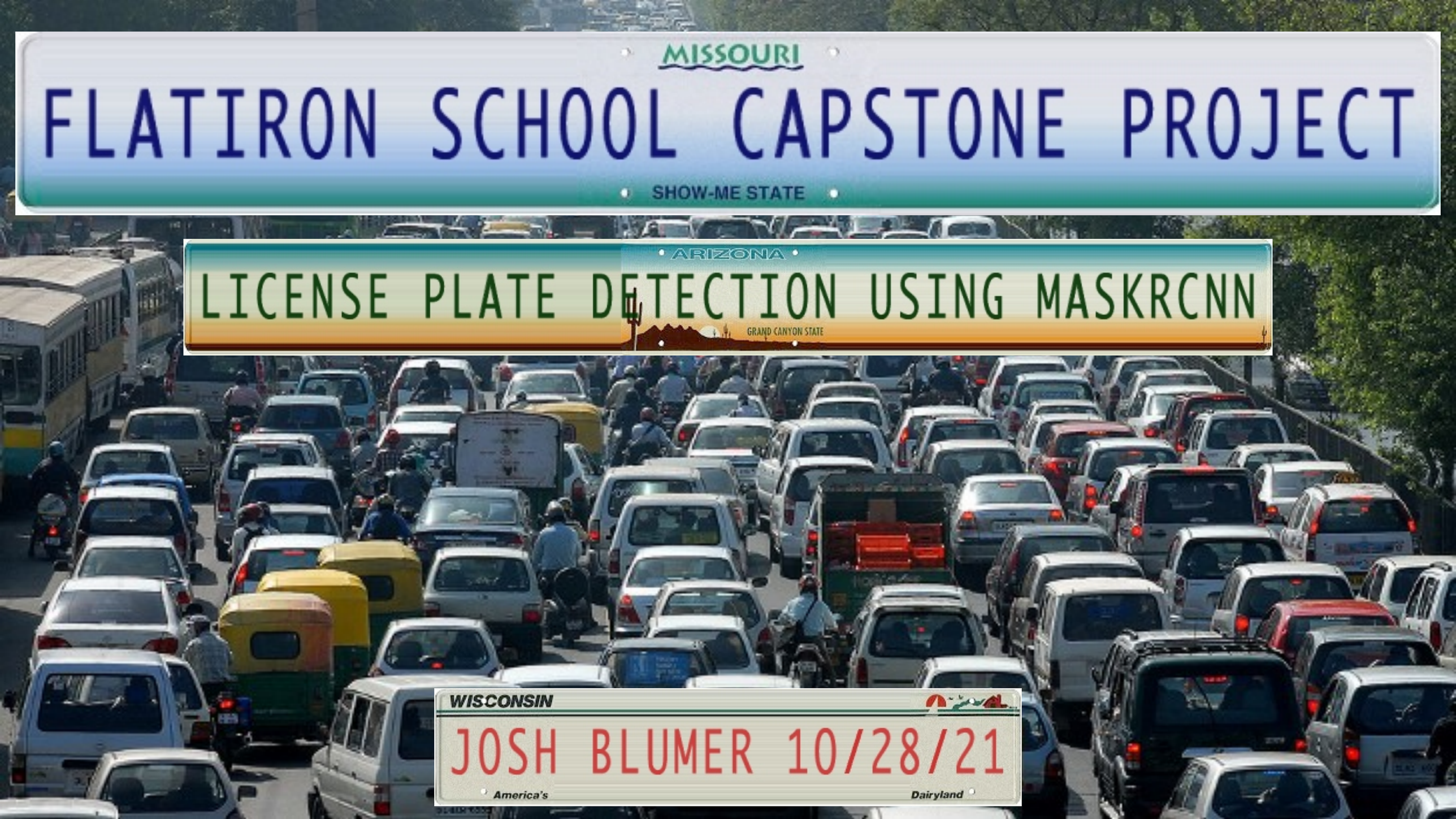
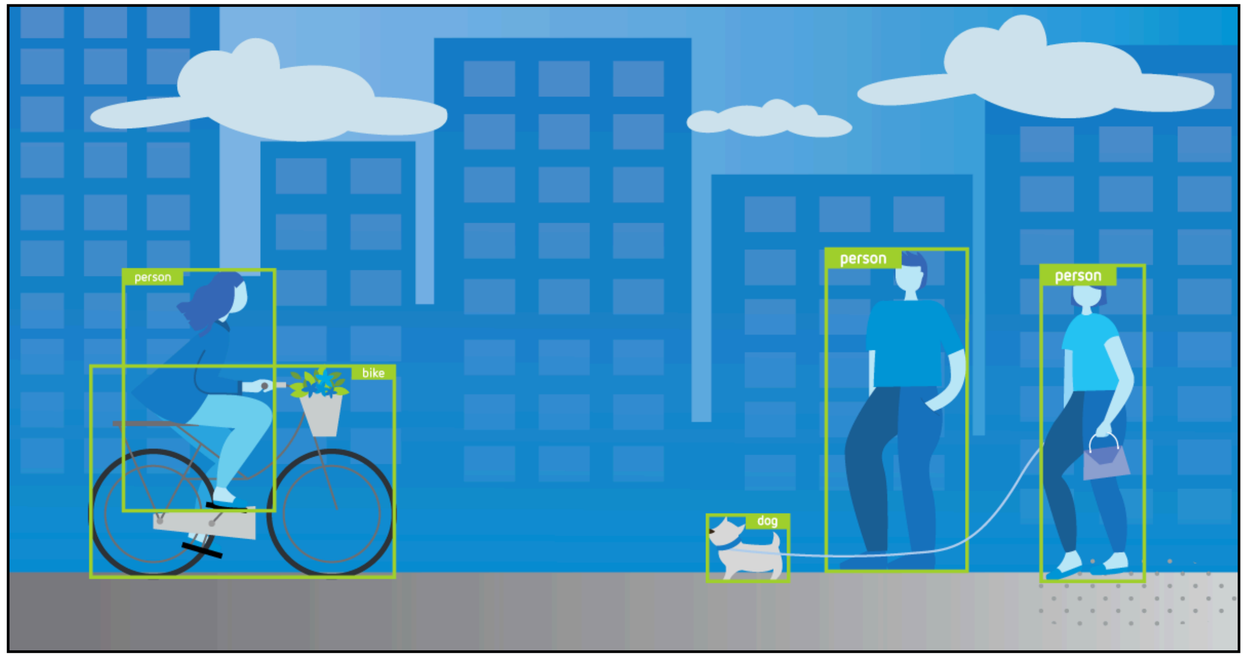

