# PREDICTING CHICAGO CAR ACCIDENTS & INJURIES

BY HITEN PATEL

# PROBLEM

- Average span of 4 days = Over 1000 car accidents will occur
- Drivers + Passengers + Pedestrians + Cyclists = Over 2000 people
- 45% will experience a minor to fatal injury
- Predict what causes accidents which can lead to an injury

# BUSINESS VALUE

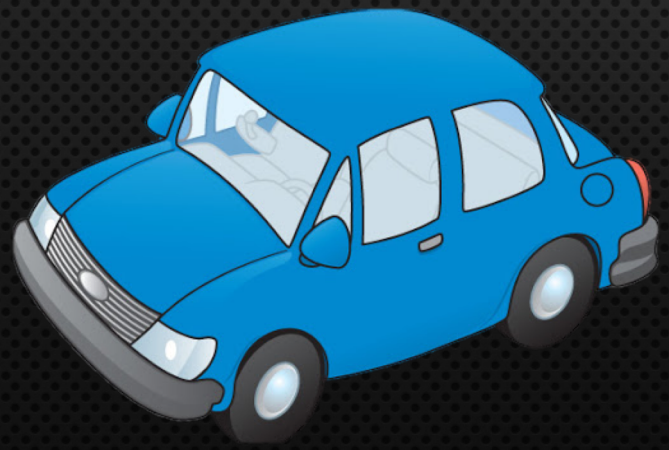
- Reduce Injuries/fatalities
  - Make the streets safer for drivers, passengers, pedestrians and cyclist
  - Alleviate work for Emergency Responders and Officers

- Reduce Traffic
  - No accidents, no congestion
  - Shorter travel times

- Safety
  - Safe environment for the citizens of Chicago
  - Happy drivers

# THE DATA

- Source: City of Chicago Websites
  - Traffic Crashes
  - Vehicle Information
  - People Information

