

Predicting the most popular and trending locations within the localities of twelve boroughs in the city of Berlin

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Introduction

Background

Berlin city is one of the German's federal states and it consists of twelve boroughs each with its own local government

Each borough is made up of neighborhoods/localities.

It is beneficial for each borough council to have an effective plan on improving the infrastructure of its localities within a year. This will also help the city government to allocate funds appropriately and ultimately improve the living standards and well-being of the inhabitants.

To achieve this predicting and identifying the behavior of inhabitants within localities of each borough, most popular areas, venues, activities etc. is important.

Interest

The project findings will directly be beneficial for local governments of each borough in their planning, designing strategies and fund management processes. It will also provide valuable insights on future planning of the borough infrastructure and decision making as well. The findings of the project will also benefit inhabitants of each borough localities ensuring them an easy, healthy, comfortable, safe life style.

Problem

Usually each borough's local government is allocated funds to improve living standards and general well-being of its inhabitants

It is important that these funds are utilized in a way that the population receives the maximum benefits every year.

It is critical for the local government of each borough to identify the most effective ways, such as on what, where and how to utilize the allocated funds.

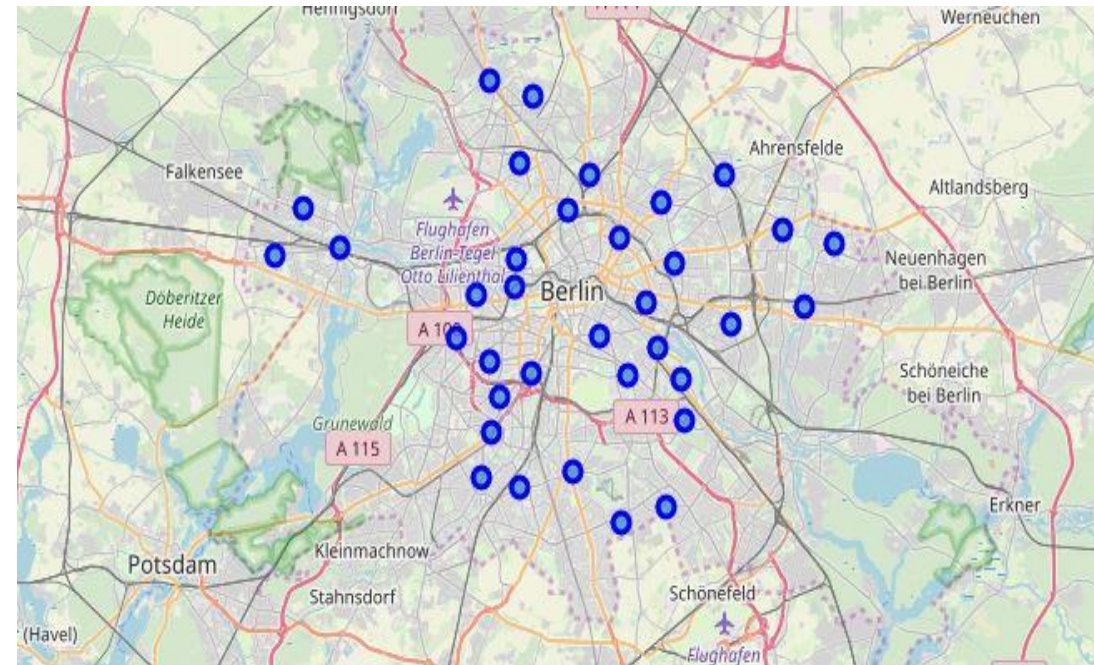
Data

Data Sources – Boroughs of Berlin city and each of its locality were scraped from the wiki web

https://en.wikipedia.org/wiki/Boroughs_and_neighborhoods_of_Berlin

Foursquare API was also used to get data about popular/ trending venues, venue categories etc. for each locality.

