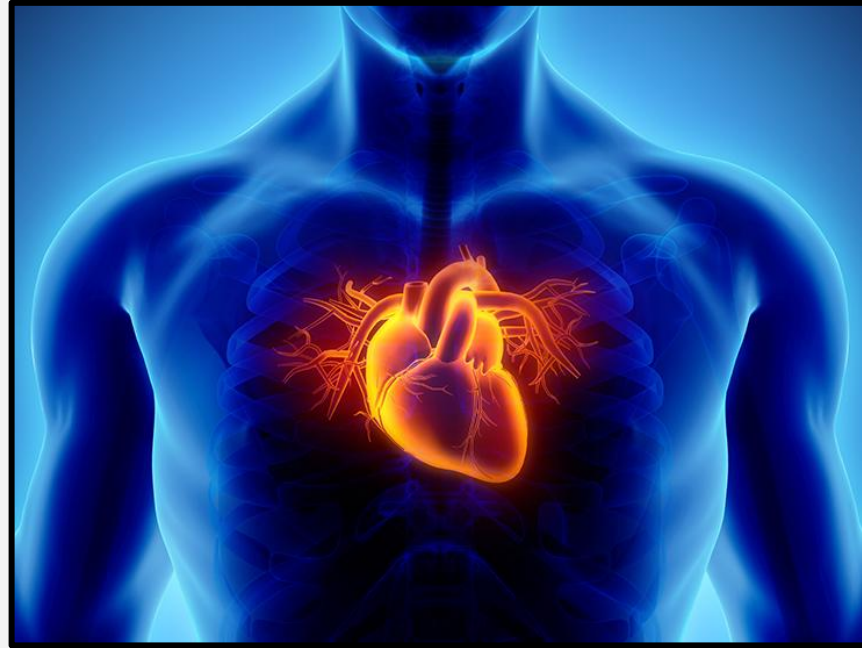# Populations at Risk for CHD

By: Zachary Greenberg & Jonathan Silverman

Business Problem

- According to the CDC, Heart Disease is the #1 leading cause of death among Americans.

- Heart Disease cost the US about $214 billion in 2015 and is increasing annually.

- Identify populations at risk, and design an intervention for these populations.

- In the long run, reduce the financial burden to the U.S. Healthcare system.

CHD Data

- Public Dataset from Kaggle.

- Data on 4000 individuals

- Fifteen Measures of Health

| Sex	Stroke	Diastolic Blood Pressure
Age	Hypertension	Body Mass Index
Smoking	Diabetes	Heart Rate
Cigarettes Per Day	Total Cholesterol	Glucose
BP Meds	Systolic Blood Pressure	Ten Year Risk for CHD

