# COVID-19 RETROSPECTIVE

Predicting COVID-19 cases & lessons learned from the first year of the pandemic

Walter Tyrna | Metis

# OVERVIEW

- Project Motivation
- Data & Methodology
- Results & Analysis
- Future Work

# MOTIVATION

Goal: ***How can we use COVID-19 case data to better inform future pandemic response?***

Early pandemic - inconsistent government guidance lead to public confusion and an inability to control the pandemic:

> *“Strikingly, our mathematical model reveals that, across a broad range of model parameters, partial measures can often be worse than no measures at all.”*
>
> *- NIH paper: The unintended consequences of inconsistent pandemic control policies (Aug 2020)*

# DATA & METHODOLOGY

**Source:** Imperial College London YouGov Covid 19 Behaviour Survey

**Target:** In the last 7 days, have you personally been tested positive for COVID-19?

**Data:**

- USA, February - September 2020 (32059 rows of data)

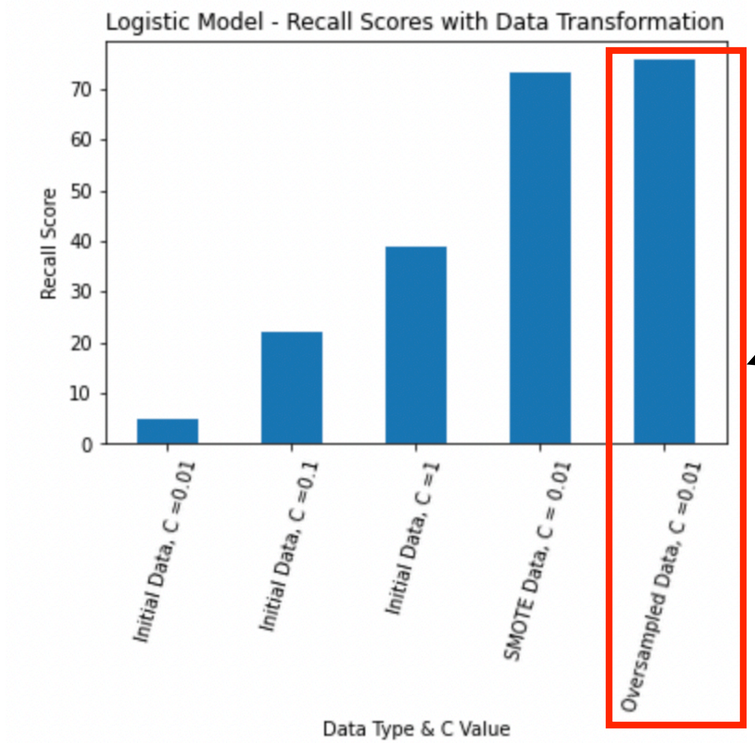
- Behavioral, Demographic, & Health Questions (16 questions)