	Postal_code	Borough	Locality	Latitude	Longitude
0	0106	Mitte	Gesundbrunnen	52.550920	13.384846
1	0103	Mitte	Hansaviertel	52.519123	13.341872
2	0102	Mitte	Moabit	52.530102	13.342542
3	0202	Friedrichshain-Kreuzberg	Kreuzberg	52.497644	13.411914
4	0201	Friedrichshain-Kreuzberg	Friedrichshain	52.512215	13.450290



Results

Two boroughs Mitte and Friedrichshain-Kreuzberg were chosen to analyze

Borough Mitte has 6 localities. We obtained postal code, latitude and longitude data for all

Foursquare API used to retrieve venue data per each locality with a maximum limit of 100 venues within a radius of 500m

	Postal_code	Borough	Locality	Latitude	Longitude
0	0106	Mitte	Gesundbrunnen	52.550920	13.384846
1	0103	Mitte	Hansaviertel	52.519123	13.341872
2	0102	Mitte	Moabit	52.530102	13.342542
3	0105	Mitte	Wedding	52.550123	13.341970
4	0101	Mitte	Mitte	52.517690	13.402376
5	0104	Mitte	Tiergarten	52.509778	13.357260

	Locality	Locality Latitude	Locality Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
0	Gesundbrunnen	52.55092	13.384846	La Femme	52.550107	13.385304	Breakfast Spot
1	Gesundbrunnen	52.55092	13.384846	Il Milanese del Tacco	52.551772	13.384107	Gourmet Shop
2	Gesundbrunnen	52.55092	13.384846	F-Bar	52.551908	13.386493	Dive Bar
3	Gesundbrunnen	52.55092	13.384846	MOXY Berlin Humboldthain Park	52.549568	13.384071	Hotel
4	Gesundbrunnen	52.55092	13.384846	Curry Baude	52.549420	13.386999	Currywurst Joint

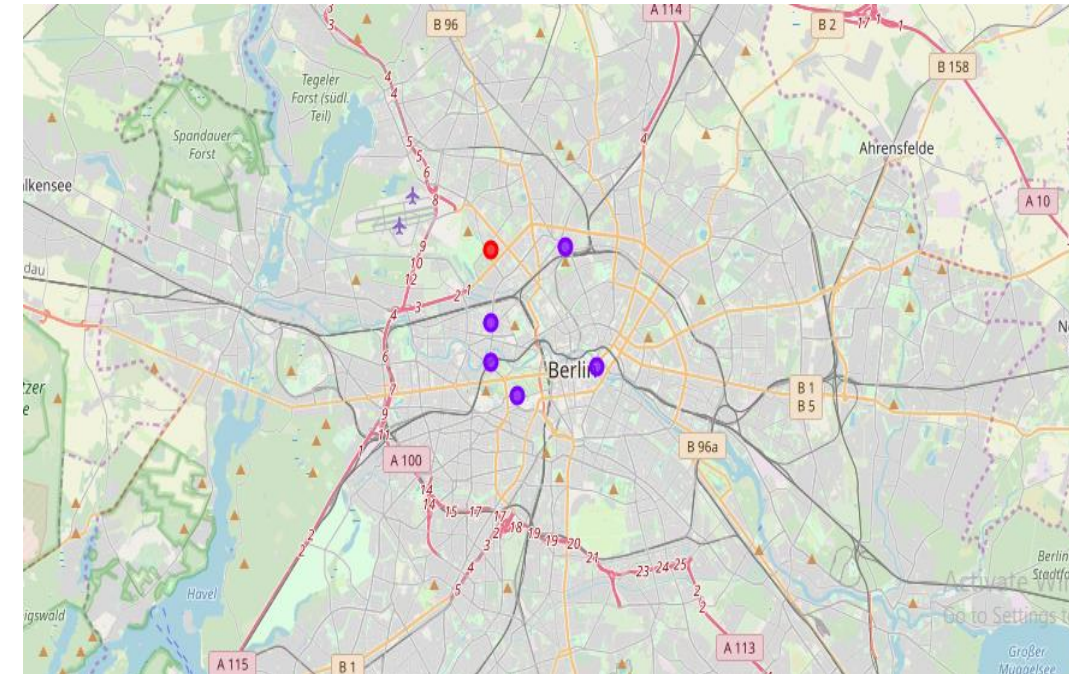
	Postal_code	Borough	Locality	Latitude	Longitude	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
0	0106	Mitte	Gesundbrunnen	52.550920	13.384846	Turkish Restaurant	Platform	Drugstore	Hotel	Trail
1	0103	Mitte	Hansaviertel	52.519123	13.341872	Café	Pedestrian Plaza	Art Museum	Bakery	Park
2	0102	Mitte	Moabit	52.530102	13.342542	Café	Supermarket	Hostel	Burger Joint	Doner Restaurant
3	0105	Mitte	Wedding	52.550123	13.341970	Supermarket	Pharmacy	Tennis Court	Park	Gas Station
4	0101	Mitte	Mitte	52.517690	13.402376	German Restaurant	Museum	Café	Hotel	History Museum
5	0104	Mitte	Tiergarten	52.509778	13.357260	Lounge	Hotel Bar	Garden	Historic Site	Café

Results contd.

