

Predicting a location to open a next 'Chipotle Mexican Grill' outlet in USA

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1. Introduction

1.1 Background

'Chipotle Mexican Grill' is a casual restaurant chain in USA. Currently it operates less than 2,500 restaurants, most of which are in the U.S. This number is very small as compared to the 35,000+ McDonald's restaurants in 119 countries or 42,000+ Subways across many countries, which are similar in type of 'fast casual restaurant' chains. There are states in USA with very less or without Chipotle outlet!! Although Chipotle is closing some of its outlets, it is expanding business in some areas as well. There is a tremendous growth opportunity for Chipotle to expand both domestically and internationally.

1.2 Problem

Aim of this project is to find out the next probable location where there's a potential to open new 'Chipotle Mexican Grill' outlet. For which real data on every Chipotle is explored to identify their presence in the states of USA. Then to find out the next potential 'Chipotle' locations, based on several important factors, such as states with no or very less Chipotle outlets, state population, proximity to shopping centers, proximity to universities and the distance from tourist attractions.

This study is presently based on limited factors but can certainly be expanded to many other factors such as travelers who prefer Mexican food over other fast foods, areas where customers opt for vegetarian options (which is offered by Chipotle) adds value, user suggested locations for new stores (Chipotle website collects this information), cost effectiveness compared to other casual restaurant chains etc.

1.3 Interest

This analysis should interest Chipotle management to explore areas in which there's a potential to expand business. It is heard that Chipotle do not offer franchises but in future if management decides to change the policy then this analysis could also interest potential franchisees.

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2. Data Acquisition and Cleaning

2.1 Data Sources

Mainly two data sources are used in this analysis. Dataset giving details of US states is downloaded. This data has US states, cities with GPS coordinates (latitude and longitude) and city population. Foursquare location data is used to find the locations of 'Chipotle Mexican Grill' outlets in different cities. Locations data is also used to find Universities/Educational institutes and tourist attractions in those cities.

2.2 Data Cleaning

Subset of downloaded data with relevant features was created. I decided to consider states which has population > 100000 (i.e. $>100K$) for this study. Data is checked for missing values and outliers.

For each city based on its coordinates, number of Chipotle outlets are fetched using Foursquare API. This data is stored in a Data frame. Data is then filtered for the states having less than 3 Chipotle outlets. Tourist Attractions and Universities in these states is fetched using Foursquare API. Both these datasets were checked for missing values. Rows with location missing values were replaced by the city coordinates. Columns with all missing values were deleted.

2.3 Feature Selection

States, cities data frame with location coordinates and population, store outlets and tourist attractions, universities and shopping in the respective cities are the features selected for this exercise. Their proximity to the outlets, population of the state and their correlation is studied.

3. Exploratory Data Analysis

4. Predictive Modeling

5. Conclusions