Predicting Seasonal Flu Vaccination

Keeping communities safe and healthy

Real Difference Data | April 2022

Content Outline

Topics for discussion

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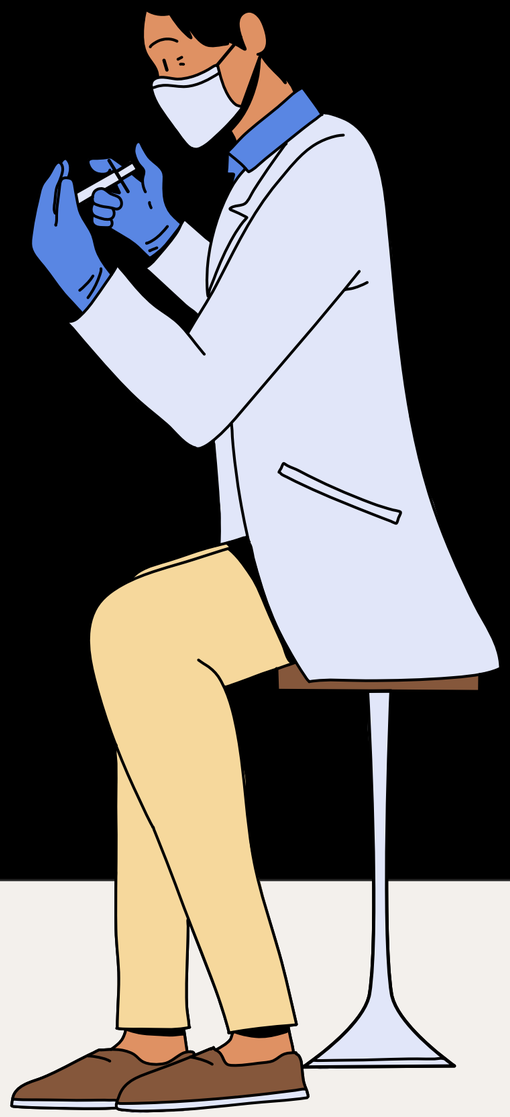
SEASONAL FLU

12,000 - 52,000 Deaths

140,000 - 710,000 Hospitalizations

per year (2010 - 2020)



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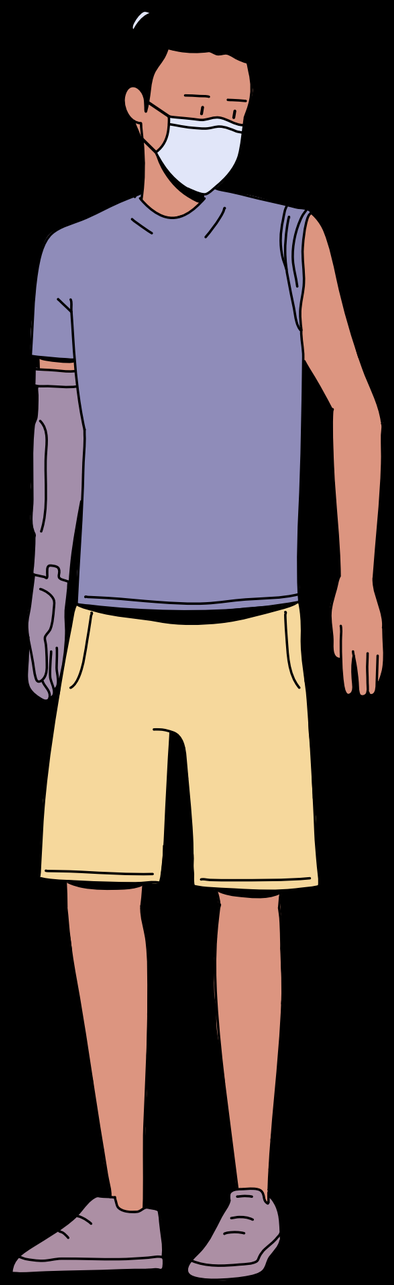
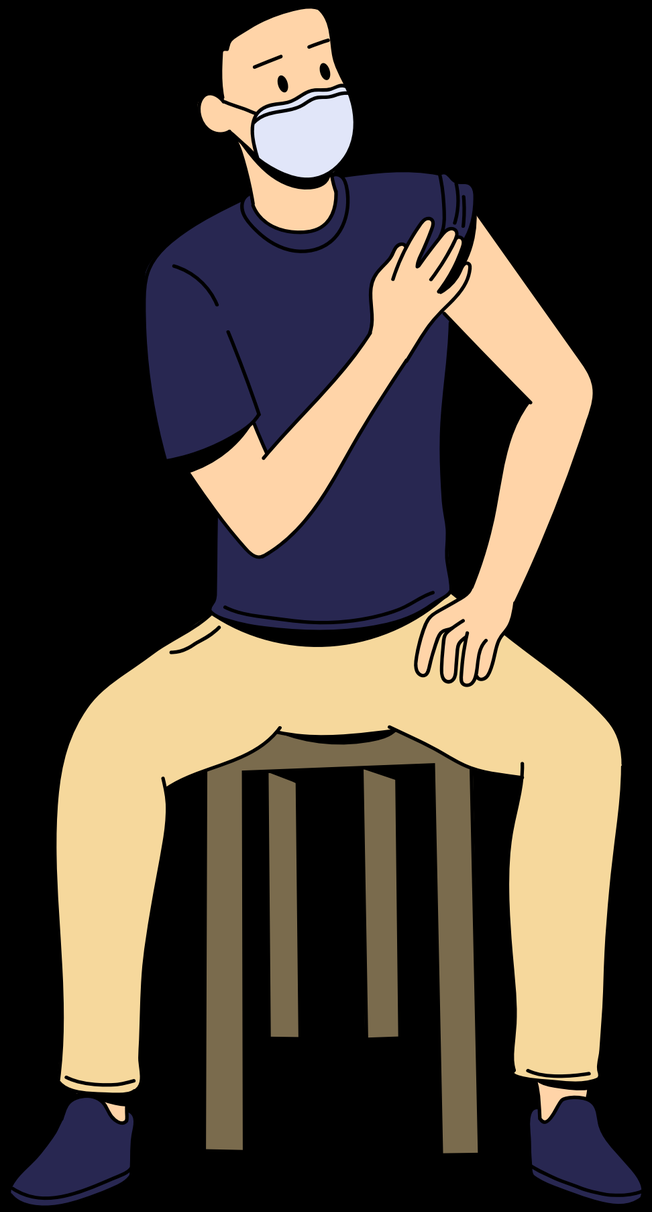
Source: https://www.cdc.gov/flu/about/burden/index.html



