


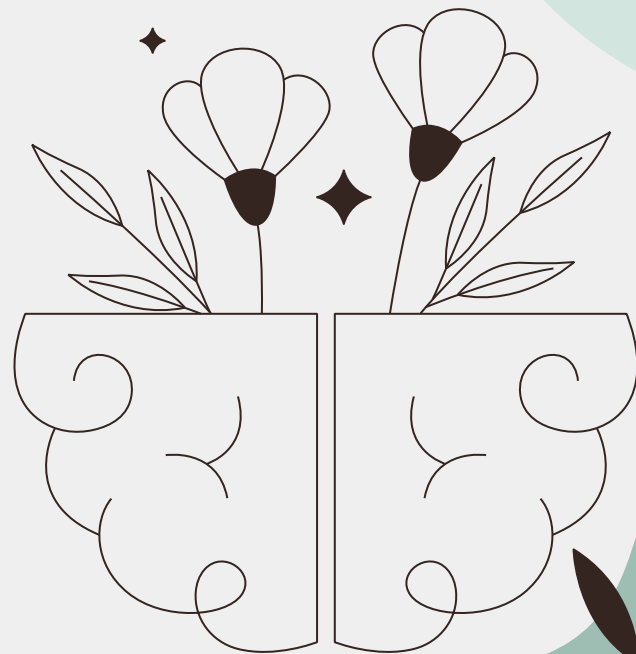


DSCI 510

# Predicting Chronic Diseases from Personal Wearable Devices



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# Introduction



## Health

Increasing public accessibility, knowledge, understanding of medical data for a healthier future.

(ex: Apple Watches, Health App)



## Tech

Harnessing advancing technology to provide medical insights and improve prevention care.

(ex: AI, Machine Learning)

# Data Sources

## Apple Watch / Fitbit Data

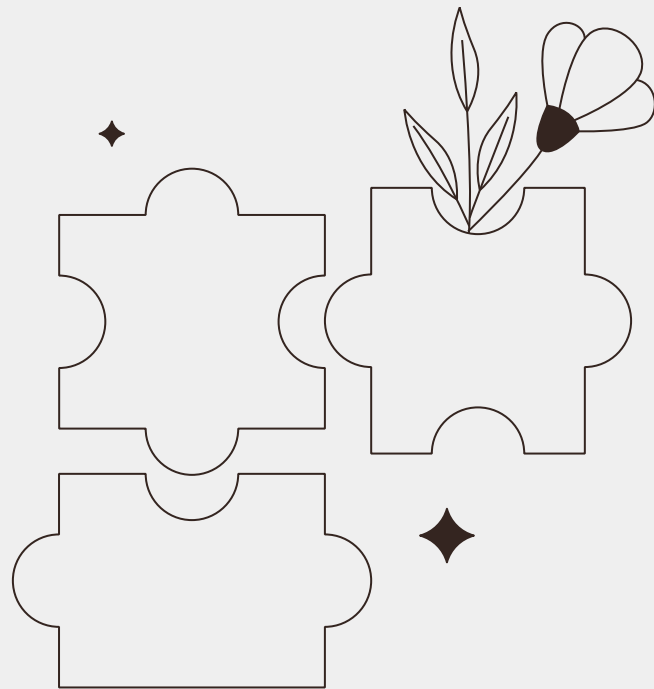
20 features and 6264 instances used for predicting chronic disease

## US Chronic Disease Indicators

34 public surveillance indicators and 309215 instances for chronic diseases

## Behavioral Risk Factors

33 public surveillance indicators and 106260 instances for behavioral risk factors



# Process and Results

## EDA

Feature engineering  
and cleaning

## Technique

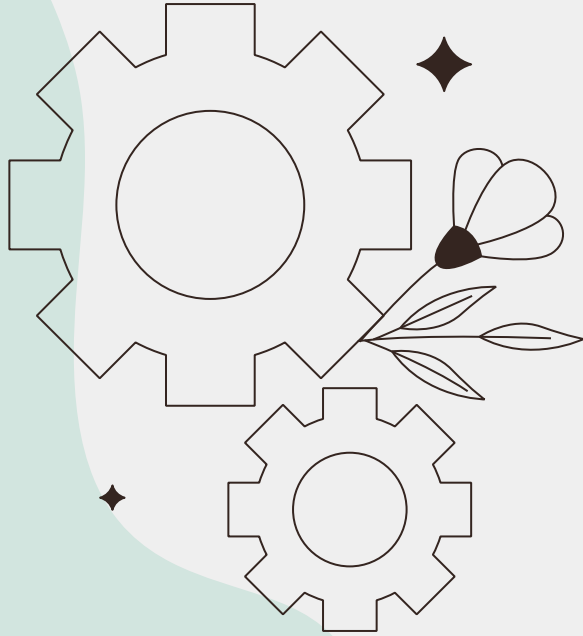
Random Forest  
Classifier and  
one-hot-encoding

