

Hotel Development in Philadelphia

by Onur Yavuz

Photo: https://unsplash.com/@gibson_hurst

Introduction

There are 22 police districts in Philadelphia.

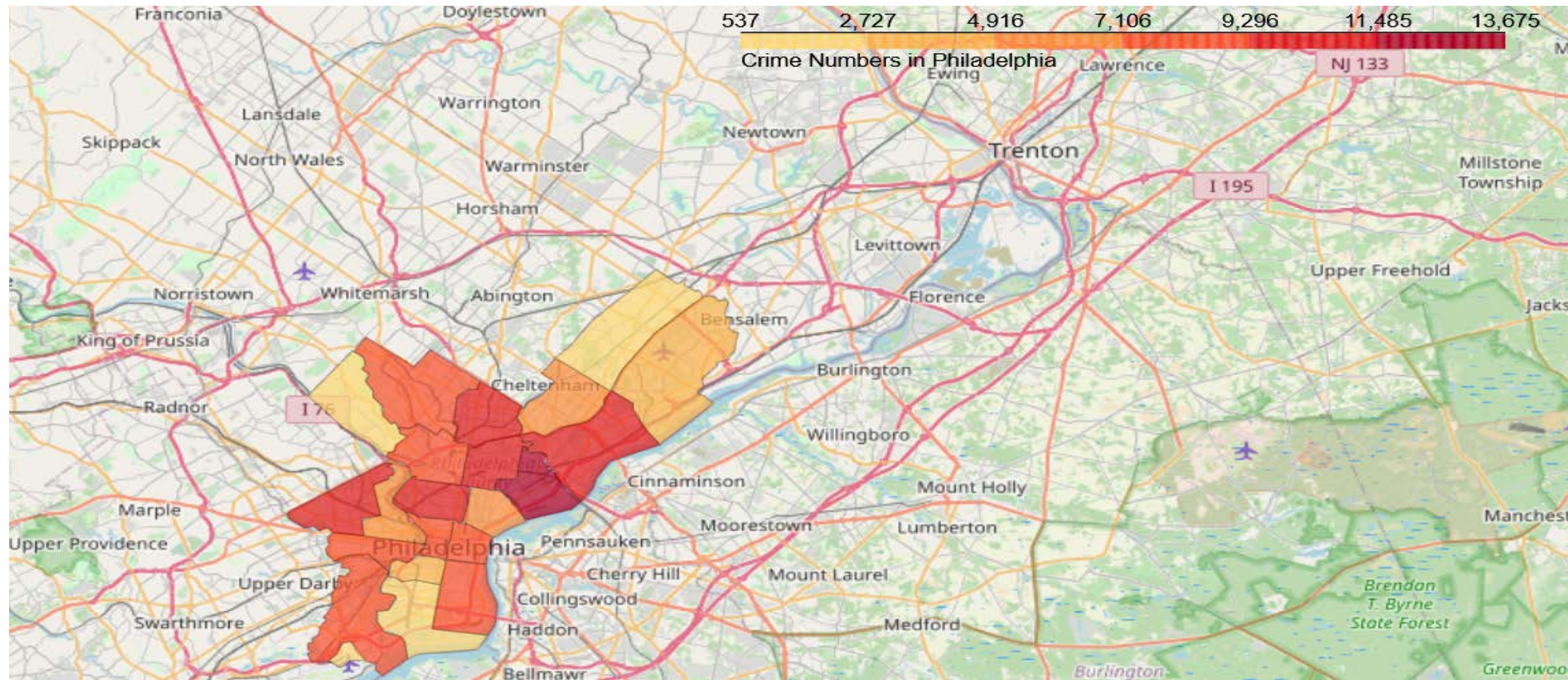
This is an analysis of crime numbers together with the common venues per district in Philadelphia to provide information to hotel investors.

Districts are clustered in terms of common venues so that investors can use safety as a parameter given cluster while making a decision over location.

