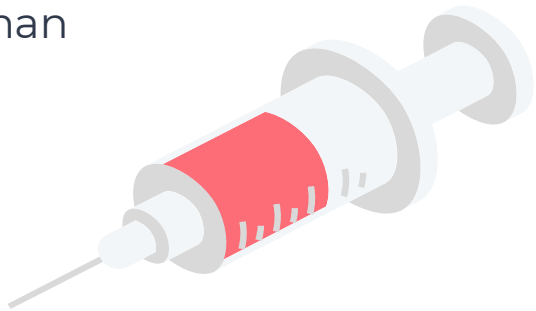
AmerisourceBergen

Predicting Future Demand for the Seasonal Flu Vaccine

Roshni Janakiraman



OUTLINE

01. OBJECTIVES

02. DATA UNDERSTANDING

03. INITIAL INSIGHTS

04. PREDICTIVE MODEL EVALUATION

05. RECOMMENDATIONS & NEXT STEPS

BUSINESS OBJECTIVES

- Ensure timely & reliable delivery to vaccine providers

BUSINESS GOALS:

1. Provide Market Insights to manufacturers

2. Streamline Shipment Logistics

3. Expedite reliable deliveries to vaccine providers

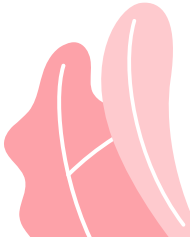
- **Accurately estimate nation's future vaccine needs**

PROJECT OBJECTIVES

1. Use Machine Learning Models to optimize the accurate prediction of future seasonal flu vaccine demands

2. Identify the *types of vaccines* that are in demand based on population demographics

3. Discuss strategy to increase vaccination usage



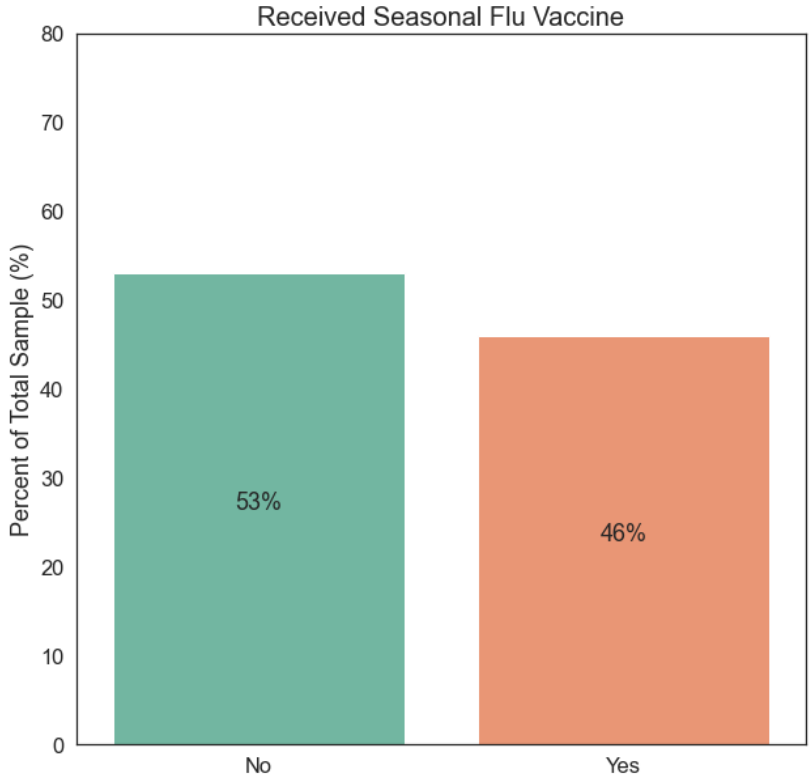
DATA UNDERSTANDING

CDC: *National H1N1 Flu Survey*, 2009

- Phone interviews (n ~25,000)
- *Multi-demic* similarity

Survey assessed:

