Rats in NY: Project Proposal

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```
library(tidyverse)
library(tidymodels)
library(httr)
```

```
squirrels <- read_csv("data/squirrel_data.csv")
head(squirrels)
```

```
# A tibble: 6 x 31
      X     Y `Unique Squirrel ID` Hectare Shift     Date Hectare Squirrel Num~1
  <dbl> <dbl> <chr>                <chr>   <chr>    <dbl>                  <dbl>
1 -74.0  40.8 37F-PM-1014-03       37F     PM    10142018                      3
2 -74.0  40.8 21B-AM-1019-04       21B     AM    10192018                      4
3 -74.0  40.8 11B-PM-1014-08       11B     PM    10142018                      8
4 -74.0  40.8 32E-PM-1017-14       32E     PM    10172018                     14
5 -74.0  40.8 13E-AM-1017-05       13E     AM    10172018                      5
6 -74.0  40.8 11H-AM-1010-03       11H     AM    10102018                      3
# i abbreviated name: 1: `Hectare Squirrel Number`
# i 24 more variables: Age <chr>, `Primary Fur Color` <chr>,
#   `Highlight Fur Color` <chr>,
#   `Combination of Primary and Highlight Color` <chr>, `Color notes` <chr>,
#   Location <chr>, `Above Ground Sighter Measurement` <chr>,
#   `Specific Location` <chr>, Running <lgl>, Chasing <lgl>, Climbing <lgl>,
#   Eating <lgl>, Foraging <lgl>, `Other Activities` <chr>, Kuks <lgl>, ...
```

```
library(tidyverse)
squirrels |> group_by(`Runs from`) |> summarize(n())
```

```
# A tibble: 2 x 2
  `Runs from` `n()`
```

```
  <lgl>       <int>
1 FALSE        2345
2 TRUE          678
```

Introduction

As a result of the continuous human development, animals are inevitably interacting with humans more often. However, this form of interaction has mostly shown to be a disturbance to animals [1]. Animals see humans as a threat, so it is no surprise that they would treat the presence of humans the same way they would when they face other predators. Nevertheless, recent studies show that the squirrels actually act differently, as characterized by a phenomenon called synurbization, or the process of becoming urbanized [2].

In an effort to investigate these two competing theories, and to better understand the dynamic between squirrels and humans, we carry out this research project to explore what factors affect whether a squirrel is indifferent to human presence. From there, we would like to deduce whether the squirrels' attitude to humans are caused by human presence or other factors such as their species.

We hypothesize that the age category, fur color, location, distance above ground when spotted, number of activities that the squirrel was doing, sound that the squirrel makes, and whether squirrel is disturbed by human activities (as measured by features like approaching or running away from humans and tail signs) could have a relationship with the attitude of the squirrel (whether indifferent or not).

Data description

We are sourcing our data set from the TidyTuesday project on GitHub. Their data originally came from The 2018 Squirrel Census, a project based on the sightings of squirrels in Central Park, New York City.

In October of 2018, the Squirrel Census Team and a group of over 300 volunteers collected the data based on squirrel sightings around Central Park.

The Data gives a wide range of observations and characteristics. It first gives us the location, in both longitude and latitude, the hectare of the park the squirrel was located in, the date, and whether it was found in the AM or PM. It also assigns each squirrel a unique ID. It has information on whether the squirrel is an adult or a juvenile, its primary and highlight fur colors, and has a number for the sequence of sightings in one session. It also contains data on their exact location, how far they were from the ground, and the objects they were found on. There is data for the activities the squirrel was found doing, ranging from running to foraging, with a separate column for any activity that was not chosen to be a column. It gives data on the sounds the squirrel made and tail movements, if any. Finally, it has 4 columns for the

response, being either that the squirrel approached, was indifferent, ran away, or any other action.

Initial exploratory data analysis

...

Analysis approach

...

Data dictionary

The data dictionary can be found here [Update the link and remove this note!]