Project Argos

Readmission Reduction among Diabetic Patients
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Summary

Background

Introduction

Challenge

Data

Background

Education: Master in Public Health (Biostatistics)

Work: Health Research / Analytics / Data Science / UnitedHealthcare

Data: Research / Clinical Trial / Lab Data / Health Claims Data

Likes: Being outside and moving

Introduction

US Healthcare - Affordable Care Act

- Health Quality / Health Costs

Hospital Readmission Reduction Program

- Payments & Readmission Rates

Hospital Readmission Definitions

- 30 day all cause

Data

- Includes 10 years (1999–2008) of clinical care data
- Restrictions as stated in paper:
  1. It is an inpatient encounter (a hospital admission)
  2. It is a "diabetic" encounter, that is, one during which any kind of diabetes was entered to the system as a diagnosis.
  3. The length of stay was at least 1 day and at most 14 days.
  4. Laboratory tests were performed during the encounter.
  5. Medications were administered during the encounter.
- Available here: https://archive.ics.uci.edu/ml/datasets/diabetes+130-us+hospitals+for+years+1999-2008

Source: Beata Strack, Jonathan P. DeShazo, Chris Gennings, Juan L. Olmo, Sebastian Ventura, Krzysztof J. Cios, and John N. Clore, "Impact of HbA1c Measurement on Hospital Readmission Rates: Analysis of 70,000 Clinical Database Patient Records," BioMed Research International, vol. 2014, Article ID 781670, 11 pages, 2014.

Challenge

Scenario: The hospital in which you work has a new 2019 goal of reducing hospital readmission rates. Both the hospital finance and clinical care teams are interested in how the data science team may help these departments reach this goal.

Develop a model which predicts whether a patient will be readmitted in <30 days. A new diabetic readmission reduction program intervention will use this model in order to target patients at high risk for readmission.   Models will be evaluated on AUC and False Positive Rates.

You will be expected to present this model to the following teams:
- Hospital health intervention team - how will this affect rates / payment / the bottom line?
- Data science team - how well does this model perform/ how is this model evaluated?
- Data engineering team - what is needed for model implementation?

Notes

- Typical DS Requests in Healthcare
- Solution Design / Data Engineering / Model Building
- Presentation