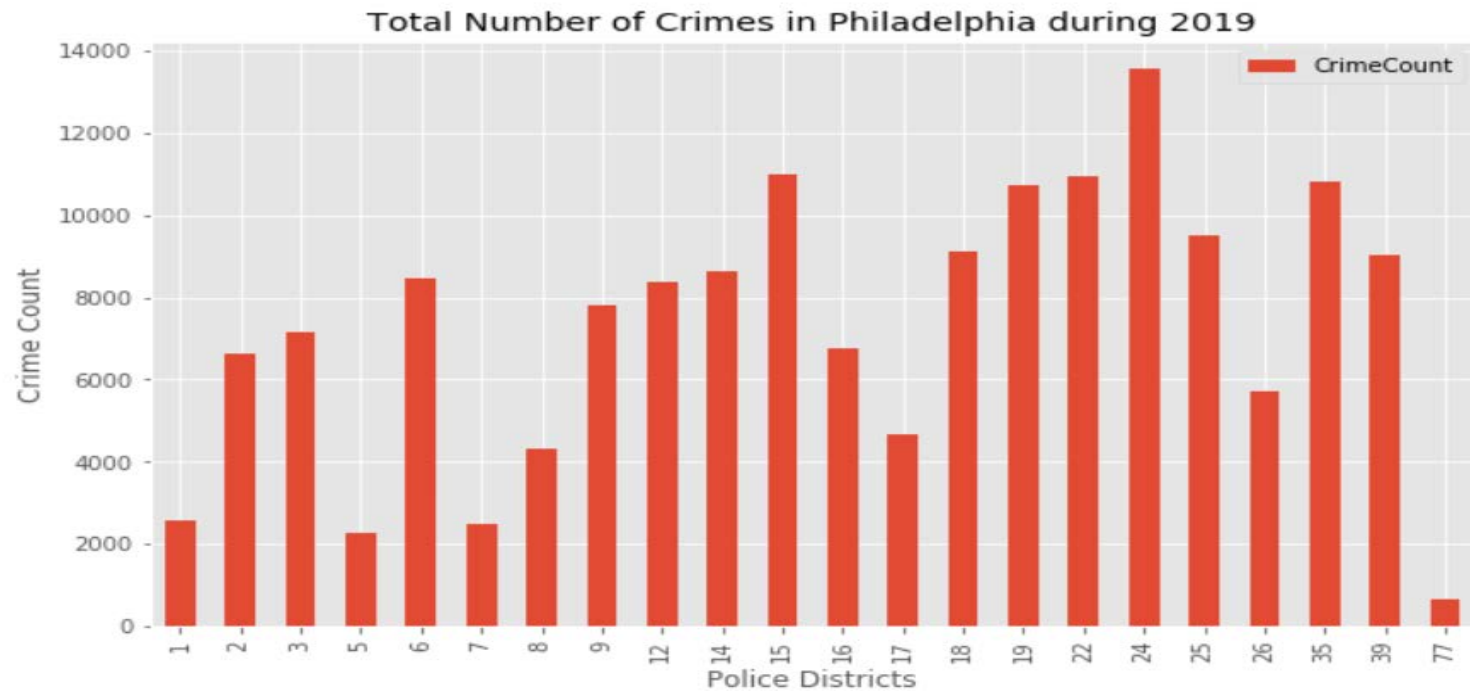
Data Resources

- Crime Data: Crime incidents data-set for 2019 from the website <https://www.opendataphilly.org/> and the link for the data set is <https://www.opendataphilly.org/dataset/crime-incidents>
- Geo Data: Geojson file of police districts from the website <https://www.opendataphilly.org/> and the link for the data set is http://data.phl.opendata.arcgis.com/datasets/62ec63afb8824a15953399b1fa819df2_0.geojson
- Venue Data: Common venues of Philadelphia from Foursquare API <https://foursquare.com/>

Crime in Philadelphia (2019)



