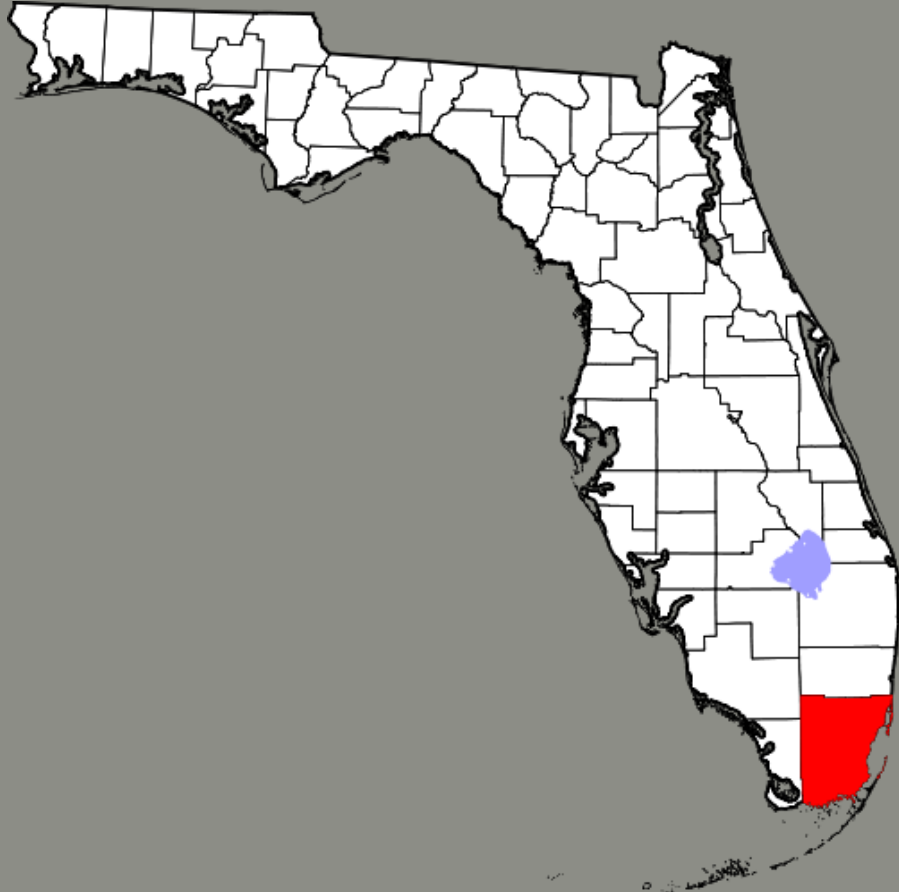




K-Means Clustering Of Municipalities Based On Venue Categories In Miami- Dade County

*Capstone Project
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Miami-Dade County, Florida

- Population: 2,498,018
- Area: 2,431 square mile
- Number of Municipality: 35
- Major Industry of Employers:
 - *Education*
 - *Hospitality*
 - *Entertainment*
 - *Healthcare*
 - *Financial Institution/Service*

Business Problem

How to further plan the city or select an optimal site for incoming business in a such vibrant and already congregated area like Miami-Dade.

Goal

Have clear understandings of local businesses by clustering the 35 municipalities of Miami-Dade County into 5 distinct groups based on the attributes of local business venues.

Benefits

The findings would facilitate future city planning, distribution of resources, and site selection for future business initiative or development.

Data Sources

- Miami-Dade County Open Data Hub
- Foursquare location data (API)
- United States Census Bureau