Prevalence of CHD As You Age

The risk of CHD seems to exponentially increase with age.
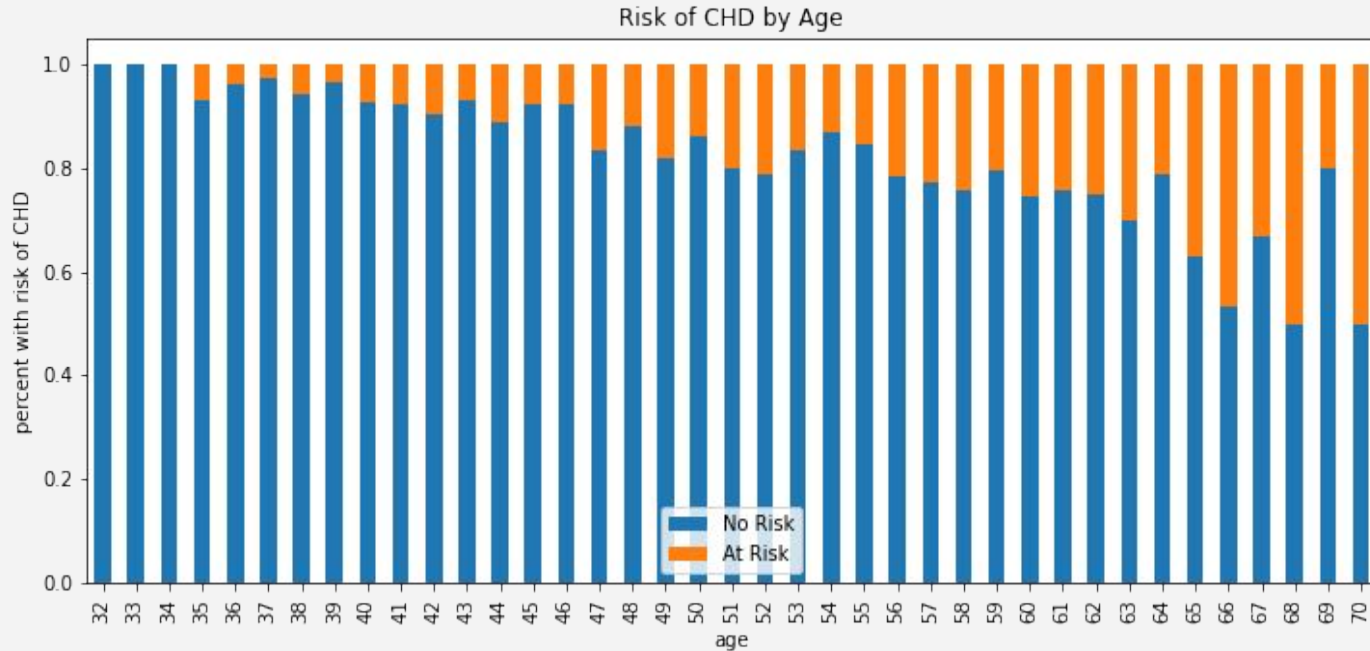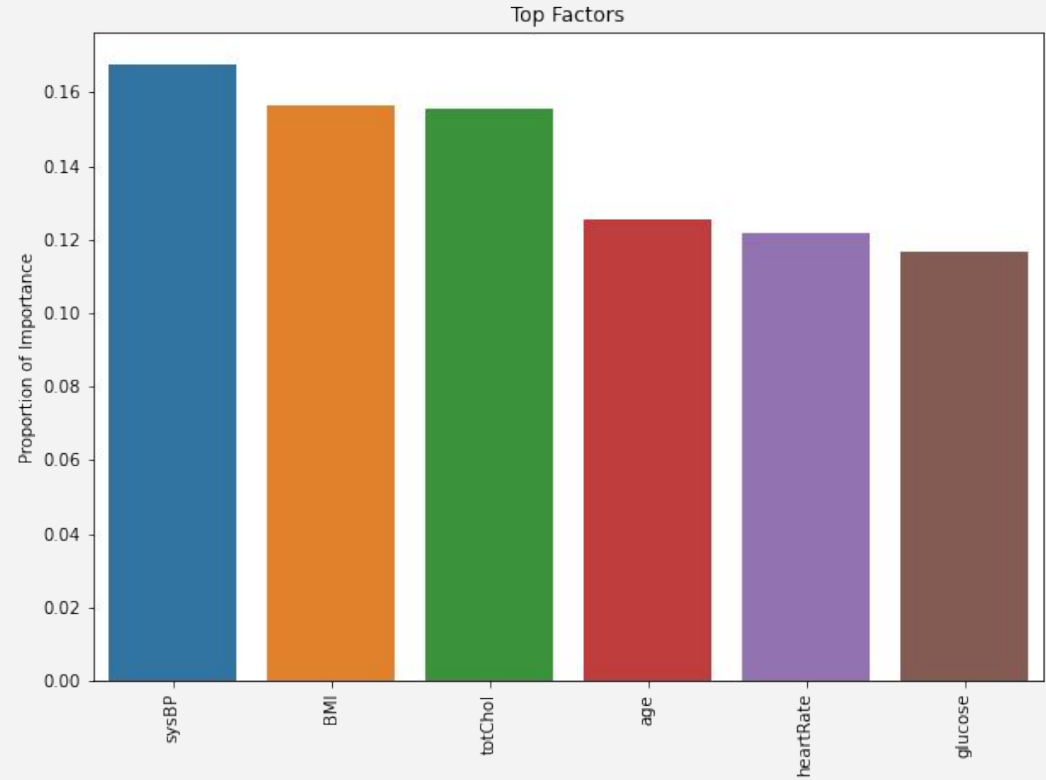

Risk of CHD by Age

Other Insights

Given 2 conditions, the risk of CHD is made clear.