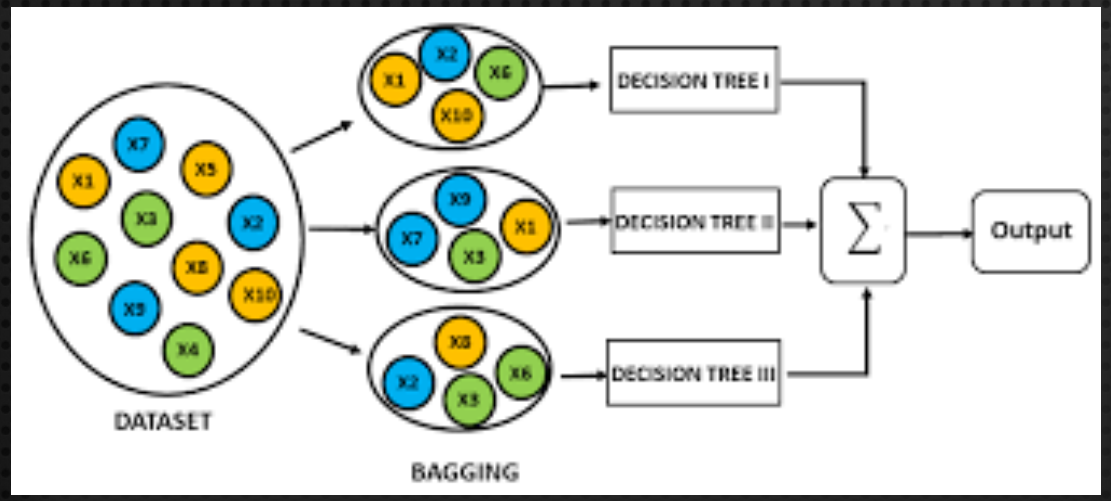


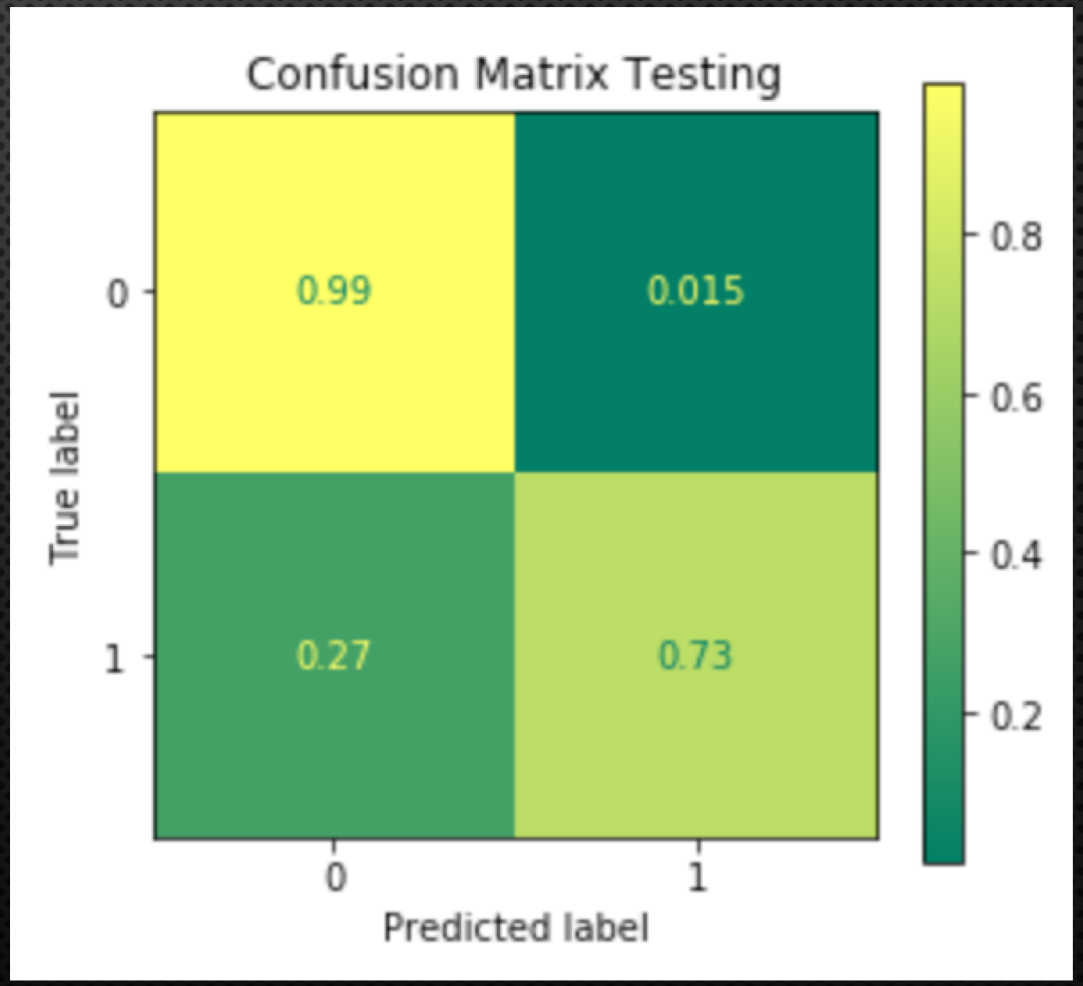
# METHODOLOGY

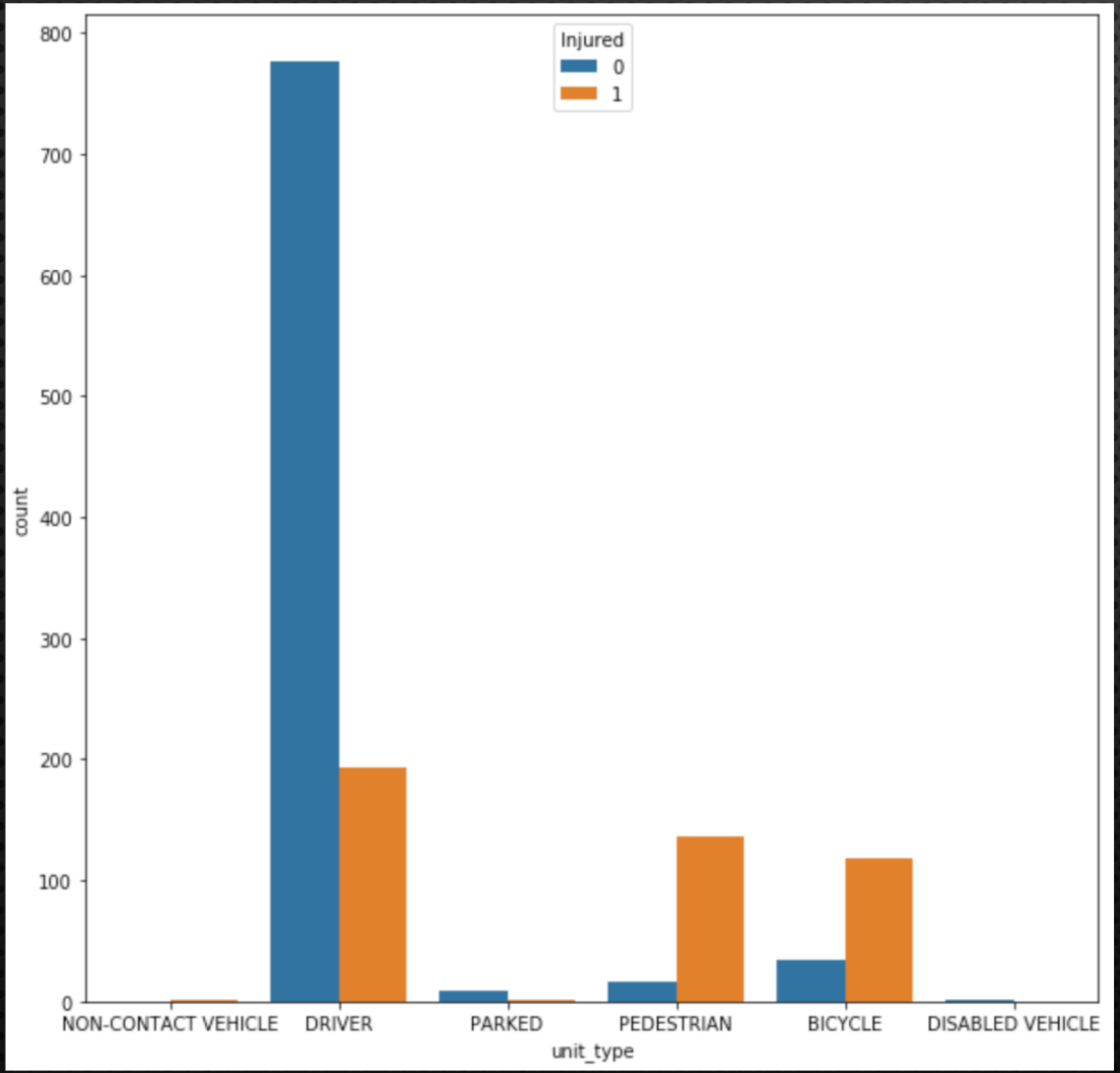
- Obtain
  - Obtain the data and observe the values
- Scrub
  - Removing irrelevant/redundant columns
  - Replace null values
- Explore
  - Creating visuals to understand data
  - Converting datatypes
- Model
  - Creating different types of models
  - Understanding the relationships between variables
- Nterpretation
  - Explaining what the model is telling us