MISSOURI
FLATIRON SCHOOL CAPSTONE PROJECT
SHOW-ME STATE
ARIZONA
LICENSE PLATE DETECTION USING MASKRCNN
GRAND CANYON STATE
WISCONSIN
JOSH BLUMER 10/28/21
America's
Dairyland

# Introduction:

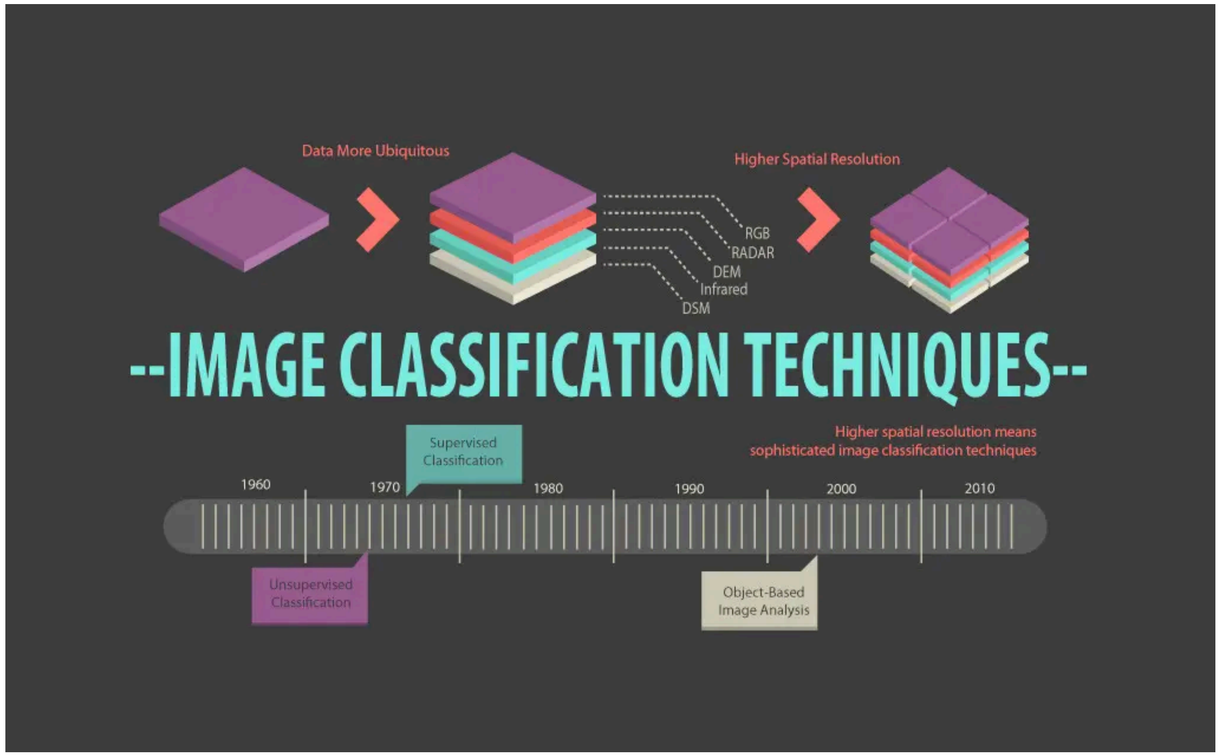
## Data analysis and modeling of automobile images

