# Exploring the Cost of Cesarean Sections in New York

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# Cesarean Section (CS)

- The most often performed procedure
  - ~80,000 children are born in New York by CS yearly
  - ~396 per hospital yearly
  - ~1 child per hospital daily

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# Models

- Data Source
  - https://health.data.ny.gov
- Data Points
  - 79,217 events (1 year, New York State)
- Methods:
  - Lasso, Ridge, Regularized OLS, Random Forest
- Final Analysis:
  - Regularized OLS, two models $R^2$=0.53, $R^2$=0.70
- β Coefficients

# Analysis

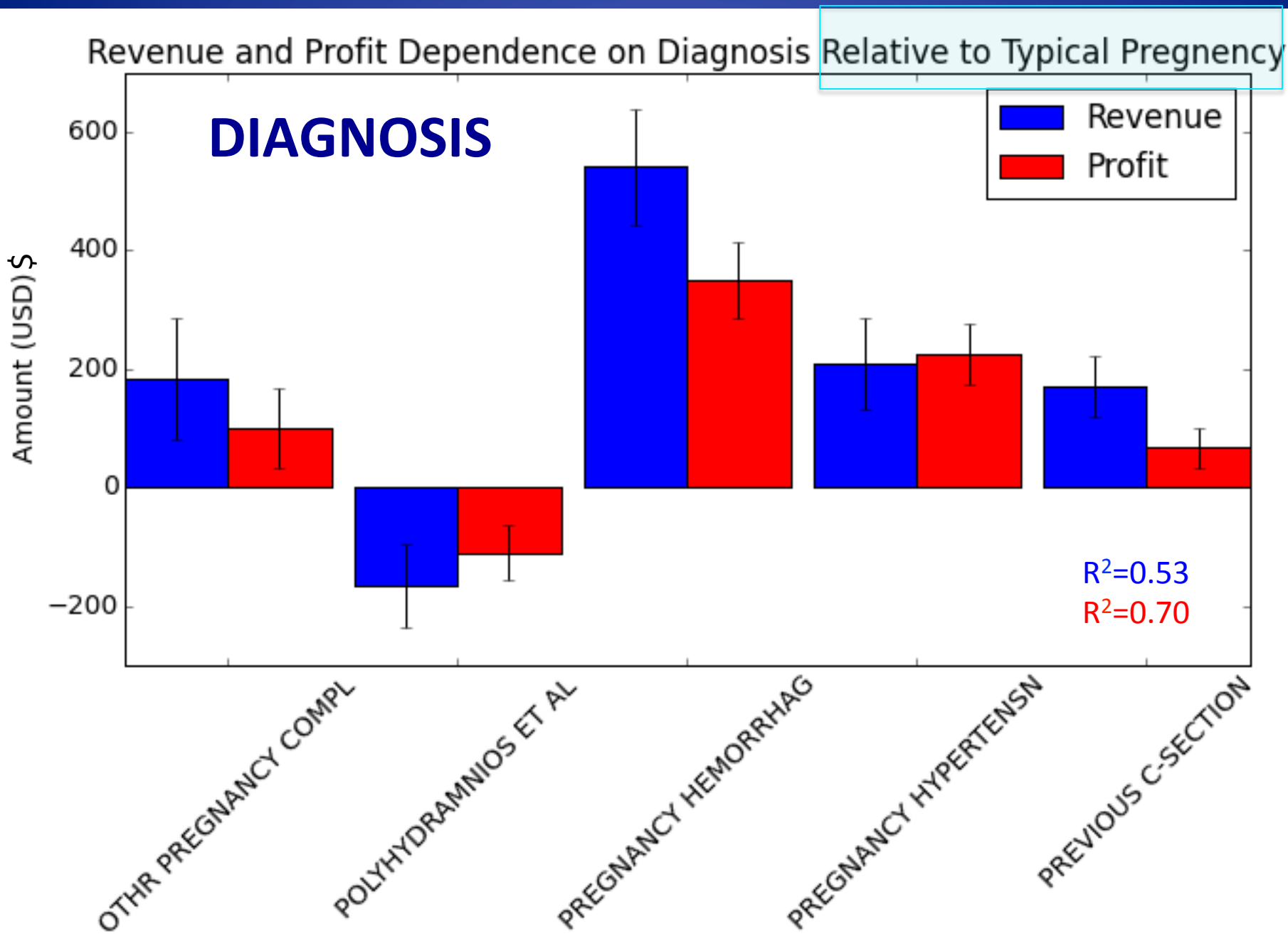
**Into Model:**

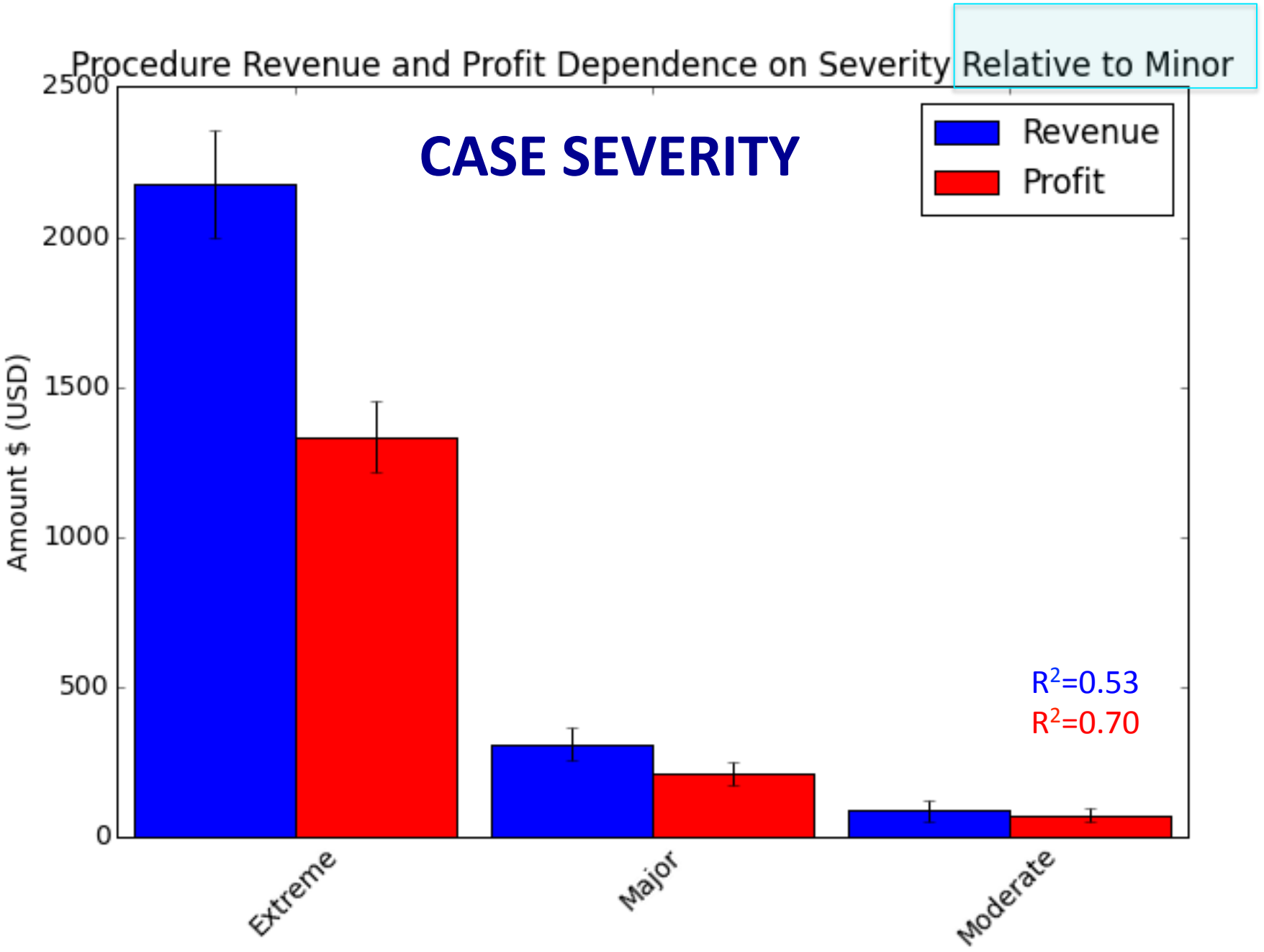
- Diagnosis
- Severity
- Payment Option
- Hospitals

