Predicting Shelter Animal Outcomes

Austin Animal Center is a 'No Kill' municipal shelter

- No Kill means animals are only euthanized for medical reasons
- This causes capacity issues: more animals are transferred to partner organizations

Business Objectives:

- Predict positive vs. negative outcomes for animals at time of intake
    - Positive: Adoption or Returned to Owner
    - Negative: Transfer or Euthanasia

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- Predict positive vs. negative outcomes for animals at time of intake
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- Create a tool for the Austin Animal Center to predict the outcome of new animal intakes from Travis County

Data was retrieved from the Austin Data Portal

data.austin texas ★ gov
the official City of Austin open data portal

Remove Duplicate Entries,
Select Cats and Dogs

69,000 pets
over 6 years
2013-2018

Predictors were selected based on intake data

Predictor	Data examples
Species	Dog or cat
Age	Days old
Breed	Domestic shorthair
Color	Black, brown, white
Intake status	Good or poor
Intake type	Owner surrender, stray

Supervised learning was used to predict outcomes

Models:
Logistic
SVM
KNN
Decision Tree
Random Forest
Gaussian

Evaluation & Selection:
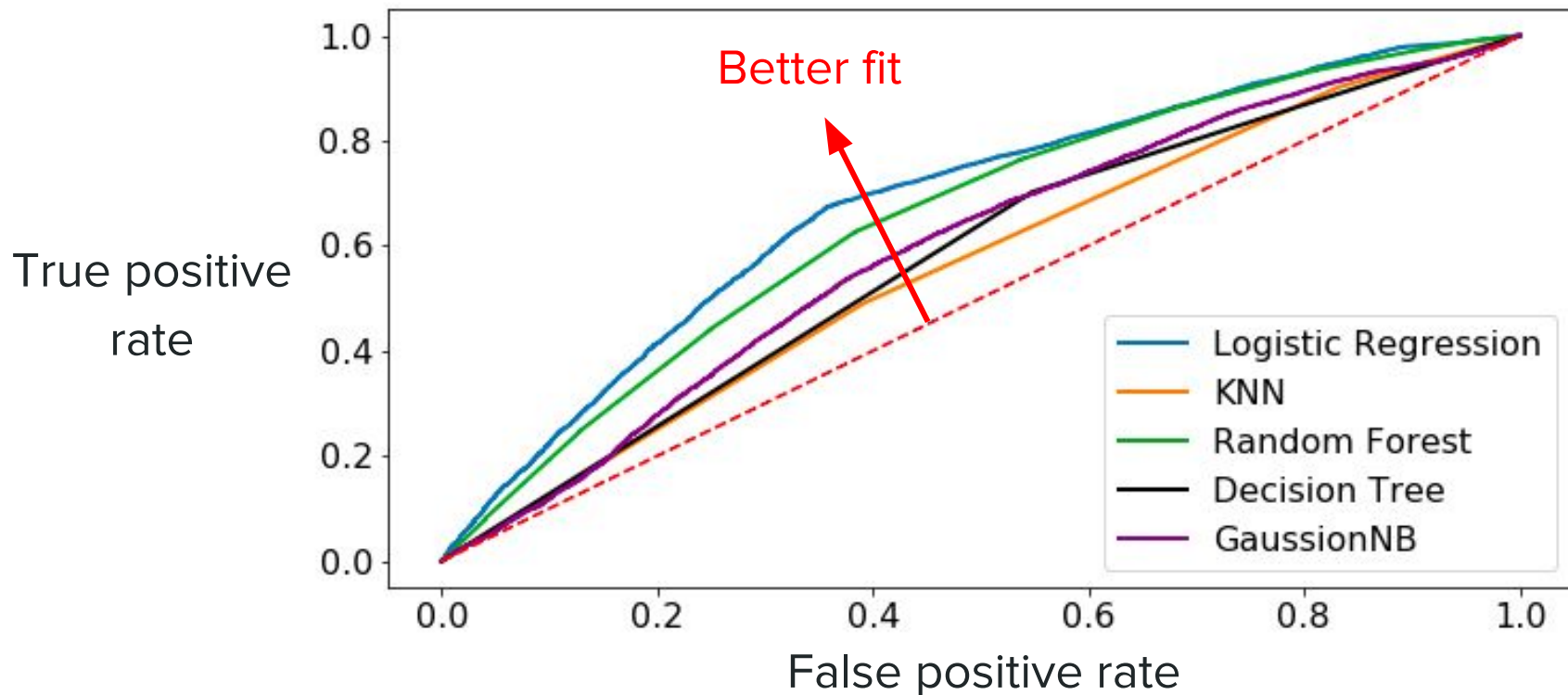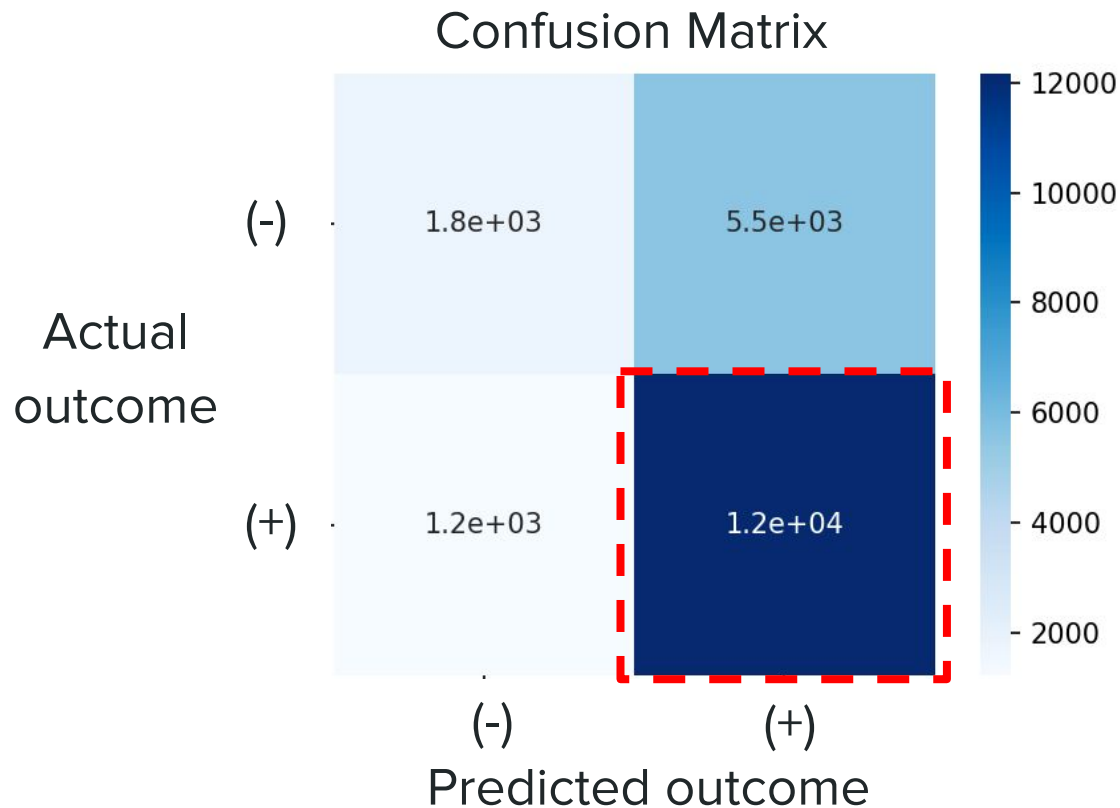Comparing Accuracy vs. Dummy Classifier

