Making the right recommendation for meds based on historical cases

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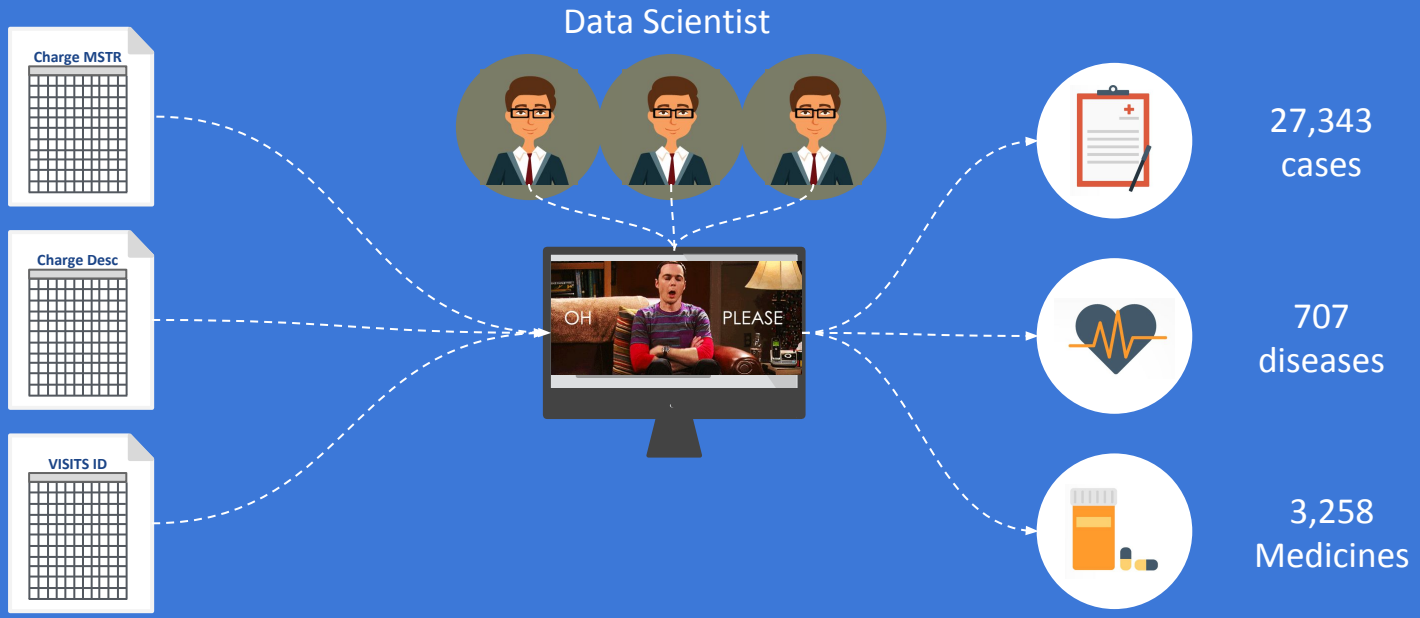
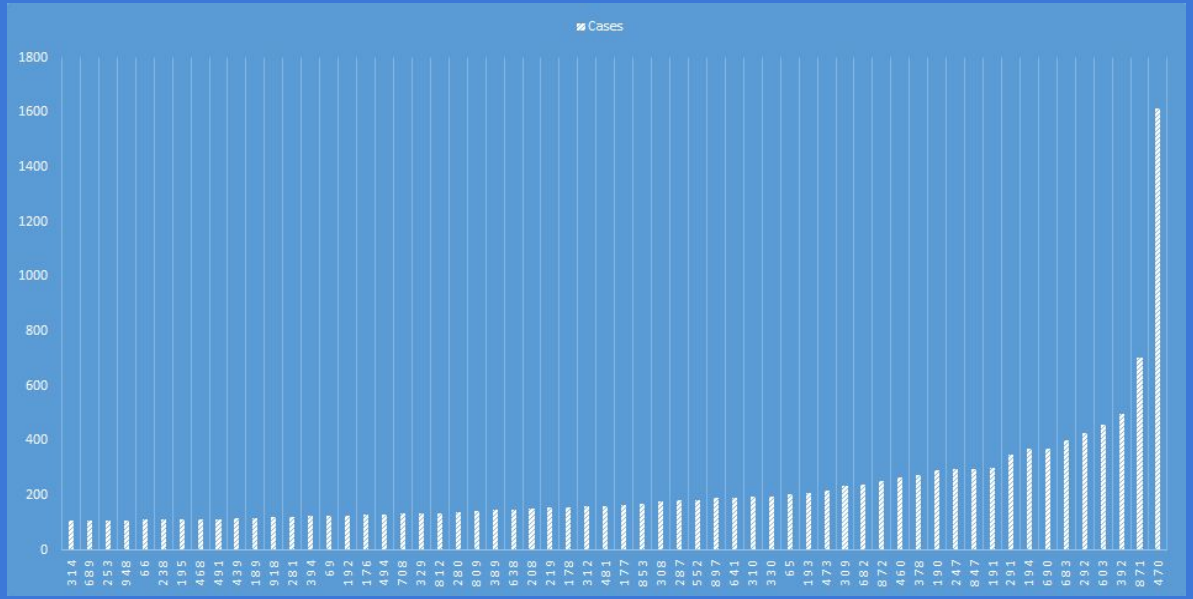
Data organization and exploratory data analysis