Business Problem

- Encourage vaccination
- Provide vaccination
- Prepare healthcare resources



Data

National 2009 H1N1 Flu Survey (NHFS)

- Opinions about H1N1 and seasonal flu vaccines
- Behaviors to avoid illness
- Basic health and demographic information
- Respondent received vaccine (2009-2010)

Methods

Two machine learning algorithms

- Predict vaccination status
- Determine most important factors
- Excluded questions about H1N1

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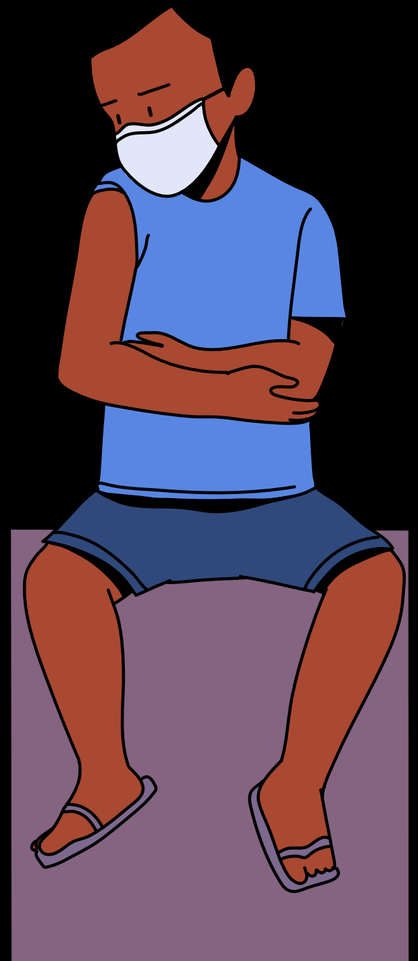
Model Predictions