For example if age is greater than or equal to 50, and glucose greater than or equal to 140, 60% of people at in the dataset were at risk for CHD.
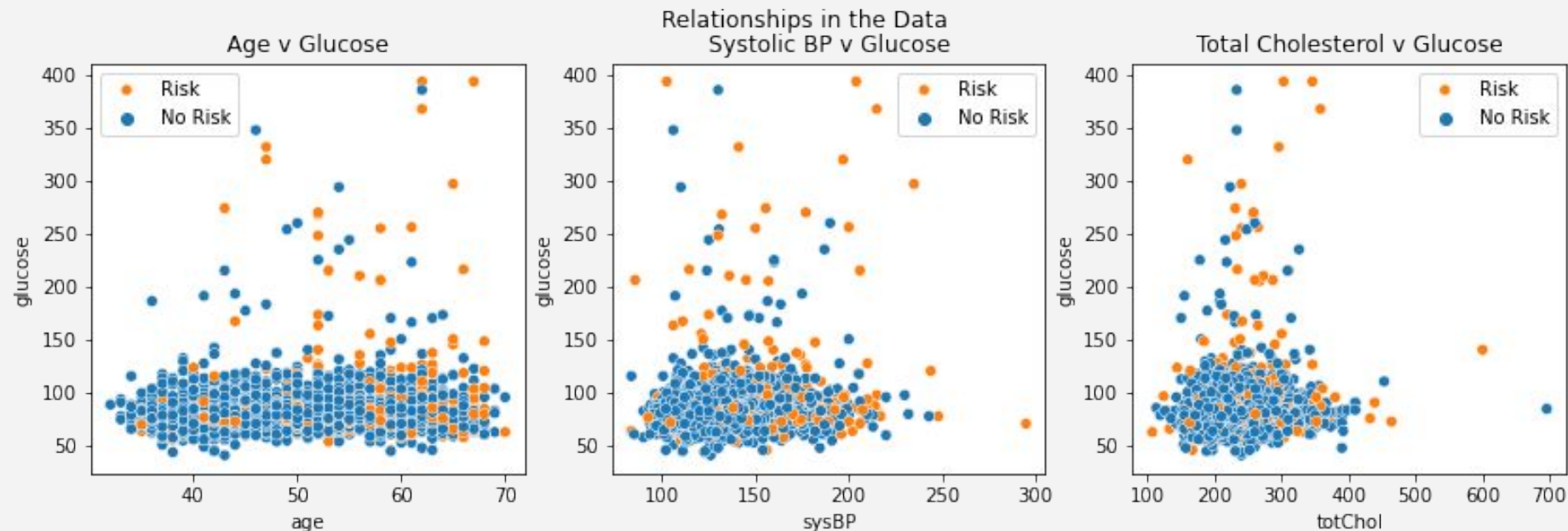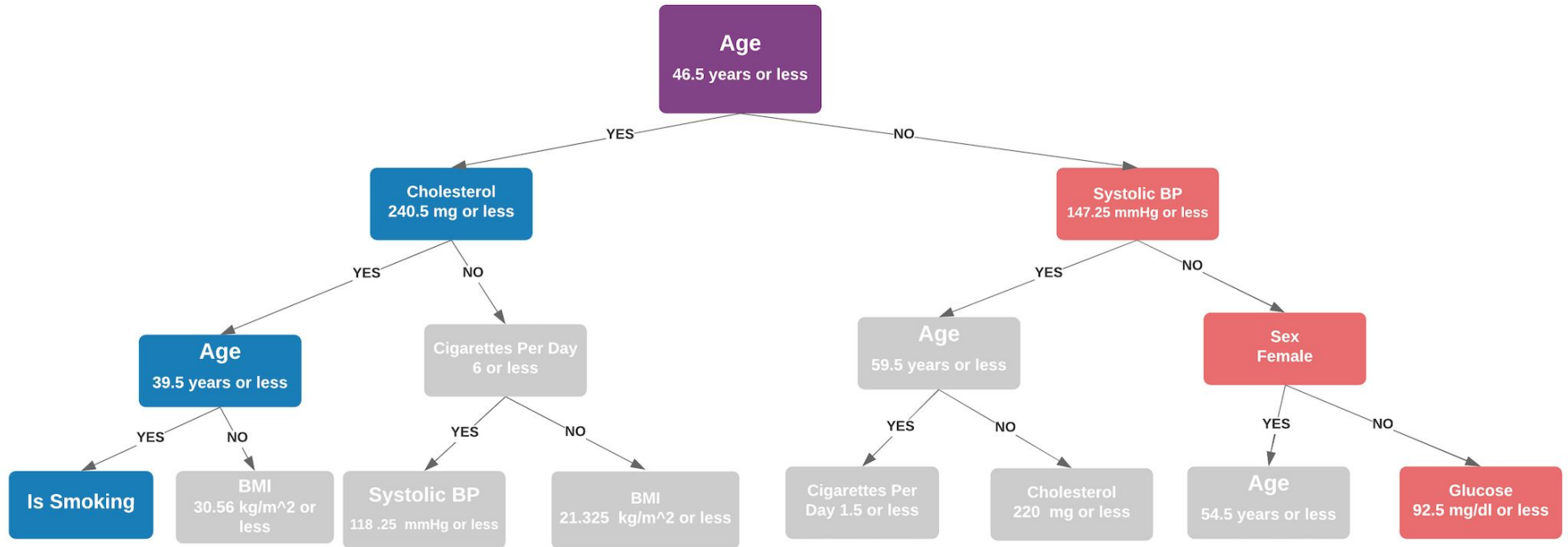
Biggest Risk Factors

The top 6 risk factors are:

Systolic BP, BMI, Cholesterol,

Age, Heart rate, & Glucose Levels.

Tree Diagram for Identifying Populations At Risk For CHD

Zachary Greenberg and Jonathan Silverman | April 1, 2021

Population Most At Risk

Down the Right-most Branch:

- This population is over the age of 46,

- has a Systolic BP greater than 147mmHg,

- is male

- has a glucose reading of over 92.5 mg/dl.

Conclusion & Next Steps

- **Population in most dire need:**
    - over the age of 46
    - has a Systolic BP greater than 147mmHg
    - is male.
- **Insights from tree diagrams mostly parallel conventional medical wisdom:**
    - Systolic BP,
    - BMI,
    - Cholesterol,
    - Age,
    - Heart rate,
    - Glucose Levels
- **Staging interventions**
    - prioritizing dietary potassium
    - glucose management perhaps with fasting
- **Studying the left-most branch of the tree, the healthiest populations for insights into intervention techniques**