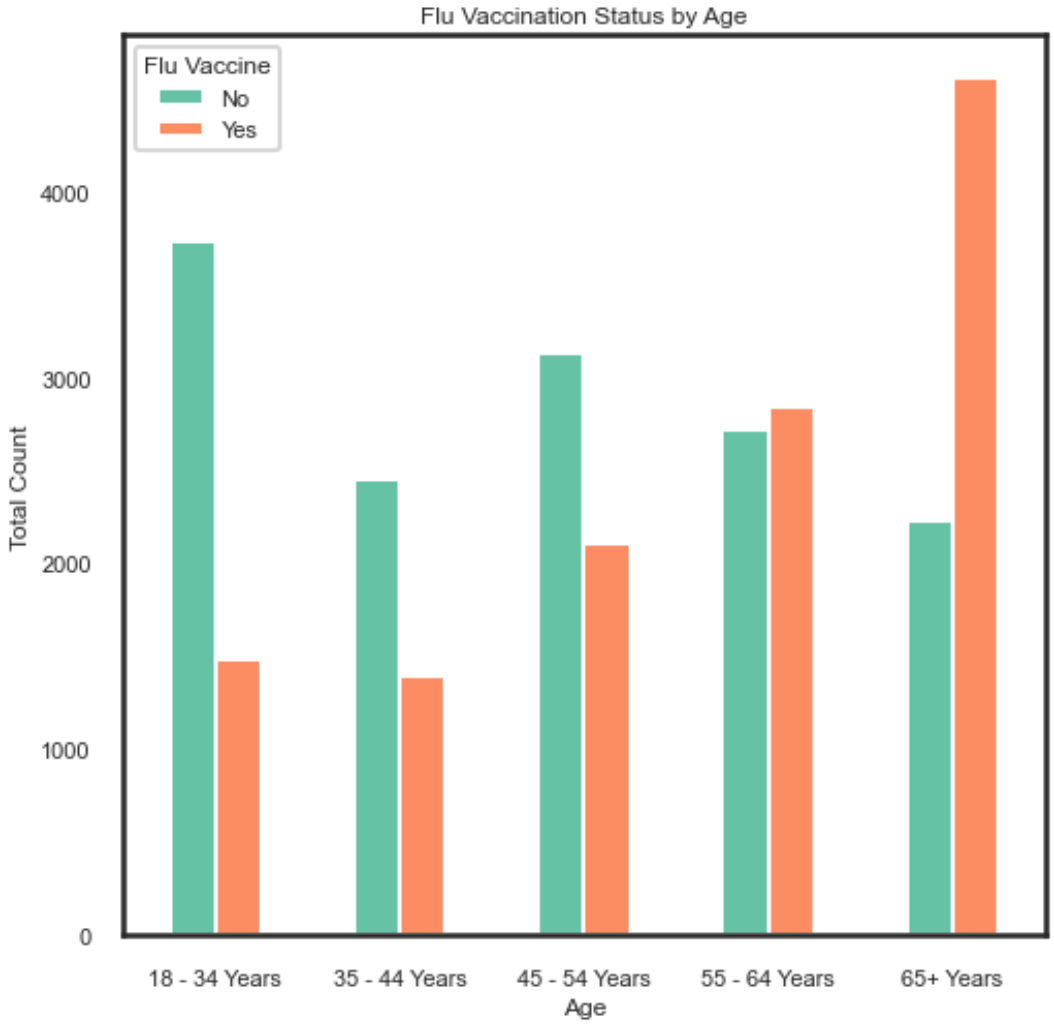
- Received Flu Vaccine (Yes/No)
  - Balanced Distribution
- Flu Prevention Behaviors
- Flu Vaccine Attitude
- Demographics