Methodology

- Cluster Analysis: K-Means Clustering
- Choropleth mapping

Results Overview – Clusters

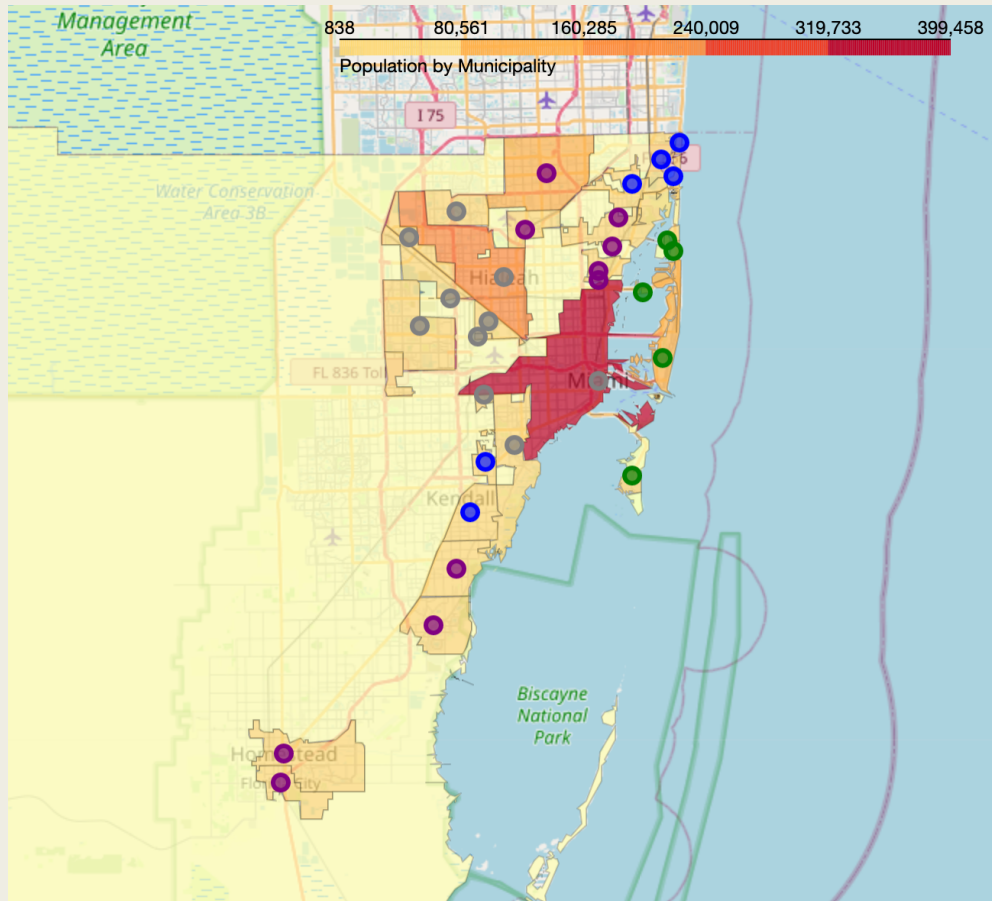
	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5
Municipality	Sweetwater	North Miami Beach	Miami Springs	North Bay	Opa-Locka
		Aventura	Miami Lakes	Key Biscayne	Biscayne Park
		South Miami	Virginia Gardens	Miami Beach	Miami Gardens
		Pinecrest	Hialeah	Surfside	Homestead
		Indian Creek	Hialeah Gardens	Bay Harbor Islands	Florida City
		Sunny Isles	Doral	Bay Harbor	Cutler Bay
		Golden Beach	Miami		Miami Shores
			Medley		Palmetto Bay
			West Miami		North Miami
			Coral Gables		El Portal

Results Overview – Top Venues

	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5
Top Venues	Hotel	Clothing Store	Cuban Restaurant	Beach	Grocery Stores
	Pizza Place	Coffee Shop	Hotel	Variety of Restaurants	Park
	Fast Food Restaurant	Shopping Mall	South American/Latin American Restaurant	Hotel	Variety of Restaurants

Results Overview – Cluster Characteristics

	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5
Cluster Characteristics	Convenient transportation (Close to Airport)	Non-residential area but frequently visited by locals	Extremely populous and diverse	Travel destinations	Spatial residential neighborhoods
	Residential neighborhoods	Regular and high-end shopping centers	Latin and Caribbean culture influenced cuisine and lifestyle	Extremely various cuisine choices	Small businesses relying on residences
	Schools and colleges		Travel destinations	Entertainment and hospitality	



Map of Clusters with Population by Municipality

Conclusion

Cluster 1	Pink
Cluster 2	Blue
Cluster 3	Grey
Cluster 4	Green
Cluster 5	Purple

Future Discussions

- Possible application of Density-Based Clustering (BDSCAN) for the municipalities.
- Considerations of more evaluation metrics of venues (Customer feedback, etc.).
- Combine the venue evaluation with other characteristics of municipalities, such as populational traits (age, education level, etc.), purchasing power, occupation.
- Detail the clustering down to neighborhood level with more precise analysis.

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