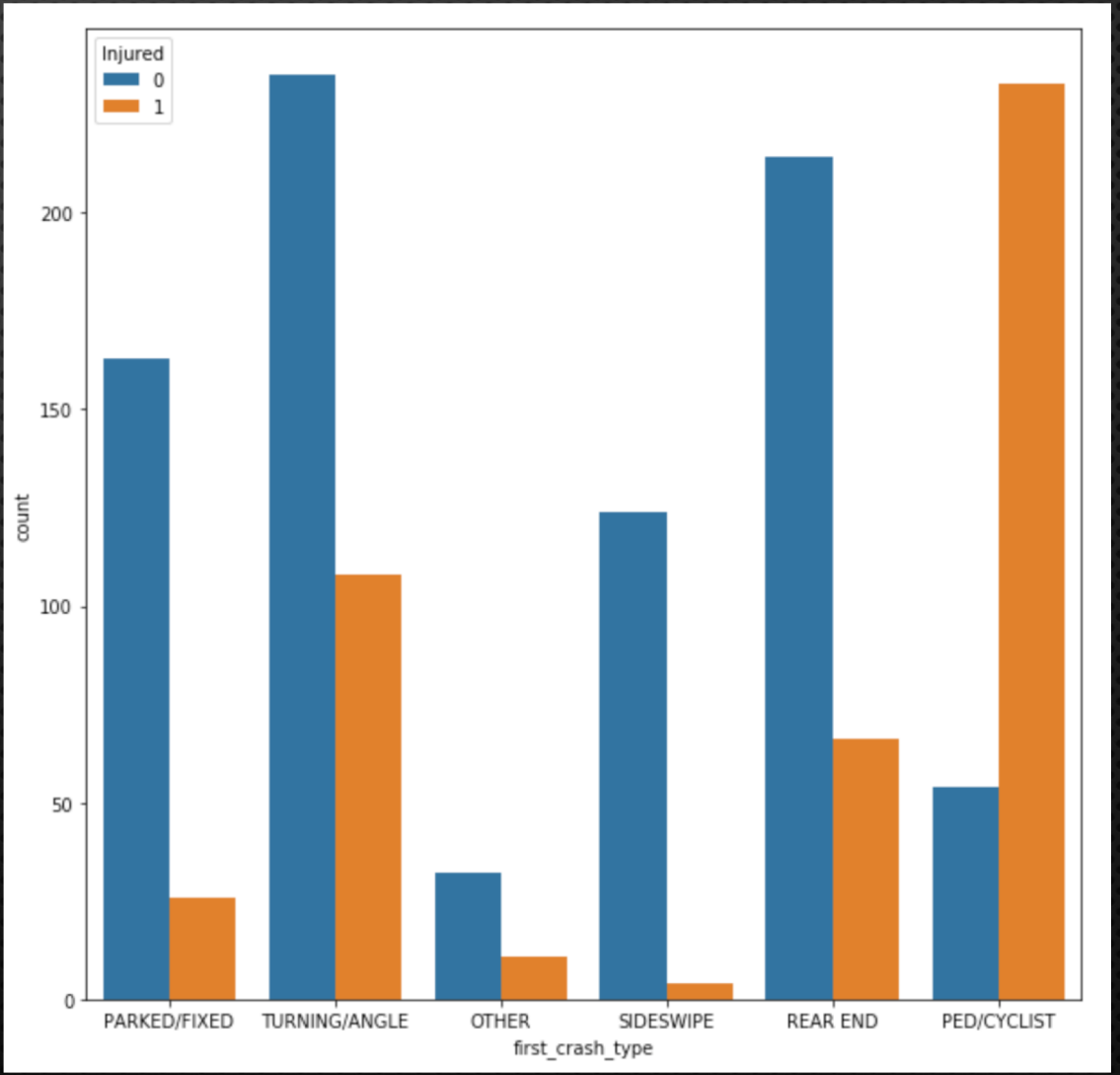
# MODEL

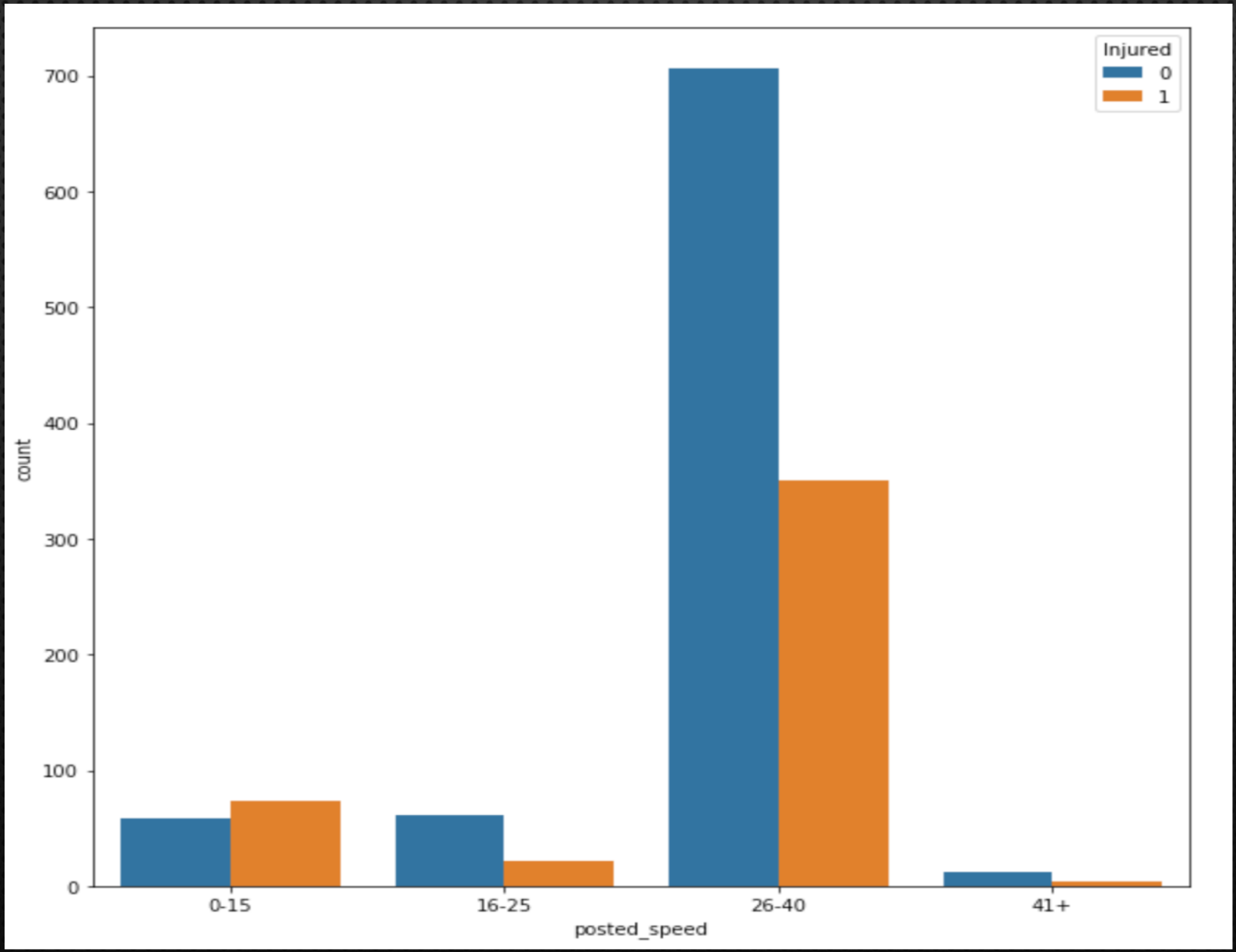
- Bagging – Random Forest
- 89% accuracy rate




Injured
0
1
count
800
700
600
500
400
300
200
100
0
NON-CONTACT VEHICLE
DRIVER
PARKED
PEDESTRIAN
BICYCLE
DISABLED VEHICLE
unit_type


Injured
0
1
count
200
150
100
50
0
PARKED/FIXED
TURNING/ANGLE
OTHER
SIDESWIPE
REAR END
PED/CYCLIST
first_crash_type


Injured
0
1
700
600
500
400
300
200
100
0
count
0-15
16-25
26-40
41+
posted_speed

# RECOMMENDATIONS

- Ped/Cyclist wear contrasting colors
- Ped/Cyclist are more aware during afternoon/rush hour
- The city can increase traffic signs/signals and lanes that are more ped/cyclist friendly
- The city lowers the speed limit during afternoon/rush hour

# FUTURE WORK

- Owner of the vehicle?
- Is this a normal driving route?
- Why are traffic control devices not working?
- Merging weather data
- Merging driving records

Thank You For Your Time
Any Questions?