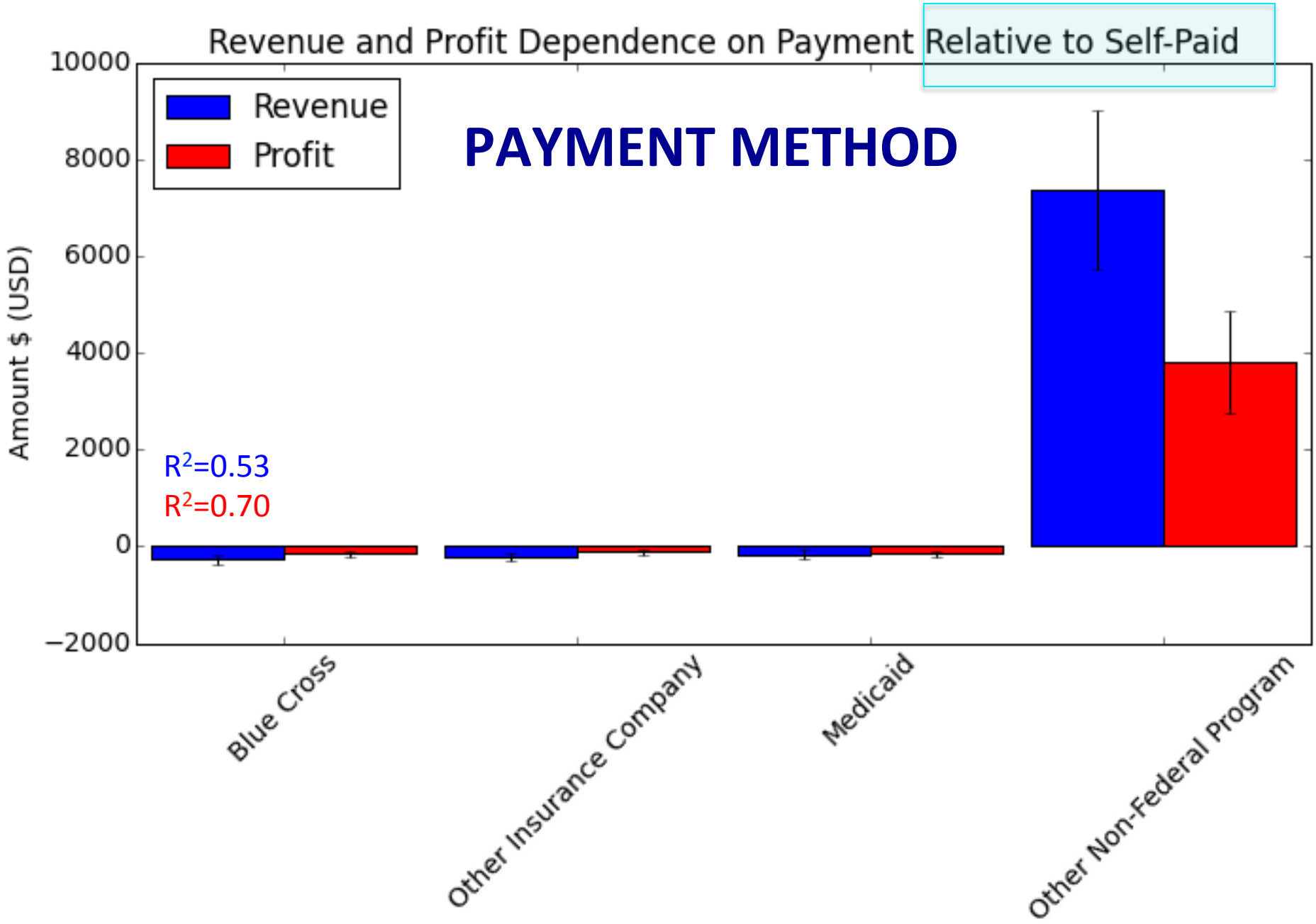
**Predicting:**

**Hospital Revenues and Profits per Procedure**

Features selected by regularized linear regression with cross-validation

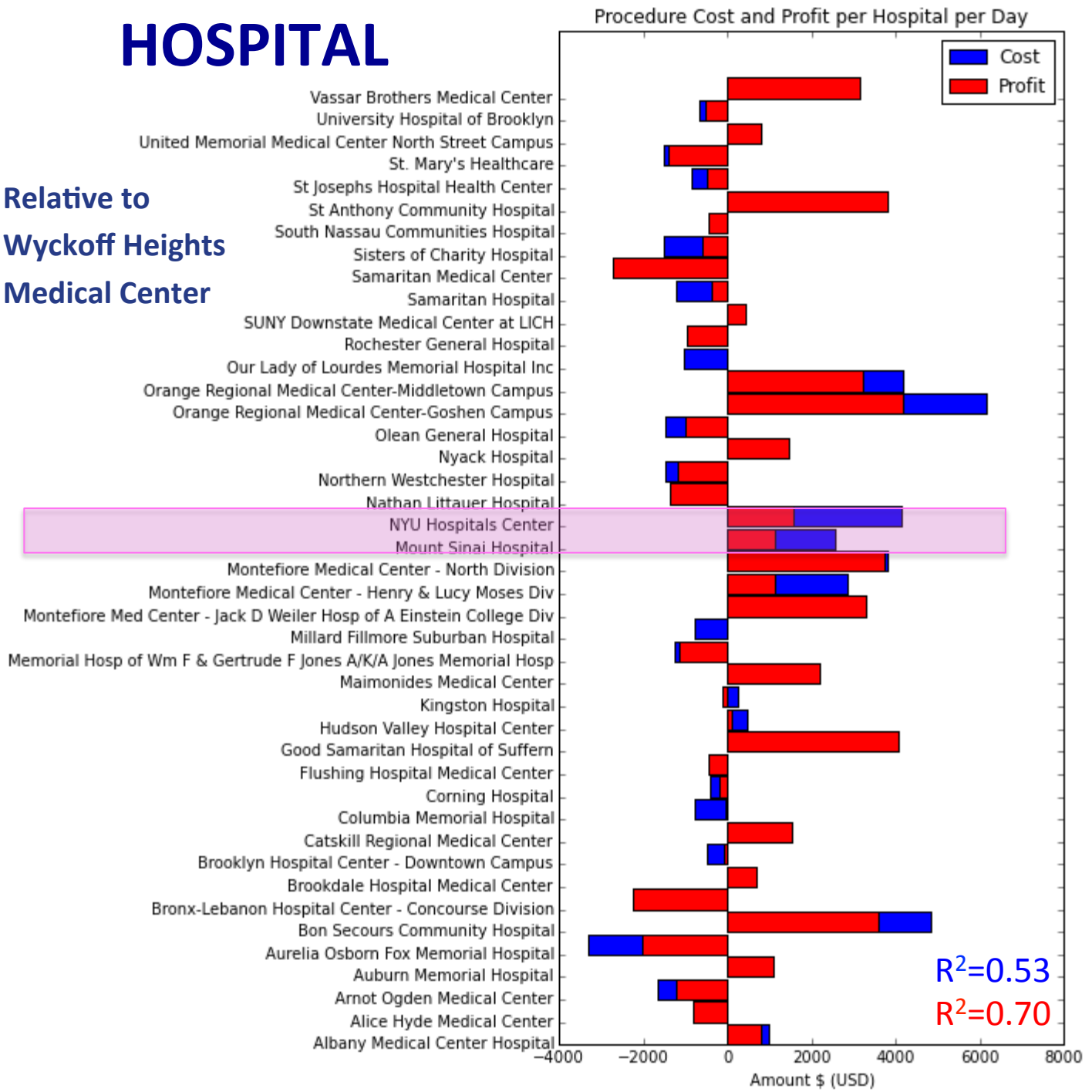

Revenue and Profit Dependence on Diagnosis Relative to Typical Pregnency
DIAGNOSIS
Revenue
Profit
Amount (USD)$
600
400
200
0
−200
R²=0.53
R²=0.70
OTHR PREGNANCY COMPL
POLYHYDRAMNIOS ET AL
PREGNANCY HEMORRHAG
PREGNANCY HYPERTENSN
PREVIOUS C-SECTION


Procedure Revenue and Profit Dependence on Severity Relative to Minor
CASE SEVERITY
Revenue
Profit
Amount $ (USD)
2500
2000
1500
1000
500
0
$R^2$=0.53
$R^2$=0.70
Extreme
Major
Moderate


Revenue and Profit Dependence on Payment Relative to Self-Paid
PAYMENT METHOD
Revenue
Profit
Amount $ (USD)
10000
8000
6000
4000
2000
0
−2000
R2=0.53
R2=0.70
Blue Cross
Other Insurance Company
Medicaid
Other Non-Federal Program

# HOSPITAL

**Relative to Wyckoff Heights Medical Center**



# Summary

- My models show that Hospitals, Case Severity, Diagnosis and Payment Type are good predictors of Cesarean Section cost.

- In combination with ratings of doctors, patients can use this information to decide where to have their Cesarean Section done.

# Thank you!

# Model Benchmark

**Feature:**

- Diagnosis
- Severity
- Payment Option
- Hospitals

**Benchmark:**

- Normal Pregnancy
- Minor
- Self-Paid
- Wyckoff Heights Medical Center

Features selected by regularized linear regression with cross-validation