Opening a food and supply store for dogs in Manhattan

IBM Applied Data Science Capstone Project

Carlotta Brunetti - 27 November 2020

Image taken from images.fineartamerica.com

1. Introduction

1.1 Background

The pet industry expenditures

According to the statistics provided by the American Pet Products Association (APPA) [1], the pet industry expenditures in the United States have been characterised by a steady increase over the past 30 years. In this period of time, Americans have increasingly spent money on pets as they are more and more humanised and treated as members of the family [2]. The total U.S. pet industry expenditures are estimated to reach $99 billions by the end of 2020 that is $9 billions dollar more than in 2018 [1]. High-quality food and treats for pets make up the most profitable and the highest selling portion of the pet market (i.e., estimated at $38.4 billions).

In US, there are more households with dogs than with children. Indeed, 67% of US households own a pet and, of all types of pets, dogs are the most popular. Around 63.4 million US households own a dog compared to 42.7 million who own a cat [1].

The pet industry and the COVID-19 pandemic

The COVID-19 pandemic has negatively affected many industries and caused unprecedented disruptions to economies. However, the pet market industry has long been proved to be recession-resistant [2][3]. That is particularly true for the economic crisis caused by the COVID-19 spread. According to the U.S. Pet Market Outlook, 2020-2021 [4], pet adoptions have increased as they provide emotional support and companionship during the lockdown periods. Moreover, owners spend more time with their pets and, hence, invest more money on them [2]. For this reason, we can expect that 2020 and 2021 will be particularly successful years for the pet market.

1.2. Business problem

According to a study conducted by SmartAsset, New York City is among the 25 most pet friendly cities in America [5] with 8.5 million residents and more than 600,000 dogs. For this reason, opening a food and supply store for dogs would be a profitable business as well as a service very appreciated by the residents who owe a dog. However, the location of the store need to be chosen accurately as it is the key factor in the success of the business. In this project, I combine Foursquare APIs location data and machine learning to help the stakeholders make decisions by answering the following business questions:

1) Which are the best neighbourhoods to live with a pet dog in Manhattan?

2) Where should an entrepreneur open a food and supply store for dogs in Manhattan?

1.3. Target stakeholders

Since the pet industry is one of the most stable and recession-resistant industries, this project is of interest for all those dog-lover entrepreneurs seeking to open a successful business during the COVID-19 pandemic. The outcome from this project is also relevant for dog owners moving to Manhattan who are interested in finding the best neighbourhood to live with their furry-friends.

2. Data

For this project, we need the following data:
• New York City location data of the boroughs and neighbourhoods
Data source: https://geo.nyu.edu/catalog/nyu_2451_34572
Data description: The data are contained in a .json file from which we can extract a data frame containing 4 columns: Borough name, Neighbourhood name, Latitude and Longitude
• Zip code of the neighbourhoods in Manhattan
Data description: The zip code of the neighbourhoods in Manhattan are found using the geopy library in python that allows to find the zip code from latitude and longitude coordinates
• NYC Dog Licensing Dataset
Data source: https://data.cityofnewyork.us/Health/NYC-Dog-Licensing-Dataset/nu7n-tubp
Data description: This is a public database of licensed dogs in New York City updated on February 8, 2020. The dataset contains different information (dog name, breed, date of birth etc.) but we are mainly interested in the zip code area in which the dog live. Indeed, from this data, we can extract the total number of dogs living in each neighbourhoods of Manhattan
• Venue data, particularly data related to the pets' world
Data source: Foursquare APIs
Data description: By using this API, I will get all the venues in each neighbourhood filtered by category of interest (e.g., veterinarians, dog runs, pet service, pet store etc.)

[1] https://www.americanpetproducts.org/

[2] https://www.entrepreneur.com/article/352418

[3] https://www.prnewswire.com/news-releases/packaged-facts-55-billion-pet-products-market-is-proving-recession-defiant-301082066.html

[4] https://www.packagedfacts.com/Pet-Outlook-13135569/

[5] https://smartasset.com/mortgage/most-dog-friendly-cities-in-america-2020