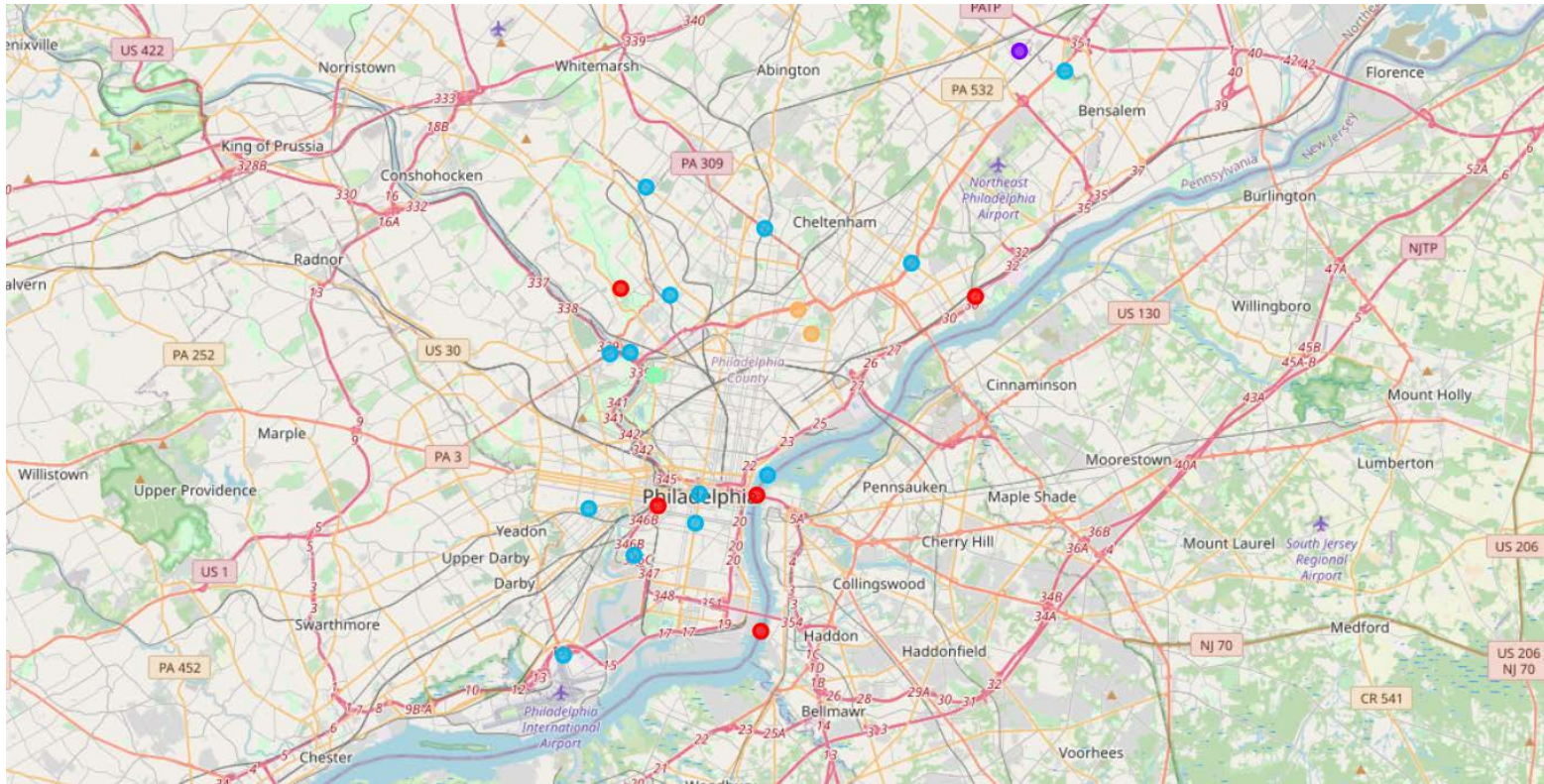
Crime in Philadelphia (cont'd)