Full dataset: Distribution of Flu Vaccine Status

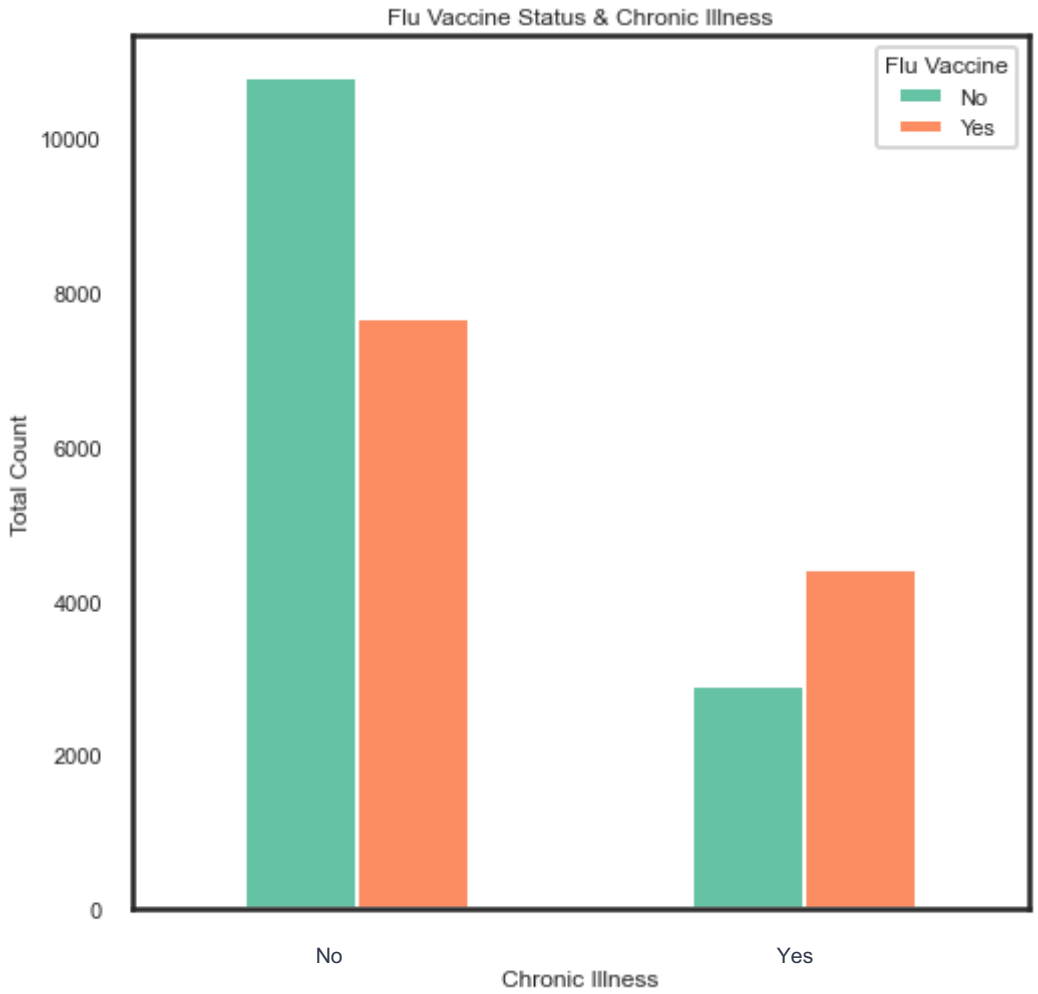
INITIAL FINDINGS: Vaccines & Age

- Different types of flu vaccines required for special populations
- **For Elderly (age 65+):**
  - High Dose
  - Adjuvanted
- *Included in predictive model to inform future orders*



