



Analysis of Singapore's Premium Product Shop Placement

IBM Data Science Capstone Project

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Executive Summary

- ▶ 1. More than 70% of Singapore residents purchase premium products in store rather than online.
- ▶ 2. Using condominium rental data in Singapore, I find out the areas where Singapore residents are paying more for housing rental.
- ▶ 3. I use Foursquare API to look for potential competitors in premium products.
- ▶ 4. Clustering algorithm is used to cluster 174,780 rental data into 100 groups based on location and rental per room.
- ▶ 5. Illustration using folium package allows us to determine the best location — where there are many rich residents but little competitors.



Introduction

- ▶ More than 70% of Singapore residents are purchasing premium products from local store rather than online
- ▶ Great opportunity for businesses to set up physical premium stores in Singapore
- ▶ This report will use data science to analyse where can a business set up physical premium stores in Singapore
 - ▶ foursquare API to look for existing premium stores in Singapore
 - ▶ condominium rental data to determine potential areas
- ▶ Of interest to premium stores retailer such as Hermes and Louis Vuitton.

Data

- ▶ Foursquare location data (use Foursquare API calls)
 - ▶ Find venues of existing physical premium stores

```
dataframe.sample(3)
```

		id	name	categories	referralId	hasPerk	location.address
1231	5e0330979ef6fe0008ff3ce0	New Balance Premium Factory Outlet	'4bf58dd8d48988d1f2941735'	[{"id": "4bf58dd8d48988d1f2941735", "name": "S..."}]	v-1578157355	False	23 Serangoon Central #02-20/21
908	4ea8c01099114a2b12263b94	Premium Auto Pte Ltd	'4bf58dd8d48988d124951735'	[{"id": "4bf58dd8d48988d124951735", "name": "A..."}]	v-1578157344	False	7 Kaki Bukit Road 1 #01-08
1321	4d637b096973a35de6e3a7ea	Ryan □ The Acorn Premium Kindergarten	'4bf58dd8d48988d1a0941735'	[{"id": "4bf58dd8d48988d1a0941735", "name": "C..."}]	v-1578157359	False	Blk 713 Tampines St 71 #01-206 S520713

Data

- ▶ Condominium rental data (from Urban Redevelopment Authority)
 - ▶ obtain the monthly rental associated with condominium units rented out
 - ▶ rental per number of bedrooms as strong indicator to the willingness to purchase premium products

```
rent.sample(3)
```

	Condo	Street	Postal	Bedrooms	Rent	Area	Lease Date	latitude	longitude	rent_per_room
63265	URBANA	RIVER VALLEY CLOSE	9	3	5600	1300 to 1400	Apr-2017	1.295304	103.837722	1866.666667
76789	THOMSON 800	THOMSON ROAD	11	3	3900	1400 to 1500	Dec-2014	1.340663	103.837062	1300.000000
127872	DOUBLE BAY RESIDENCES	SIMEI STREET 4	18	2	2700	900 to 1000	Feb-2017	1.341269	103.956287	1350.000000

