Consider my obervations and recorded data that I collected on my own two dogs. One dog, Bucky, was the source of inspiration for this project because he’s what is referred in the canine community as a “whiner”. A whine can for anything Bucky is trying to communicate, from “let me outside human, I GOTTA SHIT”, to “give me some love and attention”, “take this toy and play with me now!”, or the classic “Even though you give me all the love and affection in the world, I still get upset when anybody else is getting attention but me, so not affection between anyone else while I’m around unless it’s directed towards me”.

Sally, Bucky’s older aging sister, is the polar opposite. Instead of whining for your attention, she will kindly stand staring are you patiently waiting until she is given what she needs (or sometimes will bark until she *really* has our attention). Otherwise, the only times she indicates that she needs to go outsides she is quick with her business and (after some sniffing around) is eager to get back inside to reclaim her spot on the bed or couch.

Thoughout the development of this project as you can see \_\_\_\_\_\_\_\_, I spend a considerable amount of time

. As a result, there is a loss of understanding during the communication process where I interpret Bucking whining in a given context versus

Consider the figures below of a sample taken from data collected from my own dogs covering all the outings I made with my dog over a one-month period.

The graph that you see to the left is an example of an insight we can gain from data of this nature. It depicts the number of outings I had with my dogs each day for approximately one month. The average number of outings made each day was 3.37 outings with an average outing time of 16.38 minutes.

As you can see in the figures below, that adds up to quite a bit of time by the end of the week!

Part of the reason that weekly value can be so high for some people can be explained by a human mistakenly interpreting a signal from our pets as “needing to go outside” when they are actually attempting to communicate something else. The idea behind this project suggests that perhaps there are times that incorrection assumption of signaling leads to an outcome where an alternative outcome could potentially be more mutually beneficial.

For example, lets say that as a pet owner who must attend to their dog while they attend to their personal needs, each week I misinterpret four signals from my pet where I assumed they needed to go outside. The first time they were signaling because the ball was stuck under the couch, the second time before they wanted me to get an itch for them out of their reach, the third time was because they wanted to have some individual and some pets, and a fourth time where they wanted to play tug-of-war with a toy.

We know that each outing (in this case) lasts approximately 16 minutes. Let’s suppose the time-cost that would have been paid in an alternative reality where I correctly interpret fido’s signal each of the three aforementioned times as follows: 1 minute to retrieve the ball, 2 minutes for scratching the itchy spots, 5 minutes for giving some love and pets, and 10 minutes for a round of playing tug with the rope toy.

If you perform those simply calculations, you will see that the time-cost in Reality-A where I misinterpreted fido’s signs was about (16 minutes) \* (4 outings) = 64 minutes or 1.06 hour. The time-cost paid in Reality-B for correctly interpreting fido’s signal and avoiding an “unnecessary” outing is valued at (1 minute) + (2 minutes) + (5 minutes) + (10 minutes) = 18 minutes.

WoooWee!! That’s an extra 46 minutes you now have each week thanks to using data-driven analysis to improve our ability to understand signals from our pets and trends in their natural bodily function.

If you currently identify with Group 2,

You are being discriminated against

That’s right, you must pay a cost that pet owners in Group 1 don’t have to pay – that is the time-cost associated with having personally escort fido every time they need (or you suspect they might need) to conduct some personal business.

As a pet owner I currently identify as an <em>Occupant</em>, meaning that every time either one of my dogs need to go outside, outside I go as well. Less than a year ago at my previous residence, I would have identified as a <em>Landowner</em> according to our definitions from earlier. After having experiencing pet ownership as a member of each group, I can personal attest to the noticeable time-cost difference.

Think back to the numerical example provided above with the data collected from my own dogs where, as an <em>Occupant</em> I spent an average of 55 minutes on outings daily at the time the data sample was collected. Even if the number of outings required for Bucky are the same when I was a <em>Landowner</em> as they are for me now as an <em>Occupant</em>, the total-time cost is and was still substantially (while I didn’t collect the data at the time to corroborate my claim, I hope you can trust me. I miss a fenced yard.

Suppose we are generous in assigning a value to “Average Number of Outings per Day” and say 6.2 outings (as opposed to 3.37 from before) for the <em>Landowners</em>. Suppose the time-cost per outing for a <Landowner> includes the time to get up, walk to the door, open/close the door, sit back down, and repeat the process when fido is ready to come back in. We will estimate this total to be 3 minutes. That would put the average daily outing time for <em>Landowners</em> at 18.6 minutes, meaning a time-cost difference of 36.6 minutes less compared to the daily average for <em>Occupants</em> (according to our data) and 256.2 minutes less than the weekly average.

Looking back and reflecting on my personal experience, I’d say that sounds about right.

Thus we are brought back to the vision for the project. While it is unlikely that an <em>Occupant</em> would be able to lower their expected time-cost to the same level that of a <em>Landowner</em>, an average weekly total of 250 minutes sounds better than 386 minutes. Now if only their was some sort of workflow or scripting that would allow us to monitor such data with ease….

A brief Overview

I configured the present version of the workflow and script heavily with Google products. Google Forms has an excellent mobile interface for data entry forms, the results of which can be set to automatically update a master .csv file with all recorded entries and store the file in Google Drive. In addition, Google APIs allow for seamless integration of scripting for processing and modeling the data.

The statistical analysis in this workflow was written in the language `R`. Due to changes in my approach throughout the project’s development, I was left with two different sets of data containing the same information with slightly different formatting. If you would like to see how that beast was wrangled, expand the sections below

* Data formatted from handwritten notes (yes, it was a nightmare doing that)
* Data formatted by Google Forms

Mobile Display for Results

My initial solution for providing a mobile interface for displaying graphics and other pertinent information with live updates eventually requested/demanded that I upgrade to their premium service to continue usage, so please pardon the obtrusive red text on the image until I develop a new solution. When the mobile widget that I created <em>was</em> functioning as intended, I was able to obtain up-to-date information on both my dogs which was helpful for me to better differentiate between the whines of Bucky needing to go outside versus needing to have some attention. Enhancements to the mobile interface for displaying infromation will be coming soon!