Frequency of diseases



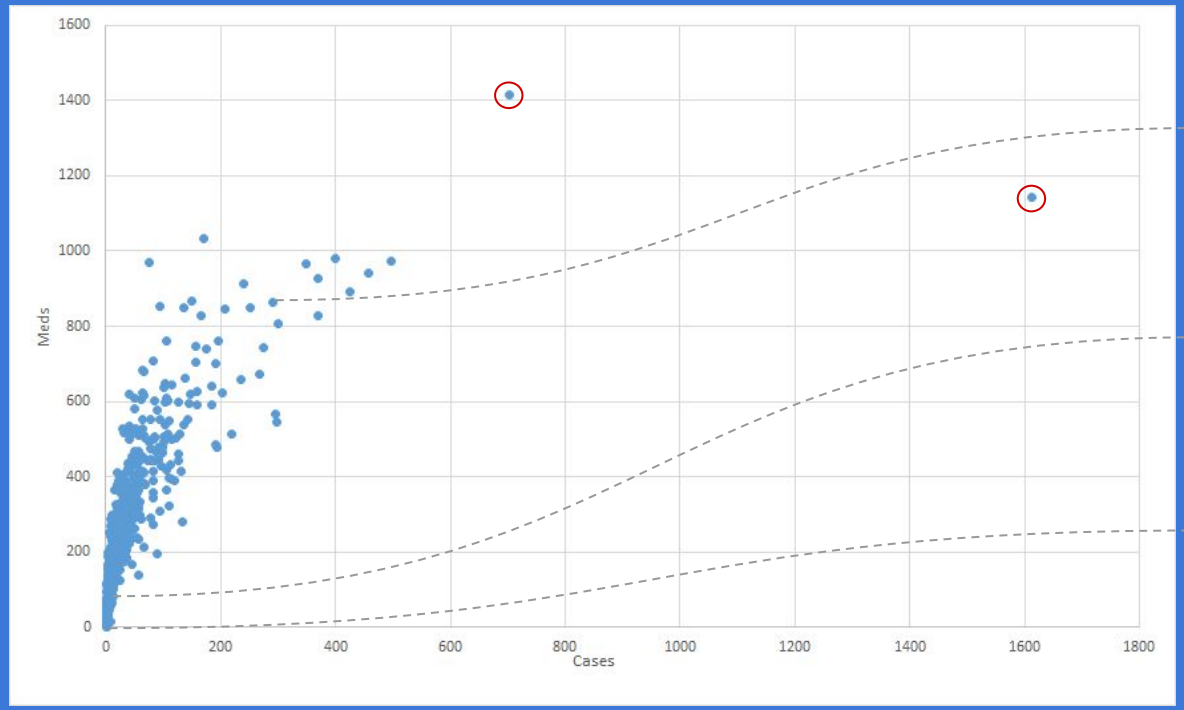
DRGs (Diagnosis-related groups)

470 (1670 cases),
Major joint replacement or reattachment of lower extremity w/o MCC

871 (703 cases)
Septicemia w/o MV 96+ hours w MCC

392 (497 cases)
Esophagitis, gastroent & misc digest disorders w/o MCC

Correlation btw meds and cases



Heart Failure & Shock
(349 cases)
966 different meds

Fractures of hip & pelvis
(15 cases)
191 different meds

Headaches
(5 cases)
76 different meds

First approach

For each DRG, we identified the meds that were used, the percentage of usage in each case, and the average quantity for all cases.