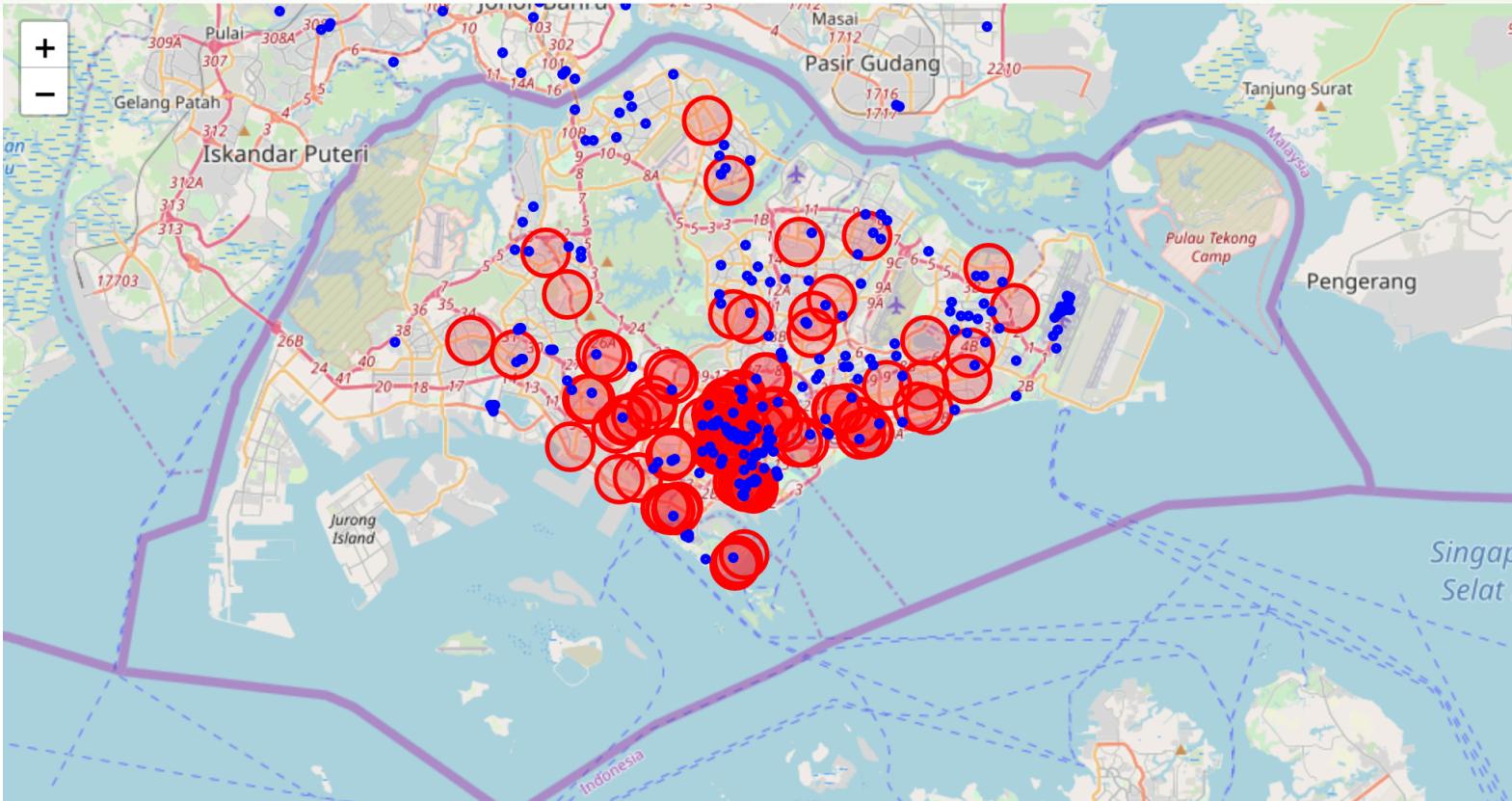
Methodology

- ▶ K-means clustering
 - ▶ Large amount of rental data (174,780 data points) impractical to analyse manually
 - ▶ Use clustering (100 clusters) to group similar areas with similar rental per bedrooms
 - ▶ Summarise data based on cluster

cluster_label	latitude	longitude	rent_per_room
76	1.372828	103.943971	923.498281
86	1.281586	103.797353	1940.816738
52	1.315226	103.836804	1949.954229
156	1.343329	103.736232	1055.278290
44	1.325821	103.847764	1243.473325
51	1.376807	103.761314	1114.072310
77	1.344390	103.720323	1092.377764

