Understanding Factors in Animal Shelter Pet Adoption
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Problem: Intro statement about pet adoption importance. What problem do I want to solve?

1. What are the most important factors that influence whether or not a pet finds a home in this area? (explore factors related to all outcome types, including: Adoption, Return to owner, Euthanasia, Death, Transfer)
2. How accurately can a predictive model identify pets that are likely to have difficulties being adopted? (i.e. probability of adoption above/below a specific threshold value)

Client: The client for this project would be the Austin Animal Center in Austin, TX. Efforts to increase the efficiency of the center and a better understanding of the factors that contribute to successfully finding homes for pets could allow them to more effectively allocate resources and serve more pets. If a model can be built from pet adoption data that outlines the most important factors relating to successful adoption, the insights we gain can be used to generate suggestions for actions that could potentially improve the chances of adoption for some pets. Some of these actions might include: 1) Early transfer for pets that typically don't get exposure at the center we are investigating, 2) Better selection of pets to prioritize for fostering.

Data: In efforts to understand trends in pet adoption outcomes, the Austin Animal Center has provided data relating to the pets in their adoption center. This dataset is available [here].The data includes the following details on almost 27,000 pets from their shelter:

Animal ID
Name
Date/Time
Outcome Type
Animal type
Sex
Neutered/Spayed?
Age
Breed
Color

Approach: The proposed project is a supervised learning problem, which will require multinomial classification techniques due to the multiple outcome classes of the variable we are interested in. The dependent variable of interest for this project will be the "outcome type" of the pet, which includes several classes, including: adoption, transfer, return to owner, death and euthanasia. Additionally, subclasses are included for the "transfer" and "euthanasia" classes, which will also be considered.

The features listed above from the dataset will be used for prediction, with a subset chosen using the aid of subset selection techniques that maximizes that predictive accuracy of the model. For example, out of the features listed, animal ID is not likely to provide valuable information and may not be included in the final subset of features used to make predictions and insights about the dataset.

Deliverables: Deliverables for this project will include code and report submissions posted in a github repository ([here](#)) for the following:
1. Code for dataset cleaning, exploration/visualization, and model development
2. Report on analysis and findings for the proposed problems
3. Slide deck presentation of this project