- Goal is to train a neural network to detect license plates in photos of vehicles
- Hit and runs increased 60% over last decade, increase further 6-7% annually
- 90% of hit and runs unsolved, at fault drivers flee, victims left responsible for injuries and property damage
- Global dash cam market growing consistently at 10-12% annually



# Methodology

## Steps to follow:




- Prepare work environment
- Prepare data to be modeled
- Utilize Mask_RCNN modeling techniques
- Evaluate model
- Use model to make predictions on data with no labels

# EDA & Preprocessing

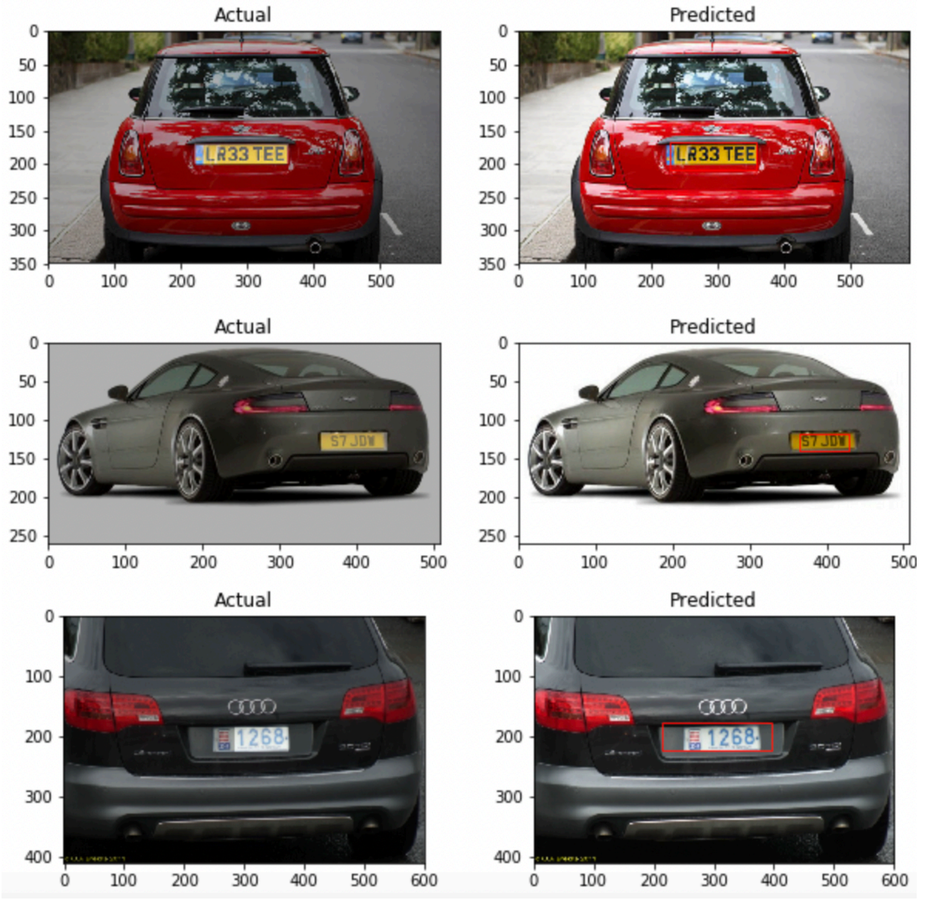
- Generate train/test split
- Define functions to extract images and annotation data
- Define function to generate mask
- Define function to extract bounding box
- Normalize image data


# Modeling

- Configure Mask_RCNN to model image data and detect license plates in automobile images
- Iterate through different modeling configurations including naive models and transfer learning models to determine best performance
- Optimize model by tuning hyper-parameter values
- Research methods to improve model processing efficiency