Tuning:
Adjusting model parameters
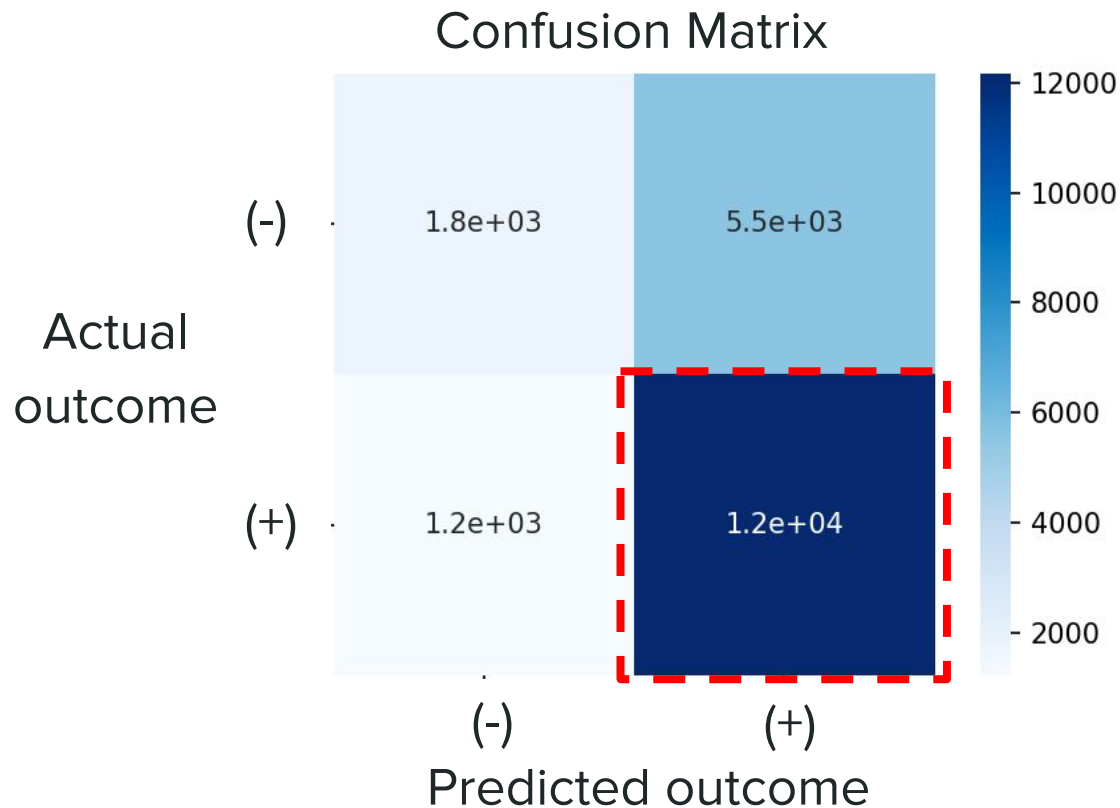
Logistic regression is the most accurate model

ROC curve

Positive outcomes are more correctly predicted

Confusion Matrix

Actual outcome

Predicted outcome

Positive outcomes are more correctly predicted

Confusion Matrix

Logistic Regression
Accuracy: 0.67

'Base' model with
100% positive
outcomes
Accuracy: 0.64

Adopters consider many factors when adopting

Factors to consider when adopting a dog	Data source
Trainability/Intelligence	U. British Columbia
Size	American Kennel Club
Breed popularity	American Kennel Club
Shedding/Non-shedding	American Kennel Club
Energy levels	American Kennel Club

Simplified prediction tool v1.0

Species (cat or dog):

Intake Age (days):

Intake Status (good or poor):

What is the predicted outcome?

Thank you!