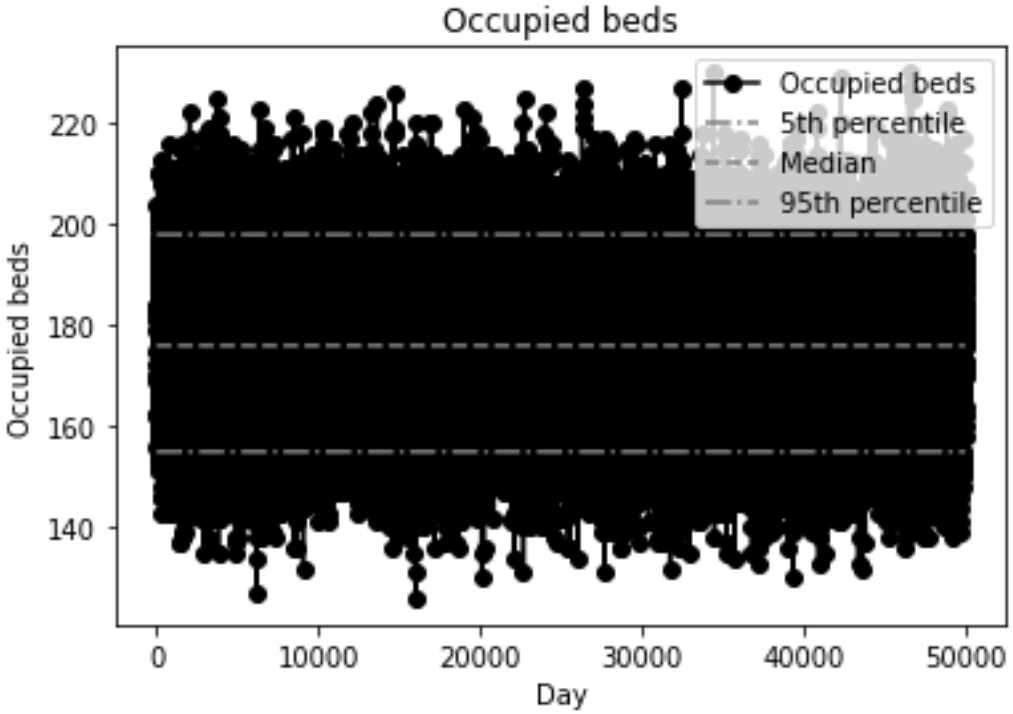
MDT comment on rehabilitative needs

POC/rehab aimed to be done in time

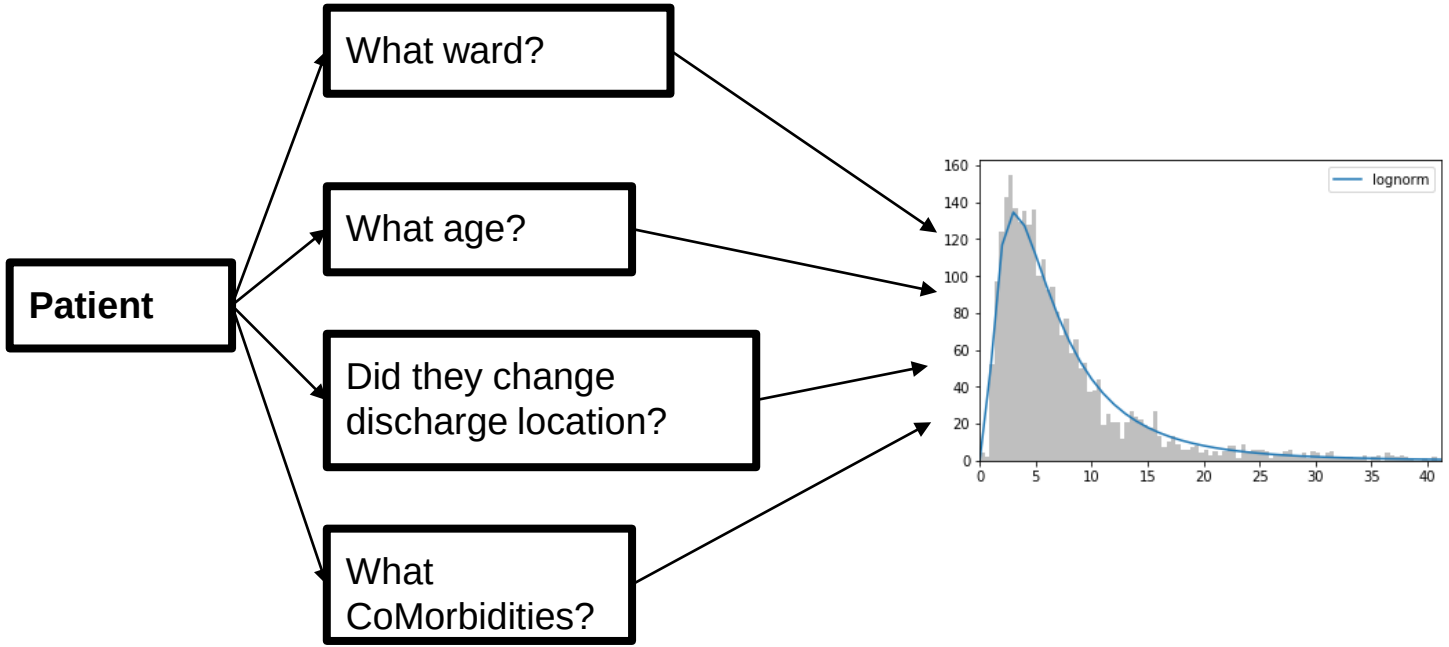
Model design



The basic simulation