Within the borough Mitte, the top popular venues of all localities include restaurants/hotels, cafes and museums

Clustering of localities within the Mitte borough based on top venues shows that five of the six localities have high similarity to each other while one locality within Mitte (Wedding) shows less similarity to the rest of the 5 localities

	Postal_code	Borough	Locality	Latitude	Longitude	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue
0	0106	Mitte	Gesundbrunnen	52.550920	13.384846	1	Turkish Restaurant	Platform	Drugstore
1	0103	Mitte	Hansaviertel	52.519123	13.341872	1	Café	Pedestrian Plaza	Art Museum
2	0102	Mitte	Moabit	52.530102	13.342542	1	Café	Supermarket	Hostel
3	0105	Mitte	Wedding	52.550123	13.341970	0	Supermarket	Pharmacy	Tennis Court
4	0101	Mitte	Mitte	52.517690	13.402376	1	German Restaurant	Museum	Café
5	0104	Mitte	Tiergarten	52.509778	13.357260	1	Lounge	Hotel Bar	Garden



Most popular venues within the localities of Mitte borough are identified as restaurants, cafes, bakery, drugstore, bar, bookstore, metro station etc.

Results contd.

Results of the analysis of Friedrichshain-Kreuzberg borough localities show that restaurants, cafes, drugstore, bar, metro station, book store etc. are the most popular venues among its inhabitants

	Locality	Locality Latitude	Locality Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
0	Kreuzberg	52.55092	13.384846	La Femme	52.550107	13.385304	Breakfast Spot
1	Kreuzberg	52.55092	13.384846	Il Milanese del Tacco	52.551772	13.384107	Gourmet Shop
2	Kreuzberg	52.55092	13.384846	F-Bar	52.551908	13.386493	Dive Bar
3	Kreuzberg	52.55092	13.384846	MOXY Berlin Humboldthain Park	52.549568	13.384071	Hotel
4	Kreuzberg	52.55092	13.384846	Curry Baude	52.549420	13.386999	Currywurst Joint

	Locality	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
0	Friedrichshain	Café	Art Museum	Bakery	Pedestrian Plaza	Metro Station
1	Kreuzberg	Turkish Restaurant	Platform	Drugstore	Bar	Bookstore

Discussion

Mitte borough localities suggests that this borough is likely to be historically important and probably a local and foreign tourist attraction site

Restaurants, hotels and cafes are similarly popular within almost all the localities in Mitte borough as well as some of the other outdoor locations of leisure such as park, trail, and tennis court providing supporting evidence

Cluster analysis results of Mitte borough localities shows, the most popular venues within the cluster with 5 localities are probably tourist attraction sites with historical value

Single locality that clustered outside the rest seems to be a domestic area/ residential area since the popular venues include supermarket, pharmacy, gas station etc unlike localities in other cluster

Analysis of Friedrichshain-Kreuzberg borough localities suggest that it is mostly a domestic/ residential area and among the most popular venues, restaurants/cafes, bakery, drugstore, bar, metro station, book store were seen supporting the suggestion

The above partial analysis results of borough localities and their popular venues using location data clearly shows that this type of analysis is beneficial in identifying which regions/ places to be given the highest priority, what measures to be taken and how they should be implemented in terms of allocating and managing funds to improve the underlying infrastructure of a borough

Conclusion

A complete analysis of all localities per each and every borough in the Berlin city will ultimately help to understand the most popular places/ venues/ locations among the people and also their popular activities/ behavioral patterns. This information can then be effectively used by the local government bodies of boroughs in their decision making/ designing strategies and processes to improve the underlying infrastructure facilities to enhance living standards of mainly its inhabitants as well as its local/ foreign tourists. These measures may include ensuring safety of pedestrians by proper walking tracks/ pavements, pedestrian crossings, improving facilities for dis-able individuals, ample parking spaces with cheap and easy access, beautify the surroundings with trees, plants, ponds etc. Proper disposal facilities of garbage, take measures to ensure that restaurants/hotels/cafes specially in popular regions provide healthy, clean food etc.

Thank You



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