Report

Shopping Mall development in Charlotte, North Carolina, U.S.A.

by

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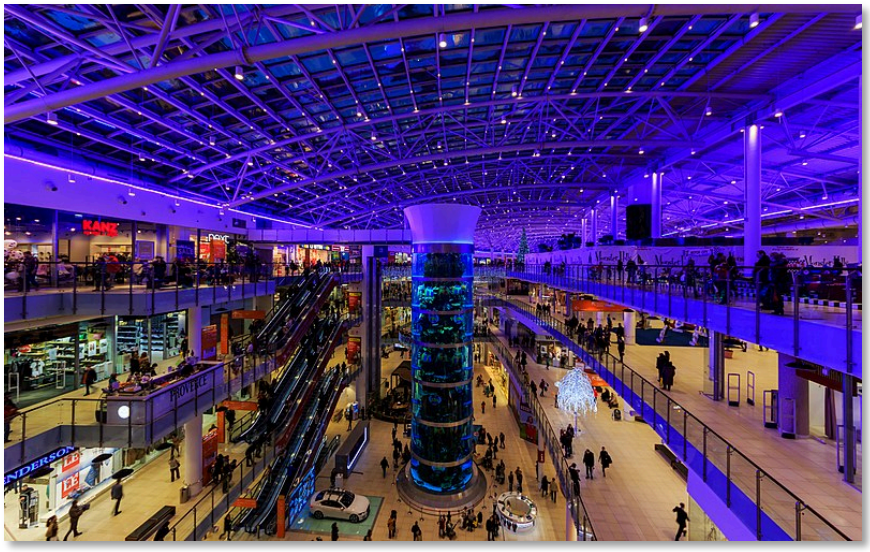

1. Introduction

Shopping malls have received their greatest popularity in the 1970s and 1980s in the U.S. and since investment has stagnated. Numbers exploded, most likely beyond the sustainable numbers in many cities. Additionally, today's brick-and-mortar businesses face the online competition. Despite that many brands meanwhile have successful online stores; the companies wish to remain physically present in their customer's memory daily life.

While shopping malls are the American meeting place and one-stop shop including entertainment, shopping, and dining, many had a fate of neglected and could not attract renewed investment (Sanburn, 2017). The same holds true for the North Carolina metropolis Charlotte, which is representative for the entire country's shopping mall landscape. Charlotte is the largest city in North Carolina and the 23rd largest metropolitan area of the U.S. with ca. 2.5 million residents and growing (Wikipedia, 2019). While a lot of time has passed in the last decades and some shopping malls in Charlotte had a declining business and dwindling number of stores, targets have partially shifted from supplying the market equally well in all city districts to replacement of neglected structures and rejuvenating interest. In parts, the Charlotte is currently suffering from an aging stock of shopping malls. Nevertheless, especially new developments in higher price segments and diligent are a worldwide trend likely to succeed and promise rental of the majority of mall stores (Squareup, 2019).

Business Problem

The objective of this report is to analyze and select the best locations in Charlotte to open a new shopping mall. We will use the data science methodology and machine learning techniques like clustering, this project aims to provide solutions to answer the business question: In the city of Charlotte, NC, a property developer is looking to open a new shopping mall. where are the most promising neighborhoods with least competition and most likely business success?

Target Audience of this report

Developers nowadays ask sensible questions such as: "What kind of foot traffic is there?", "Who are your neighbors? "Will that in-person exposure boost sales enough (both online and in person) to justify the costs?". This project is particularly useful to property developers and investors looking to open or invest in new shopping malls in the south eastern U.S. This report seeks to clarify if there are sufficient capacities for such investments in Charlotte, NC.

2. Methodology

Data types in the report

- Neighborhood data of Charlotte, NC. This defines the scope of this project which is confined to the city of Charlotte, NC, the largest city in North Carolina.
- Spatial data of the city's neighborhoods.
- Spatial data of North Carolina's store and mall base

Sources of data

We use Wikipedia as a reliable source of information curated by the city and backed up by references (List of Charlotte neighborhoods, 2019). Wikipedia can be web scraped with the Python package beautifulsoup (beautifulsoup 4, 2019), which parsees html code and will grant access to the neighborhood data for further calculations. For spatially locating these neighborhoods, the Python library GeoPy 1.20 will be employed (GeoPy, 2019). Store and shopping-mall data will be sourced from the (partially) free location API foursquare (Foursquare, 2019).

Data analysis

Exploratory data analysis will be based on visualization packages seaborn and matplotlib to give a glimpse of the basic data structure.

The Python library scikit-learn (scikit-learn, 2019) offers a wide range of modeling and classifying unlabeled data. The analysis will make use of the unsupervised analysis k-means clustering, which offers the option of entering a user-defined number of clusters. Summarizing the store and mall abundance for each neighborhood will determine the successfulness of a new project in or near a given city neighborhood. For the spatial representation of the clustering method Python package folium will create interactive maps than can be shared and explored.

3. Results

4. Discussion

5. Conclusion

6. Acknowledgements

7. References

Squareup. (2019). Retrieved from How to Define and Analyze Your Target Market: https://squareup.com/townsquare/how-to-define-analyze-your-target-market

beautifulsoup 4. (2019, June). Retrieved from pypi.org: https://pypi.org/project/beautifulsoup4/

Foursquare. (2019, June). Retrieved from Foursquare: https://foursquare.com/

GeoPy. (2019, June). Retrieved from pypi.org: https://pypi.org/project/geopy/#files

List of Charlotte neighborhoods. (2019, June). Retrieved from Wikipedia: https://en.wikipedia.org/wiki/List_of_Charlotte_neighborhoods

Sanburn, J. (2017, July). *Why the Death of Malls Is About More Than Shopping*. Retrieved from Time Magazine: https://time.com/4865957/death-and-life-shopping-mall/

scikit-learn. (2019, June). Retrieved from pypi.org: https://pypi.org/project/scikit-learn/

Wikipedia. (2019, June). Retrieved from Charlotte, NC: https://en.wikipedia.org/wiki/Charlotte,_nc