A more advanced simulation



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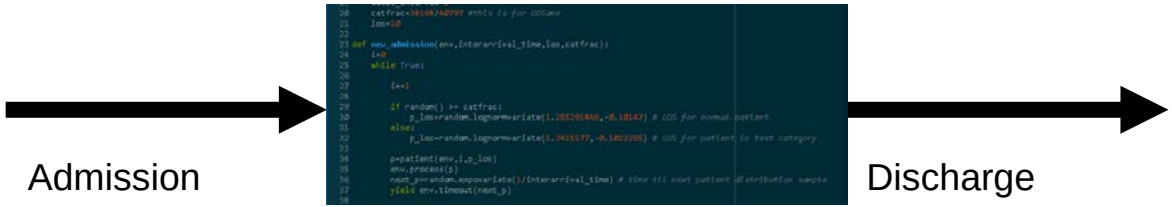
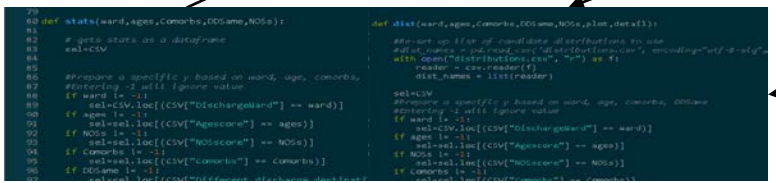


Length of stay

Ward?