**Assumption:** Survey respondents answered accurately

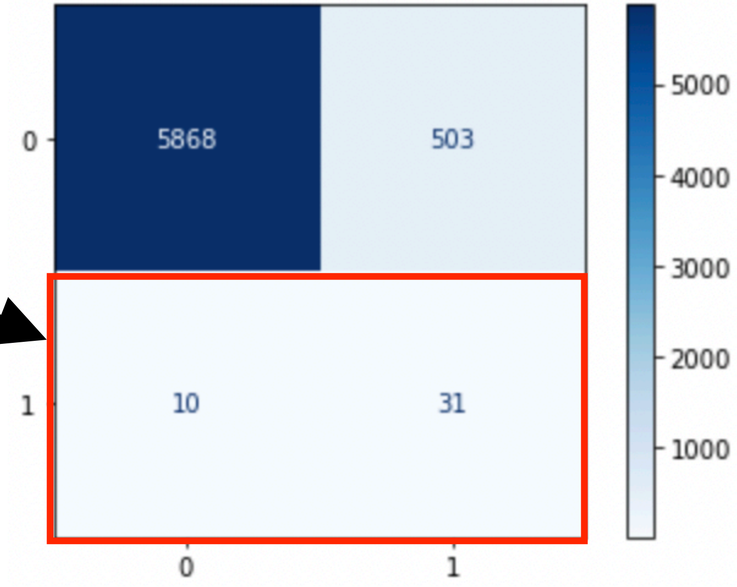
# DATA & METHODOLOGY

**Model:** Logistic Regression using oversampled data, emphasis on recall:

- Impact of misdiagnosing COVID-19 higher than a false positive

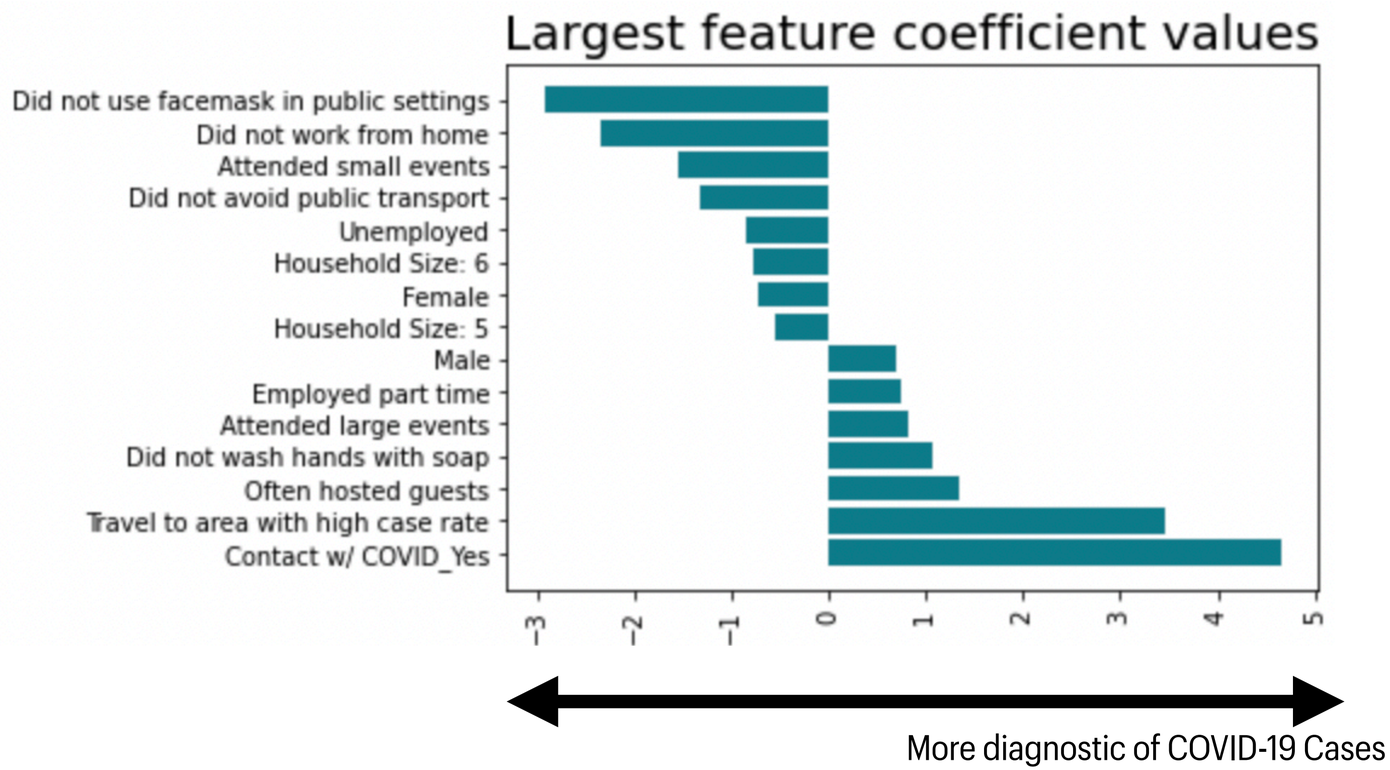



Best Recall Score: 75.6%




Cases accurately predicted: 31
Cases inaccurately predicted: 10

# RESULTS & ANALYSIS




Note: Results based on survey data, not full scientific study

Survey question:

- Have you worn a face mask outside your home (e.g. when on public transport, going to a supermarket, going to a main road)?

Event quality is key:

- Sustained, face-to-face interactions

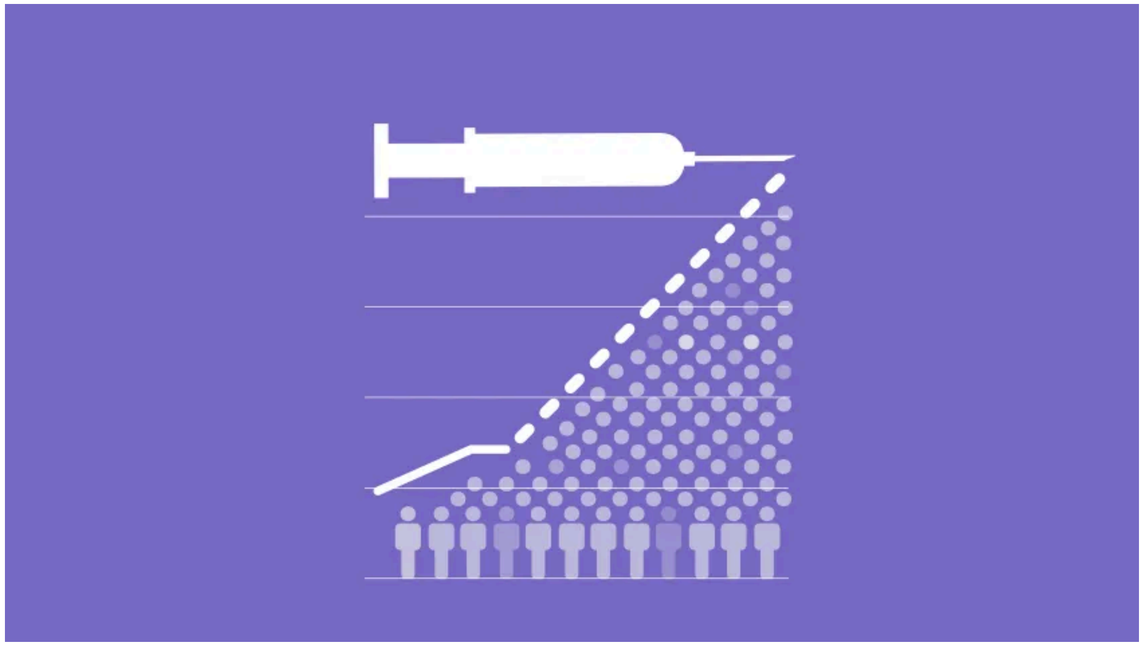
Data Gaps:

- Types of employment, households

# FUTURE WORK

Impact of both vaccines and behavior on the spread of COVID-19

Survey to include more information on nature of interactions



# QUESTIONS?