Case 1

Case 2

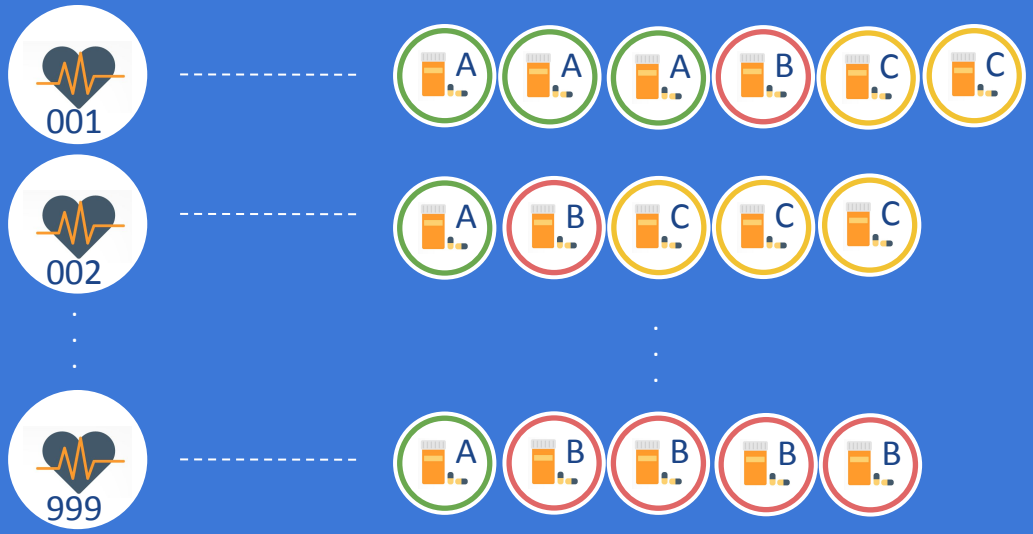
Case 3

DRGs (n): total cases

Meda(a) : 100% | average quantity,
Meds(b): 100% | average quantity,
Meds(c): 66% | average quantity,
...

First approach

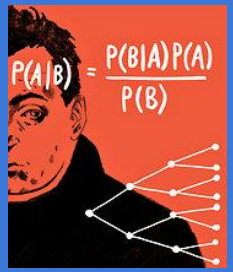
Then, we seek to identify the meds that were most used given a DRG



DRG(001):6 Meds **Med A = Quantity: 3 | 50%**

Second approach

How can we use the historical information of medicines for each DRG (disease) in order to recommend the optimal stock based on the future patients characteristics?



Naive bayes classifier

System based on observation in order to predict by counting the times an event succeed given certain characteristics.

Applications

- **Validate predictions on sports or politics**
- **Spam classifier**

Model Creation

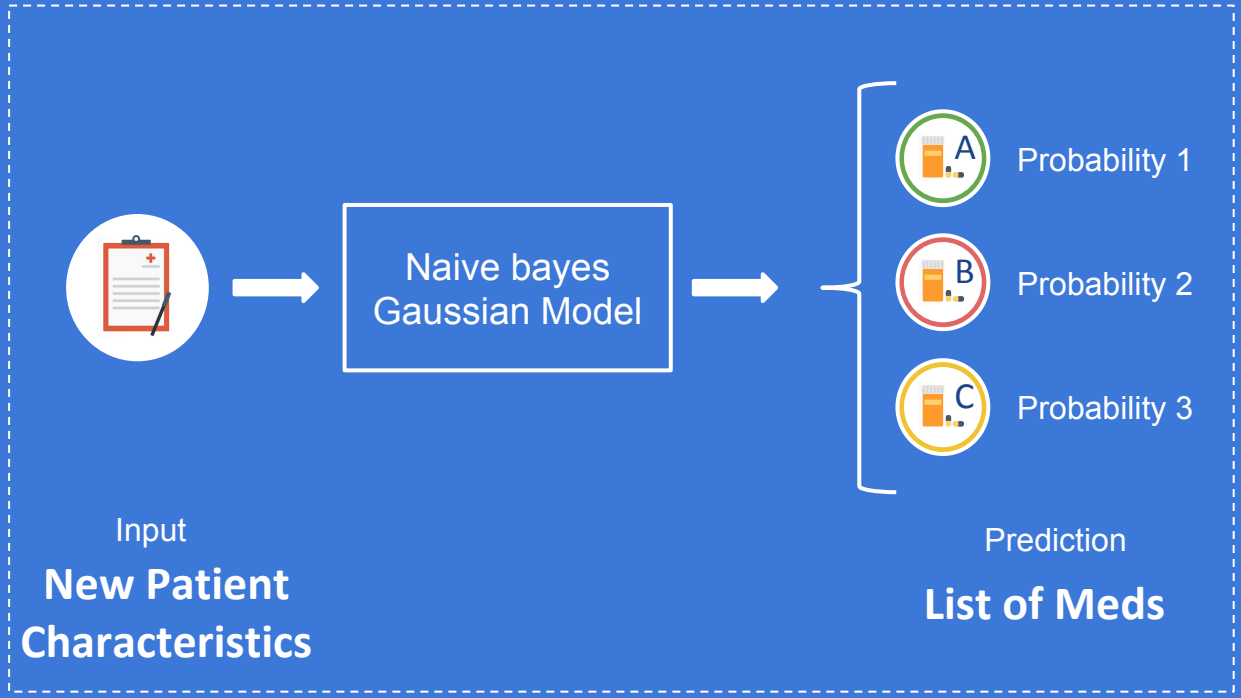
For each DRG we consider the application of each medicine as the target event, and the patient characteristics(sex, age, race, area, LOS, ICD9 Codes) as the features.

Group:
DRG

Features
Patient Characteristics

Target:
Meds

Implementation and Validation



VALIDATION

20,000 cases as training data

7,000 cases as unknown

Compare predicted recommendations against expected medicines

Decide if the model is good enough given an expert's opinion

Challenges

Programming and computational skills

Select the right model for the right outcomes

Time constraint