## Results

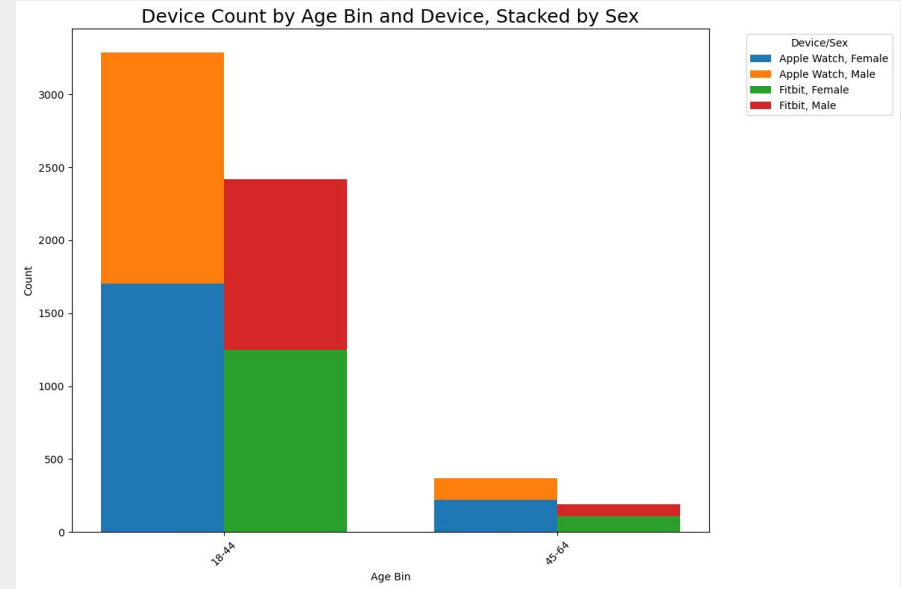
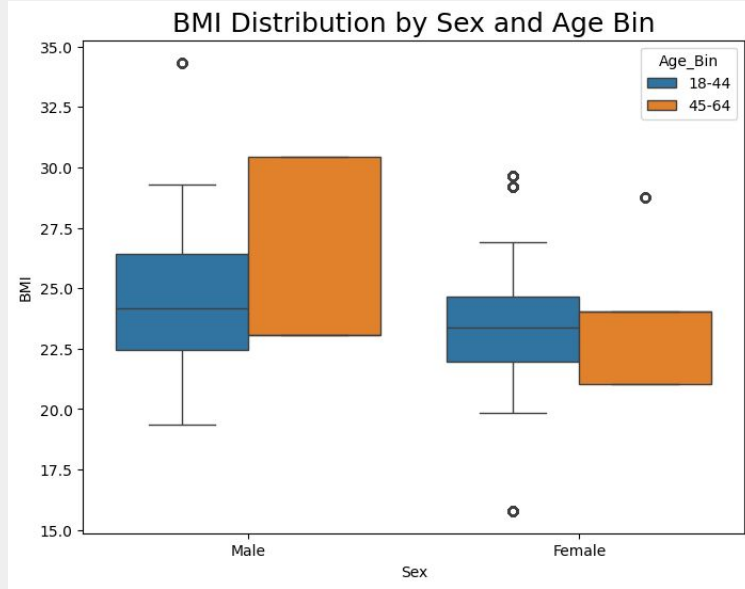
ML Algorithm bias  
identified through  
visualizations