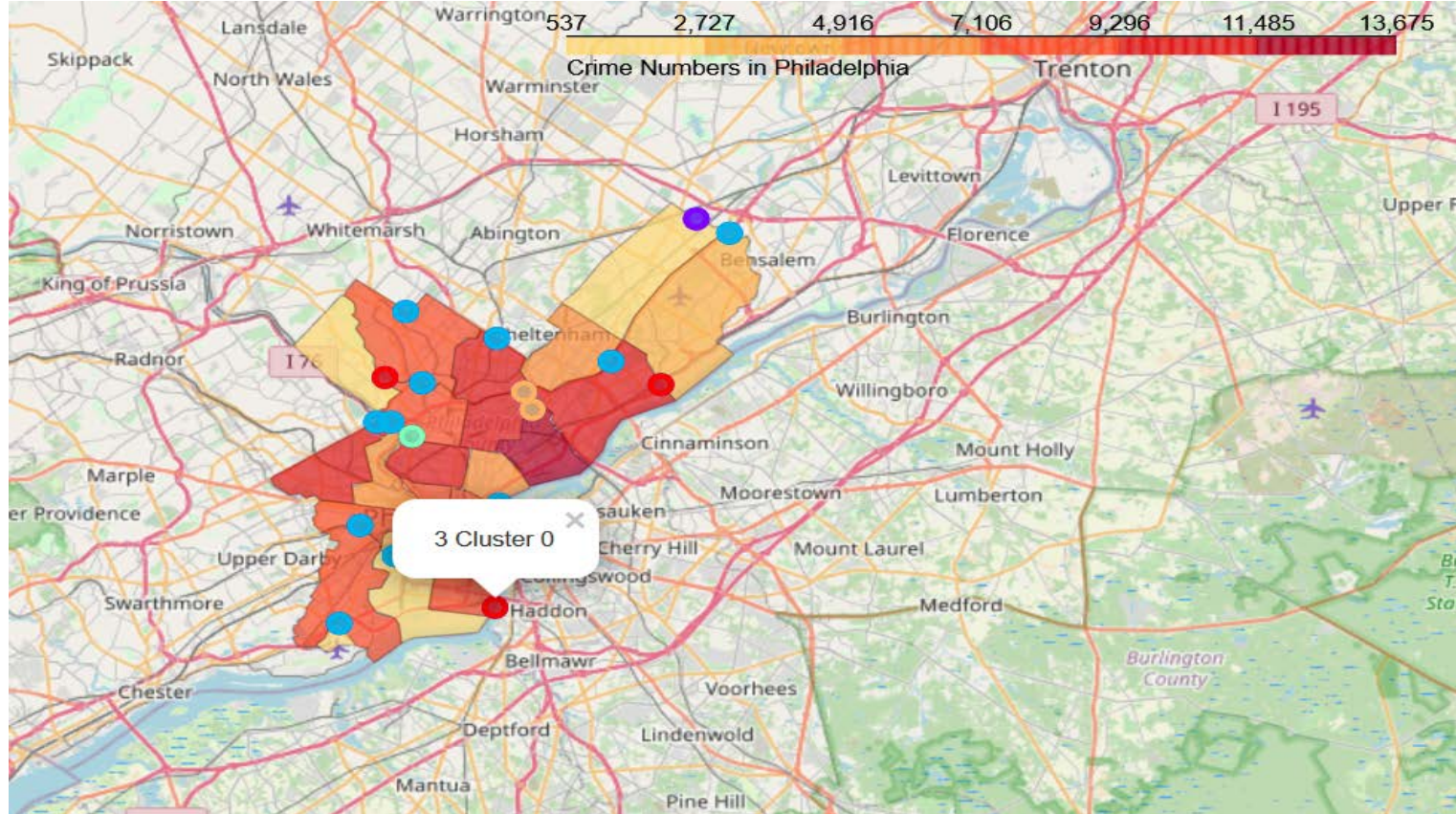
Top Ten Venues per District

district	CrimeCount	Latitude	Longitude	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue	
0	1	2560	39.929437	-75.197240	2	Baseball Field	Arcade	Hookah Bar	Grocery Store	Bar	Ethiopian Restaurant	Flea Market	Fish Market	Film Studio	Fast Food Restaurant
1	2	6611	40.044541	-75.054444	2	Men's Store	Shopping Mall	Clothing Store	Mobile Phone Shop	Optical Shop	Shoe Store	Sandwich Place	Pharmacy	Deli / Bodega	Paper / Office Supplies Store
2	3	7160	39.899322	-75.132053	0	Park	Historic Site	Harbor / Marina	Donut Shop	Fish Market	Film Studio	Fast Food Restaurant	Farmers Market	Falafel Restaurant	Ethiopian Restaurant
3	5	2260	40.034678	-75.204300	0	Park	Scenic Lookout	Beach	Bridge	Dive Bar	Trail	Eastern European Restaurant	Baseball Field	Fish Market	Film Studio
4	6	8482	39.952940	-75.134366	0	Japanese Restaurant	Bar	Park	Boat or Ferry	Trail	Other Great Outdoors	Beer Garden	Falafel Restaurant	Flea Market	Fish Market

