

# Predicting Best Theater Location:

Abrar Majidi Idrissi

February 5<sup>th</sup>, 2021

## Introduction:

Many entertainment companies seek out the success of their movies as well as revenue for the movie theaters broadcasting those movies. Therefore, the location of cinemas as well as the taste of individuals and their capability to watch movies and afford them contributes to the success of cinemas as a business and the entertainment industry.

For this project, I will be scouting the ideal location for a new **movie theater** to be established in Toronto, Canada and how to explore that using different approaches.

## Data:

In analyzing this data, I will be looking at the area's density when it comes to movie theaters and the probability of success based on the number of theaters nearby as well as the target demographic.

For this analysis, I will be using the following:

- **Foursquare API for location data pertaining to venues.**
- **Income data as well as population data of Toronto, Canada.**

Data will be collected from **Foursquare** and the population data will be taken from the **census website** for the Canadian Government. This website contains datasets with information about each city in Canada such as demographic and socioeconomic information of the population divided based on neighborhoods and boroughs facilitating its use. Maps will be used to best visualize patterns of the models created.

### **Methodology:**

To understand the data more, I will explore the different variants affecting the success of a movie theater in a city and specify for Toronto in particular. This will be by looking at the similarities between the existing cinemas and looking at population as well as income to determine their effect on location determination for the new movie theater.

For example, the census comprises of incomes based on neighborhoods that can be matched to Foursquare data mapping the existence or the presence of a movie theater and the frequency. By looking at other areas, the prediction for the new location will be more accurate not only in terms of location but also in terms of success in that region with regards to demographic and socioeconomic factors.

The exploratory analysis was conducted to determine the relation between the location of other theater locations to determine the best new locations containing similar patterns of demographics. For example, most theaters are near restaurants or city centers or something like that.

Determining similarity based on nearby venues and venue categories also helps.

I used one-hot encoding and grouping to obtain the 10 most common venues for each neighborhood as well as the

However, due to the limited inventory of data on **neighborhoods with movie theaters**, all machine learning methods were not efficient in giving accurate results and wouldn't deliver any significant outcome that can be used for future reference.

### **Results:**

There are only 3 movie theaters in Toronto therefore there wasn't any data to analyze for the project. I scanned the data manually and found that all neighborhoods had their individuals with incomes on the higher end of the range that was explored through the data (above \$90,000 income for that year).

As for looking at most common venues, 2 of the 3 neighborhoods had a pizza place as the most common venue in that area. There were no other similarities in the exact category names. However, they had similar food-related and fitness-related locations as most common venues (gym, sporting goods shop, restaurant, coffee shop, tea chop, etc.).

They have similar themes as areas tend to revolve around similar services offered to individuals in most areas of the city.

### **Discussion:**

The main observation made is the apparent lack of movie theaters in Toronto.

Recommendations following the obtained data would be as follows:

- Building a theater will be widely successful due to the lack of them in Toronto.
- For this purpose, analyzing similar entertainment venues might offer an approximation of an ideal location for a movie theater (to have more data points).
- Might be inaccurate but offer great insight into future market research.

However, there are things to consider before looking at the data:

- Looking at other social and societal factors will help understand the reason for the lack of movie theaters (different means of entertainment, movie culture in Canada, etc.).
- Population surveys regarding movie theaters and movie entertainment will provide more information for the establishment of a new movie theater.

### **Conclusion:**

I was surprised by the research process for this project as I spent most time cleaning the data to contain both income and location data for the neighborhoods leading up to the revelation that didn't allow for much exploration.

However, this is valuable work showcasing the importance of data availability as well as other means of information gain such as surveys, polls and word of mouth.

This was a great opportunity to explore location data and expanding on this work through additional inquiries and added features would make the work more impactful.