## Challenges

Difficulties and where  
improvements can be  
made

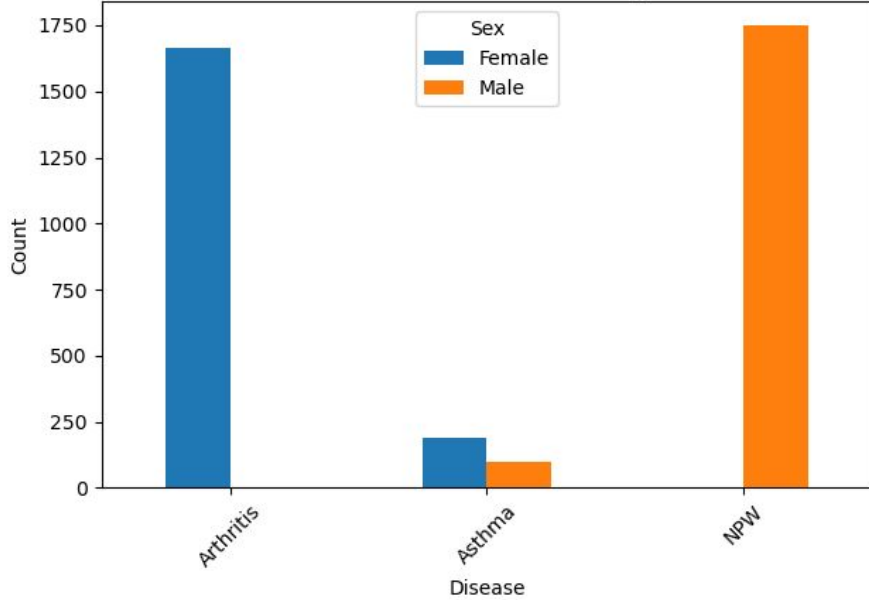


# Process: EDA

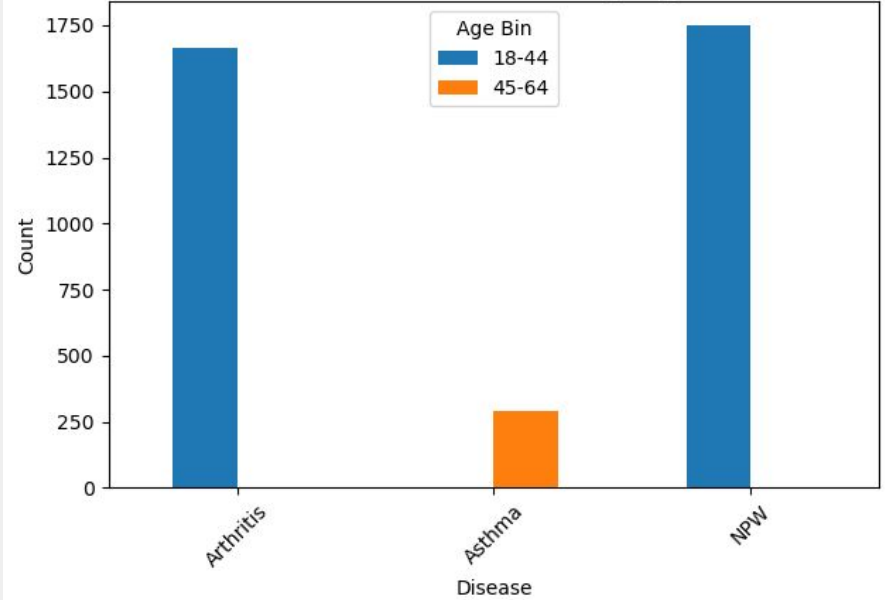


# Results

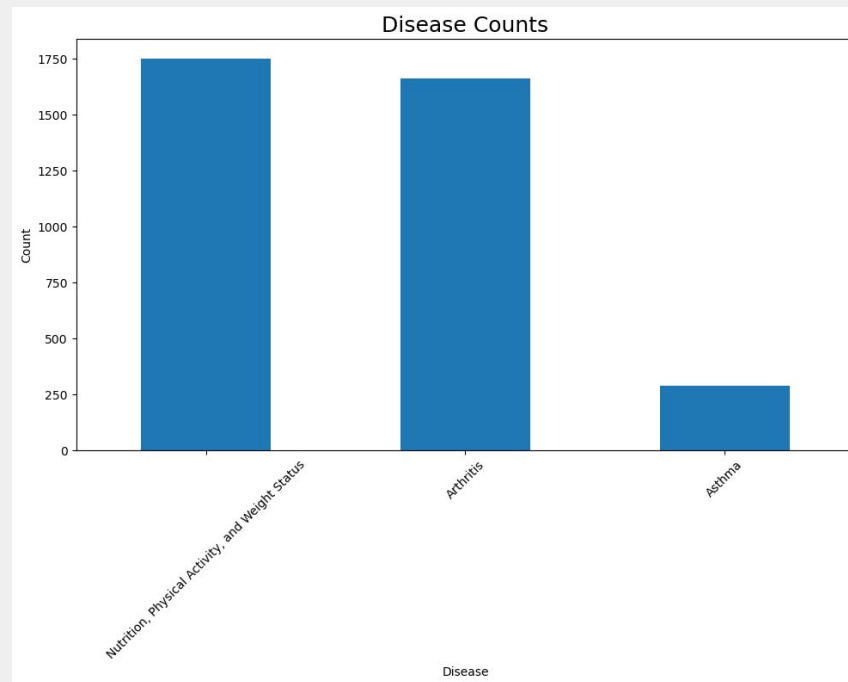
## Disease Distribution by Sex



## Disease Distribution by Age Bin



# Results



# Challenges and Improvements



## Data Availability

Not much overlap, lots of assumptions made



## Features

Additional features, better engineering

## ML Exploration

Test, explore, compare other algorithms



## Validation

Cross-validating with similar data/projects







**Thank You!**