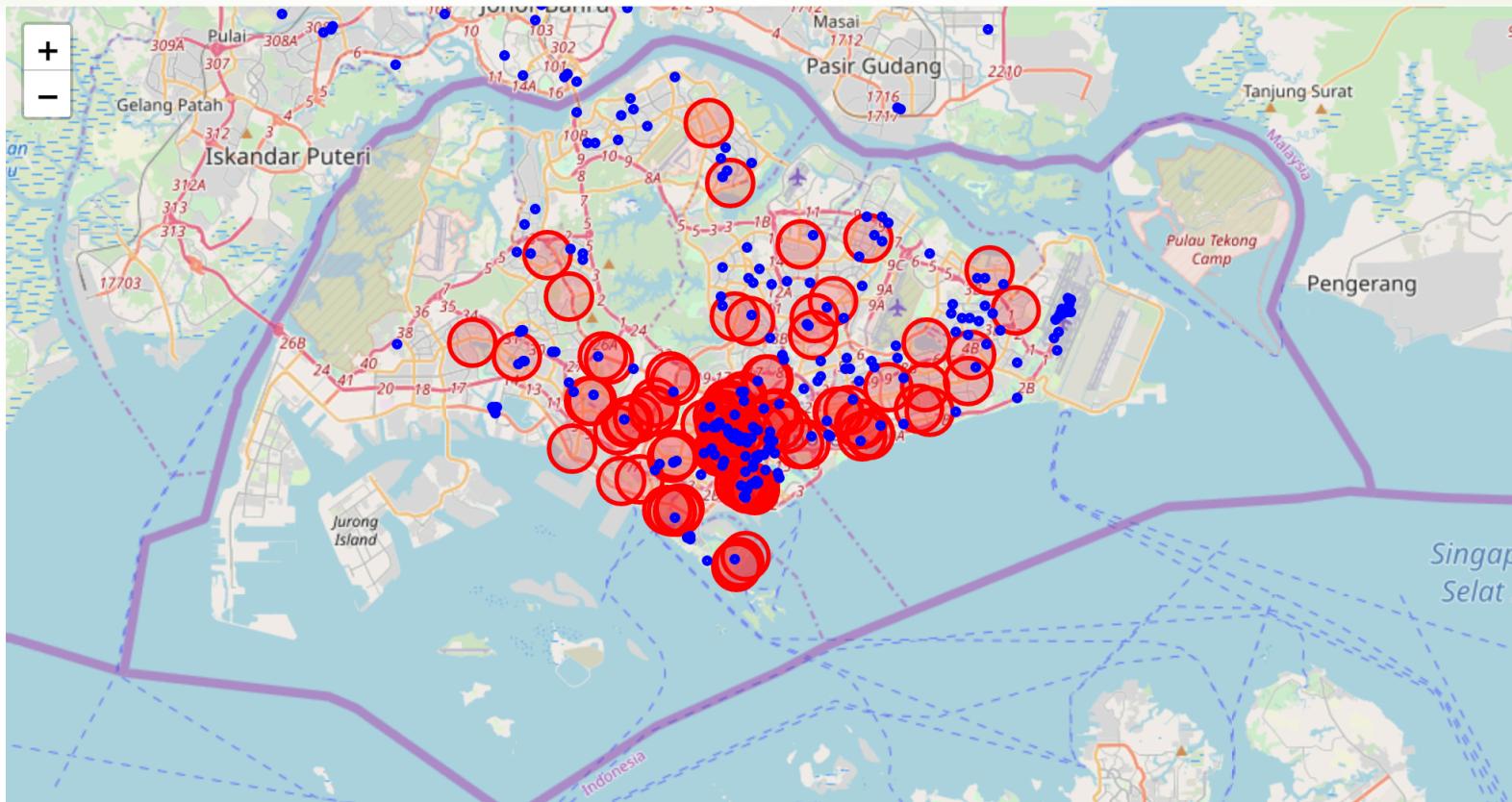
Results and Discussions

- ▶ Red circles are areas with higher willingness to spend on rental
- ▶ Blue dots are existing premium stores



Recommendations

- ▶ Recommend locations to set up physical premium stores:
 - ▶ Red circles that are far away from blue dots – e.g. Lakeside, Dairy Farm, Canberra



Conclusion

- ▶ It is important for businesses to leverage data to make an informed decision.
- ▶ We leveraged the data from Foursquare and URA to determine a suitable location for businesses to set up premium stores.
- ▶ The best locations are found to be the areas where residents are paying high rental but with little existing premium stores.