Venue Clusters in Philadelphia



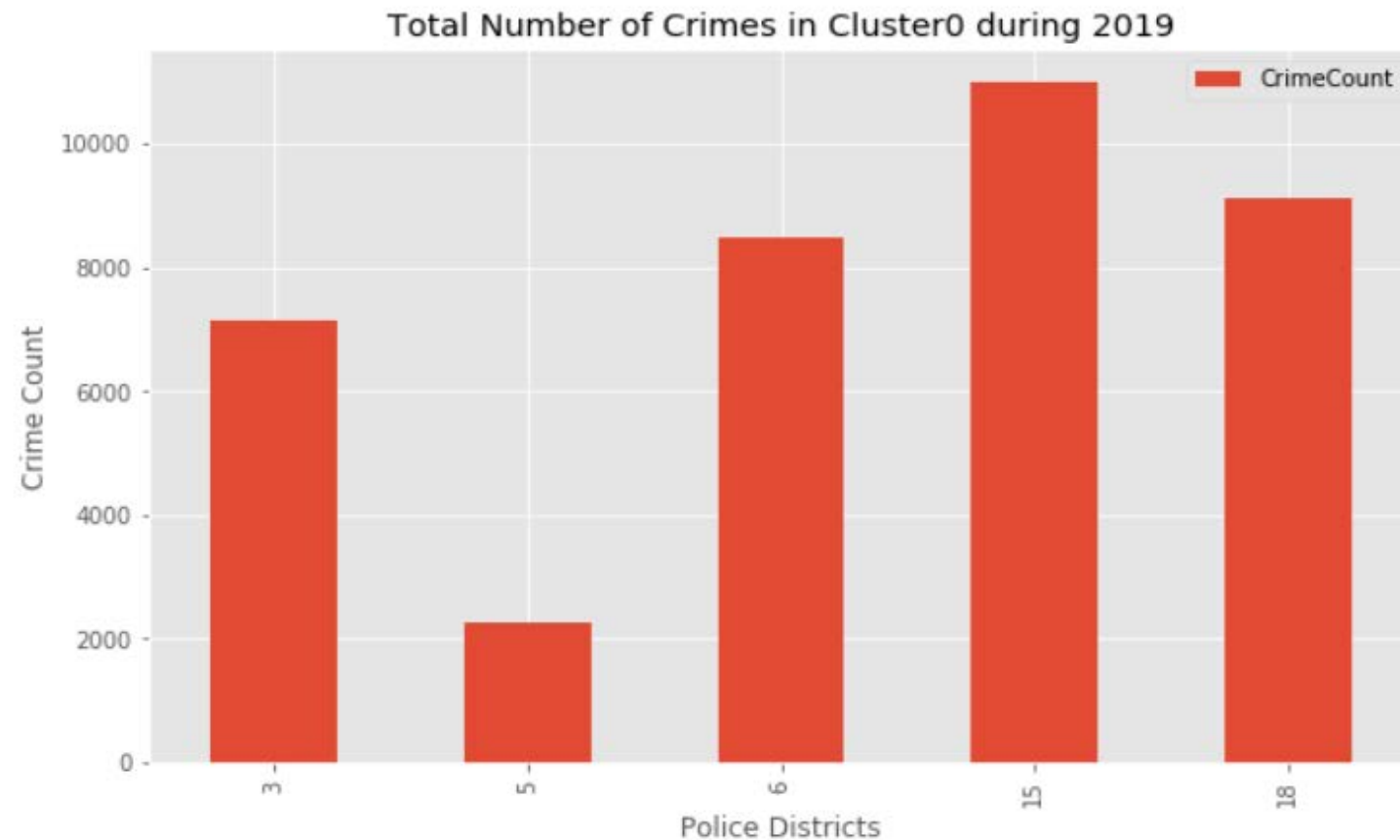
Venue Clusters together with Crime Numbers



