**Animal Shelters in America:   
The Good, The Bad and the Ugly**

**Executive Summary**

At the end of the Data Science program, students are required to complete a final project of their choice. They are given six weeks to work on the project. Often times, they will be in groups of 3 - 6. This document is dedicated to Data After Dark. It will explain the purpose and scope for the project.

**Business Objectives**

Show the need to increase Spay/Neuter Grant Programs

Educate local, state, and federal officials

Educate the general public to the plight of shelter animals

Draw attention to the number of cats and dogs killed in animal shelters

Draw media attention locally to the number of animals killed locally in animal shelters

**Background**

In the beginning of Covid lockdown many people believed that the adoption rate for shelter animals increased and less animals were euthanized. To the contrary studies now show that the number of adoptions during the Covid lockdown in 2020 was only 20% of the total animals in shelters. Animal shelters like most businesses were not considered essential and were locked down, the number of animal intakes reduced, and the operating hours including adoption have been limited. The greatest percentage of euthanized shelter animals happens in the southeastern part of the United States, and domestic animal education in rural areas needs to increase.

**Scope**

The team will be using the software taught in the program to complete the project. They will be intentional on using tools of their interest or tools that may aid finding a job. They may choose to use additional software/tools, but that is not required.

**Functional requirements**

Data Wrangling: The downloaded dataset should be successfully cleaned up for analyzing. Columns and unusable columns should be removed. As the dataset is fairly large, the team should consider sub-setting the dataset in a proper manner, meaning the subset should be a random selection of the data. The datatypes for each column should also be converted to a usable format for the needed analysis.

Data Analysis: the team will familiarize themselves with the dataset. They should have a good understanding of what each column means, and how the values are measured. They will brainstorm on questions to ask, and what they might gather from the dataset. Then, they will identify the proper functions to create models, predictions, etc.

Data Visualization: Once the team have a comprehensive understanding of and insight gathered from the dataset, they will work on visualizing the findings. They may decide to use Tableau or other graphing programs, and compile the visuals.

Presentation: Working with school leaders, the team will schedule a time to present their findings via Zoom. They should be able to communicate in a clear and easy-to-understand manner. The presentation should be kept around 20 minutes. They should be dressed professionally for this occasion.

**Personnel requirements**

The Data After Dark team are the developers. They will need to work closely for this project to succeed. They will touch base once a day via Zoom or Slack to problem-solve or to check in on work progresses. Once a week, they will review the past week workload and plan out the next week. They will take turns being the scrum master, and report their progress to their instructor (Product Owner.) Once a week, they will meet with their instructor. They should be prepared to ask questions and seek guidance for the next steps. They may also consult with their program mentor.

**Delivery schedule**

Week 1: Import dataset into preferred software to begin data wrangling. Any unnecessary columns should be removed. Educate ourselves on animal shelters. Set up Github.

Week 2: Study the dataset and ask questions. What are some possible correlations? Is the data normally distributed? What are some predictive models we can make from it? Visualize the data to see if there is any interesting findings.

Week 3: Modeling/Optimization (Combined Stepwise - Forward and Backward Selection) and Machine Learning (Random Forest.)

Week 4: Review and validate findings from the previous week, and draw insights/conclusions.

Week 5: Compile findings into a Power Point slideshow. Go over it with their instructor and friend/family member to ensure that the presentation is clear and logical. Work on the style and layout of the presentation so it is delightful on the eyes.

Week 6: Make final touches to the Power Point presentation. The team should not attempt to come up with a brand-new analysis. There will not be enough time to verify their findings. They should practice presenting at least a couple times with the two of them, and at least once with their instructor.

**Other requirements**

All programs used should be free of charge.

**Assumptions**

The software programs and platforms the team use should be available, up-to-date, and not broken.

**Limitations**

If something should come up for any member of the team during this six-week period, the project may be delayed. If the instructor or mentor have scheduled or unscheduled time-off, the project may be delayed as well. Data After Dark may experience a roadblock in their work, which may push back the completion date.

**Risks**

If something should come up for any member of the team during this six-week period, the project may be delayed. If the instructor or mentor have scheduled or unscheduled time-off, the project may be delayed as well. Data After Dark may experience a roadblock in their work, which may push back the completion date.