# Model Evaluation

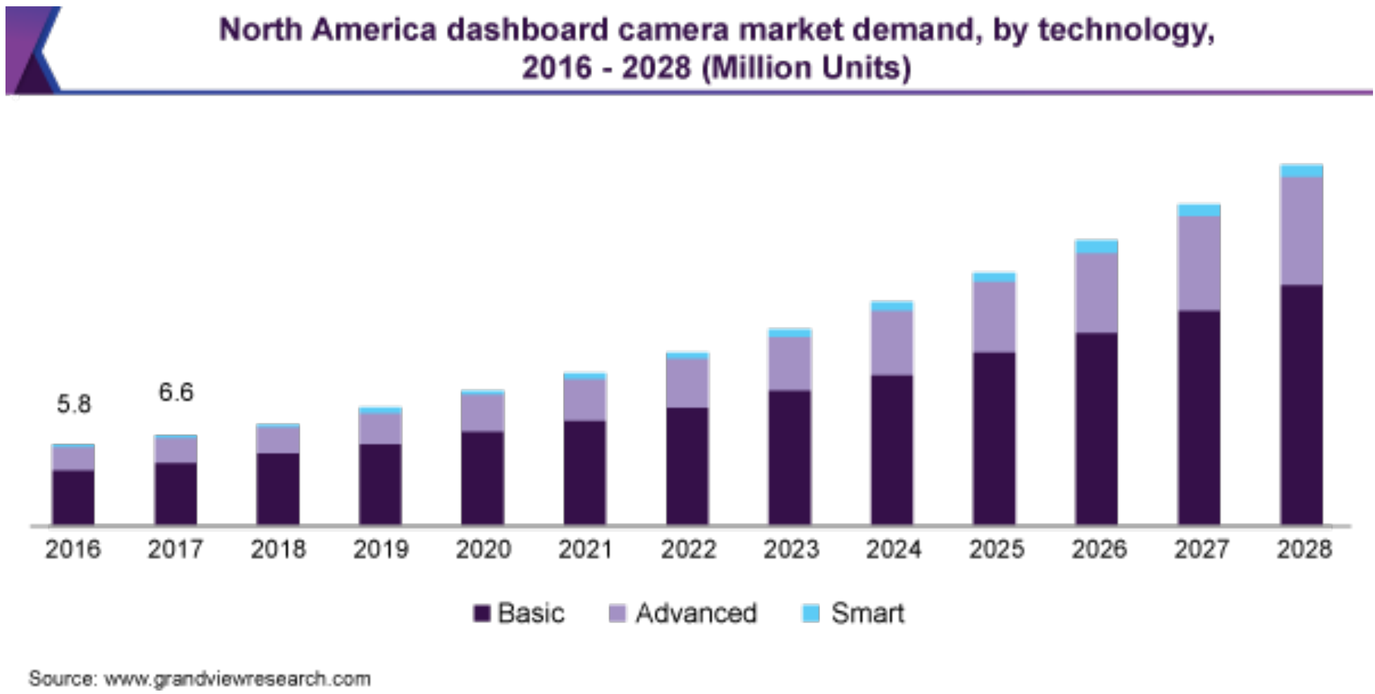
- Evaluate best model with most appropriate evaluation metric
- Use model to make predictions, visually inspect them
- Train mAP: 86.50%  Test mAP: 87.50%

# Conclusion

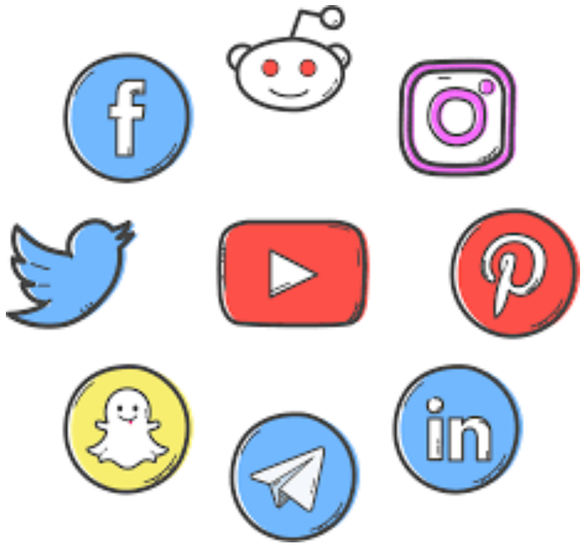
## Next steps:

- Model performance and how to improve it
- Proof of concept
- Incentives to purchase dash cams continue to grow
- Unique opportunity to capture sales based on under represented market segmentation
- Many more potential use cases



# Thank you!

## Questions?



If you have additional questions about this presentation or opportunities for me to help solve your business challenges with a data driven analysis and modeling, please contact me at the following links:

LinkedIn: https://www.linkedin.com/in/joshua-blumer-6180591b2/

GitHub: https://github.com/joshblumer

Email: josh.e.blumer@gmail.com