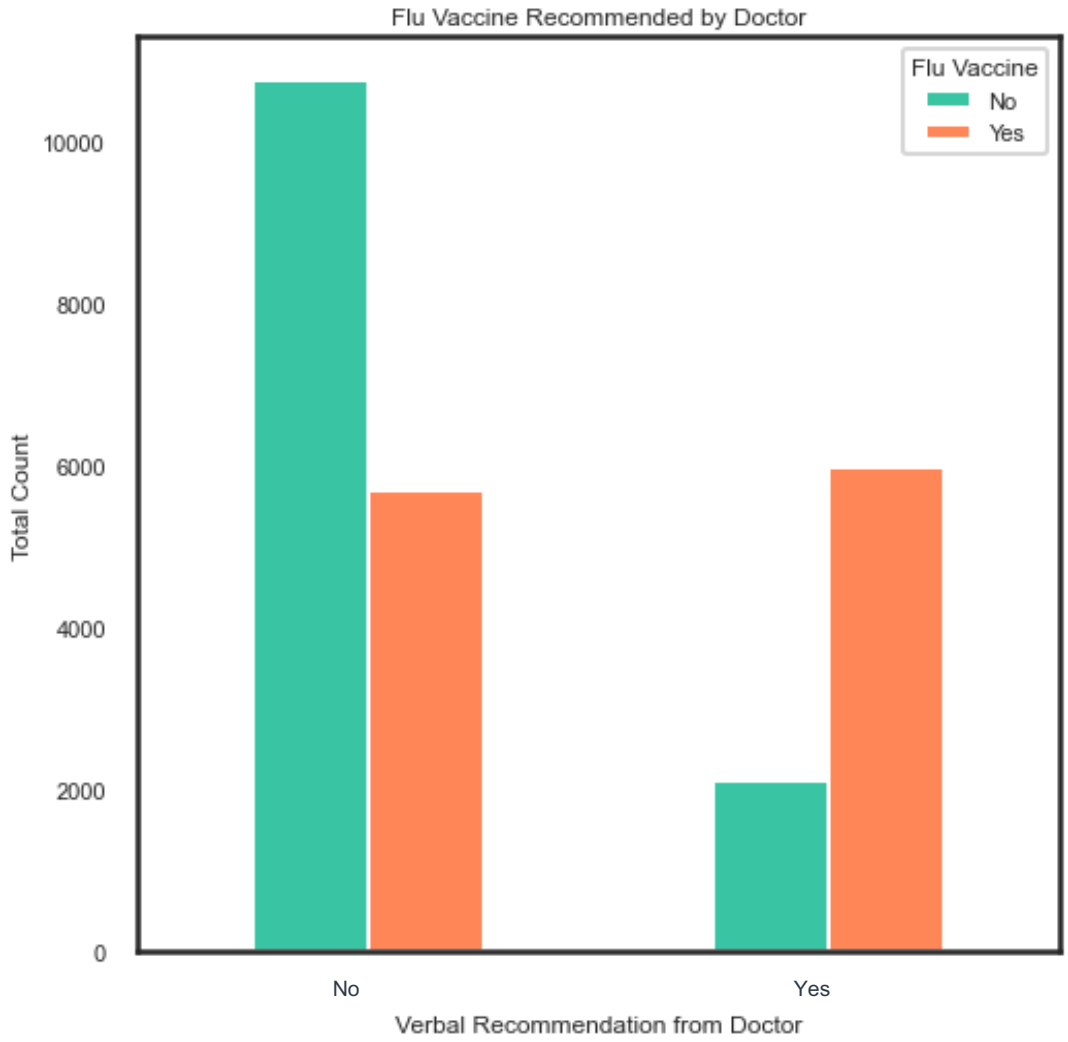
Flu Vaccines & Chronic Illness

- Normal flu shot is applicable
- **Recommended**:
  - *Recombitant flu shot*



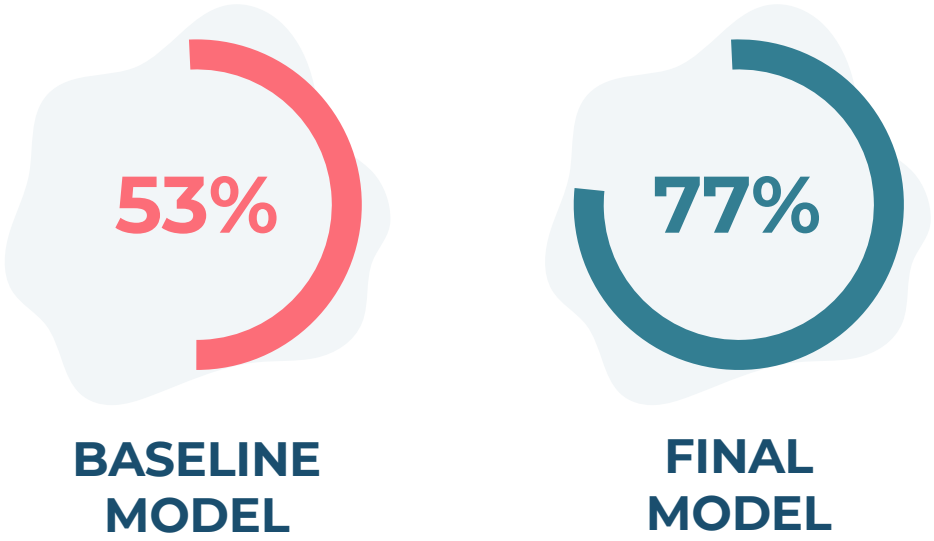
Verbal Recommendation from Doctor

- Only **33%** of people received doctor recommendations



FINAL MODEL + EVALUATION

- Random Forest Model
  Target Metric: *Accuracy*



RECOMMENDATIONS + NEXT STEPS

RECOMMENDATIONS:

1. Use Predictive Model to meet client needs & inform purchases from manufacturers

2. Consider demographics when planning vaccine inventory
    - Elderly *(high dose)* and Chronic illness *(recombinant)*

3. Encourage healthcare provider clients to verbally recommend the vaccine to their patients

NEXT STEPS:

1. Predictive Model include location distribution

THANK YOU!

CONTACT INFORMATION

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