

Capstone Project - The Battle of the Neighborhoods, Building Live Music Venues in Toronto

1. Introduction: Business Problem

Music has played a substantial role in human's life. It is tightly connected to the course of human history; a man sings a love song to his lover, mother hums melody to comfort her baby, and the history of a race can be passed down through music. From the creative music blog, it is stated that music makes us creative, makes us express our emotion, and makes learning more pleasant. As the most populous city in Canada and the fourth most populous city in North America, the establishment of more live music venues can further decorate and upgrade the historical and diverse city of Toronto.

To achieve the goal, we use data science techniques to suggest the potential borough and the type of live music venues to build in Toronto. Based on the analysis of nearby venues of the best live music venues via exploratory data Analysis and clustering, we investigate the kinds of venues (feature venues) that sustain their continual success. The cluster analysis will then be used to reveal the areas of Toronto that shares comparable surrounding feature venues of the model live music venues. Upon looking into the clusters, boroughs of Toronto that have potential to sustain a successful live music venue can be revealed.

In summary, to make Toronto an even popular city via the establishment of live music venues, the questions below will be answered through data science techniques:

1. What are the kinds of venues surrounding the best live music venues?
2. What are area in Toronto should the live music venues be invested upon?

2. Data Source

Based on definition of our problem, the following data are needed.

1.The Best Live Music Avenues are needed for analysis. This piece of information are obtained from the ROLLING STONE magazine and musicgateway website.The latitudes and longitudes for each best live music venue can be obtained from latitude website.

- ROLLING STONE:10 Best Live Music Venues in America
<https://www.rollingstone.com/music/music-lists/10-best-live-music-venues-in-america-767070/ottobar-baltimore-767244/>
- musicgateway: The 10 Best Live Music Venues In The US – NYC To San Francisco & More
<https://www.musicgateway.com/blog/how-to/best-live-music-venues-in-the-us>
- latitude
<https://latitude.to/articles-by-country/us/united-states/>

2.The borough information of Toronto is scraped off the following Wikipedia page using BeautifulSoup, and the corresponding Coordinate data is obtained link listed below.

- borough information
https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada:_M
- Coordinate data
http://cocl.us/Geospatial_data

3.The venues data associated with a geographic coordinate is obtained from Foursquare API, in which Venue's name, latitude, longitude, and Category will be given within a specified radius (meter) from the given coordinates.