Medical admission data



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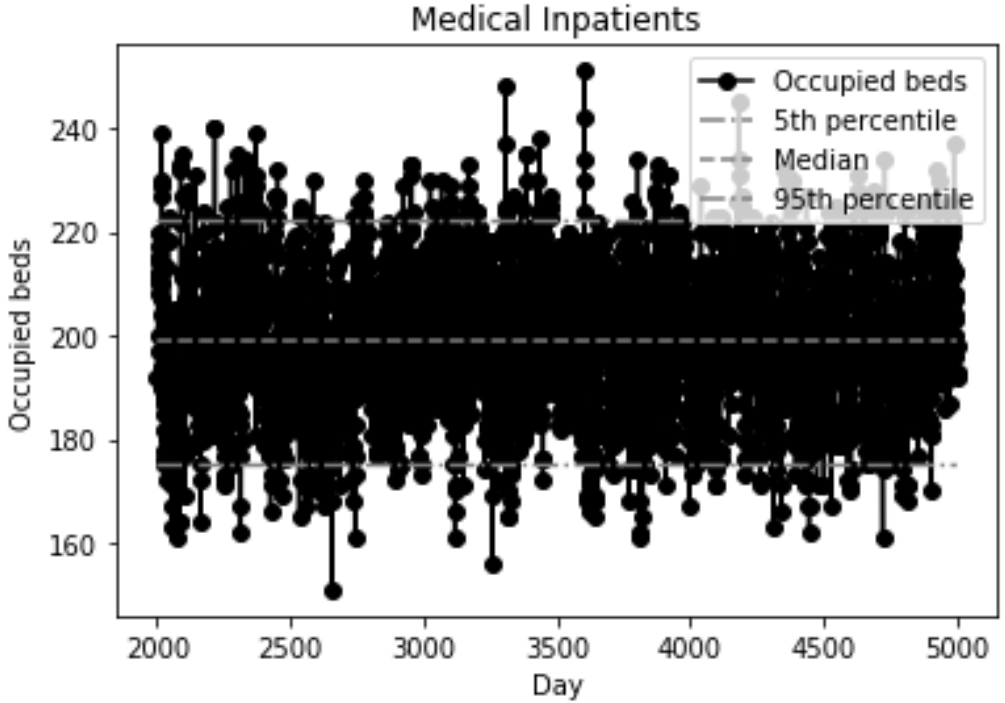
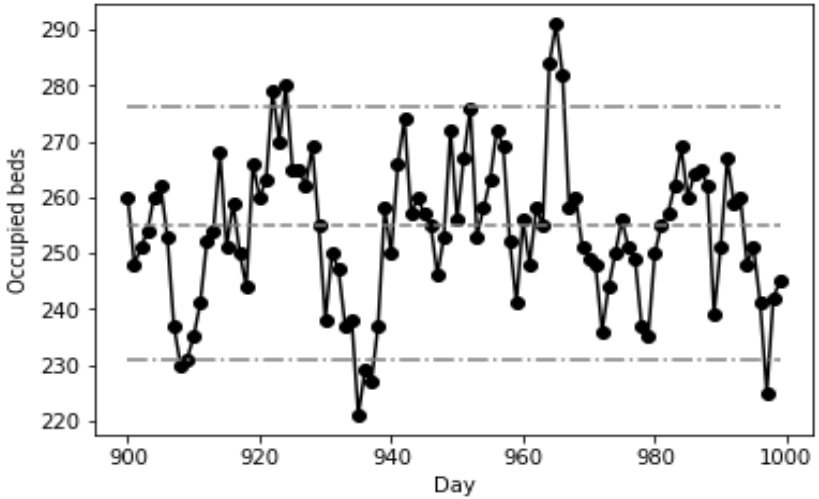
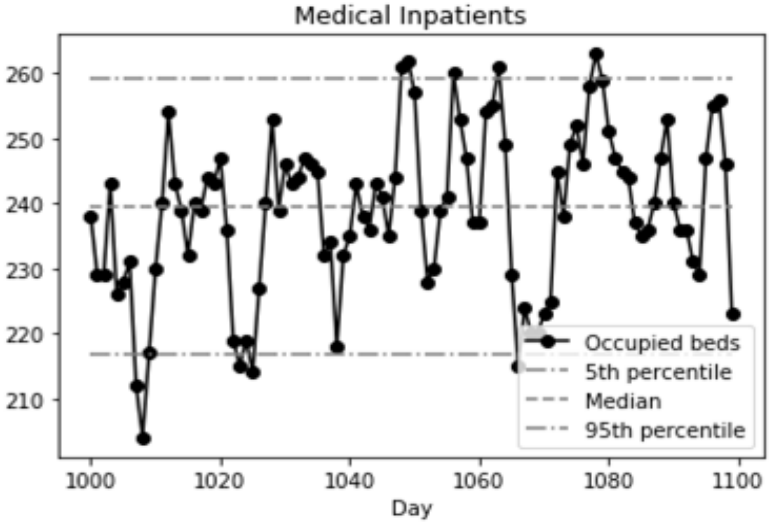


Example - reducing placement time by 5%





- Average bed usage from 264 > 245
- Peak bed usage from 320 to 276

Example - accelerated discharge for frail

People with more than 5 comorbidities discharge rate improved by 10%

- Median bed usage from 264 > 243
- Peak bed usage from 320 to 280

Surprises

1. Comorbidities:
    a. Connective Tissue Diseases and Liver Disease
    b. Dementia and Diabetes about equal
2. Admission to same ward - no evidence that this affects discharge

Non-surprises

1. Age
2. Day of admission - relevant in short admissions
3. Overall effect of comorbidities
4. Discharge destination change

Liaising with hospital team

1. Meeting with Therapy Staff
2. Teaching Doctors
   Modelling projects
3. Ongoing QIP
4. Applying findings at board round

What I've learnt from HSMA

1. Discrete Event Simulation
2. Python
3. Machine Learning
4. MDT

What next?

1. Microbiology research project
2. Quality Improvement projects

A Big Thanks to:

1. Simon, Ryan and Clare
2. The HSMAs
3. The HSMA mentors - especially Sean
4. The hospital data team
5. Therapy staff