- Identified 76% of vaccinators
  - Help allocate vaccination resources



- Identified 82% of non-vaccinators
  - Help facilitate behavioral interventions

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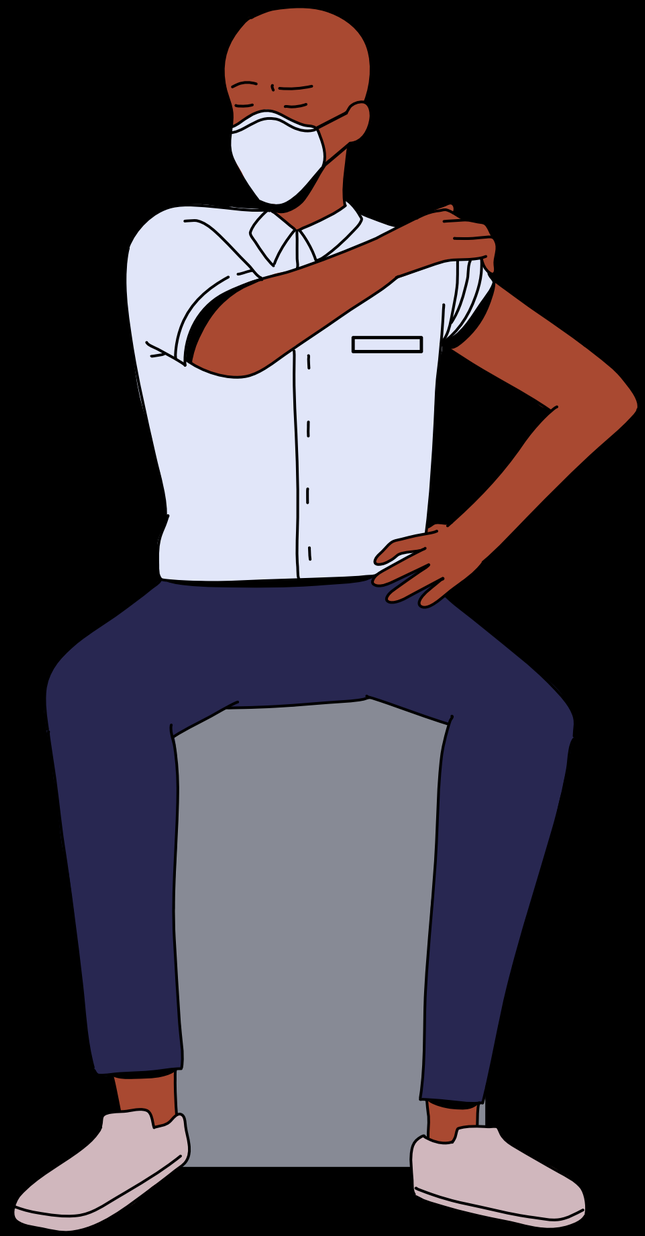
Factors influencing vaccination

- Is the seasonal flu vaccine effective?
- Worried about getting sick seasonal flu?
- Was seasonal flu vaccine recommended by doctor?
- Aged 65+ years
- Aged 18-34 years
- Worried about getting sick from vaccine?
- Healthcare worker
- Have healthcare insurance?
- Have chronic medical condition?
- Number of children in household



Recommendations

Increase vaccination rates:

- Promote benefits of vaccination
- Healthcare providers promote vaccination
- Address roadblocks (sick leave, heath insurance)

Allocate vaccination resources:

- Distribute vaccinations at primary care providers
- Target specific groups (older adults, chronic illness)
- Free vaccination for young and low-income adults

What's next?

An ongoing journey

Phase 1

Improve model performance with ensemble algorithms

Phase 2

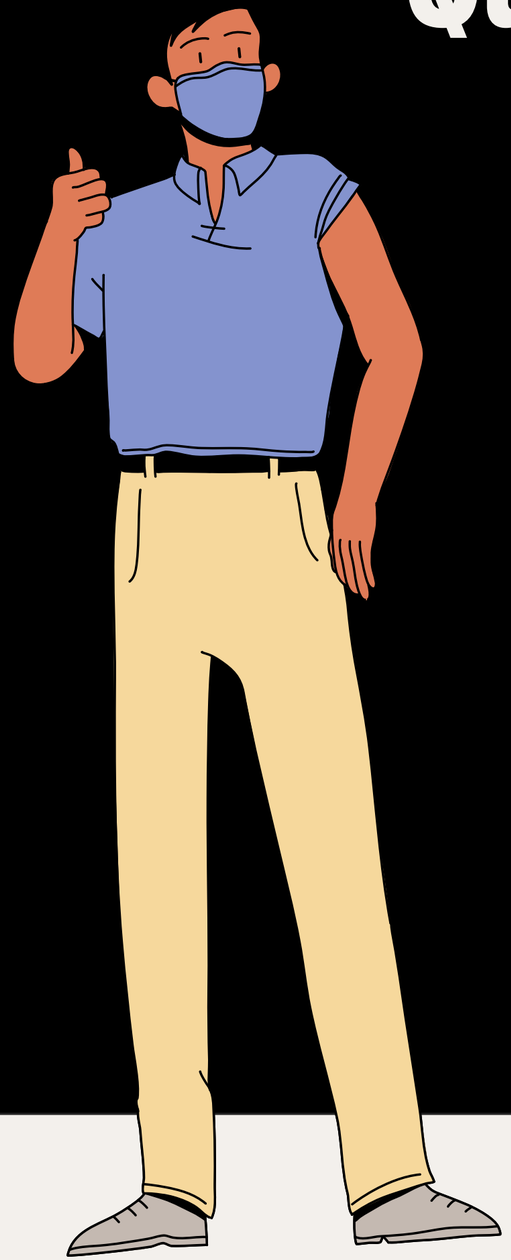
Utilize additional data to better inform decisions (PHI / PII)

Phase 3

Create separate models for different demographics and regional populations

Questions or comments?

Get in touch!



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