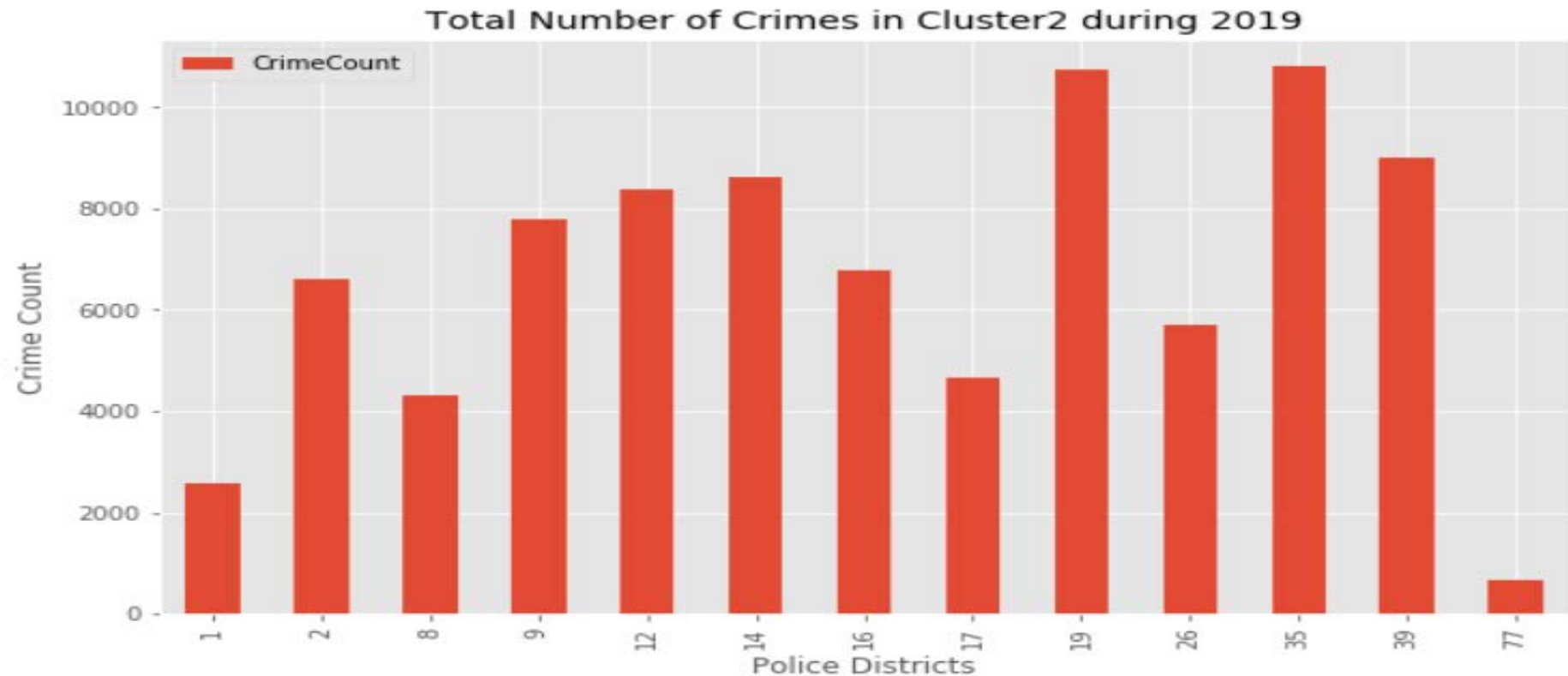
Red marks: Cluster 0 (Recreation Venues)

Blue Marks: Cluster 2 (Entertainment Venues)

Crime in Districts with Recreation Venues



Crime in Districts with Entertainment Venues



Discussion

- Longitude/ Latitude selection could be revised.
- Connection with districts and neighborhoods could be investigated.
- K-means algorithm could be repeated with different k values.
- Common venues could be recategorized.
- Population data per district could improve the safety index.

Conclusion

- Hotel Investors
- Travelers
- House Renters/Buyers

would benefit from the final cumulative map and the safety data provided by the charts.