

Data Science Final Capstone Project Presentation

17-Dec-2019

1) Business Understanding (Description of Problem)

Problem is which city and street in Australia is the best to open Hotel?

Background is that my client is a business man in Asia. And he would like to expand his business in another countries. So He would like to open Hotel but not sure in which city and location in Australia.

2) Analytic Approach

As per request of customer, we must find State, City and location where is the best for his business. Meanwhile need to collect data to look for the best location, Then his business would be successful.

To support the business, the location must meet

- 1) Population Density
- 2) Transport
- 3) Food
- 4) Cafe
- 5) Restaurant
- 6) Park

3) Description of Data

1. To solve the problem, we need the data

- data for all state and city with population density
- data for venues in each city
- data for venues in each locality in selected city

2. Source of Data

- <https://simplemaps.com/data/au-cities>
- Import the csv file to get the population of Australia.

3. Four Square API

- For Venues in City and in Each locality in selected city.

4. Data Description (How to use Data to solve the Problem?)

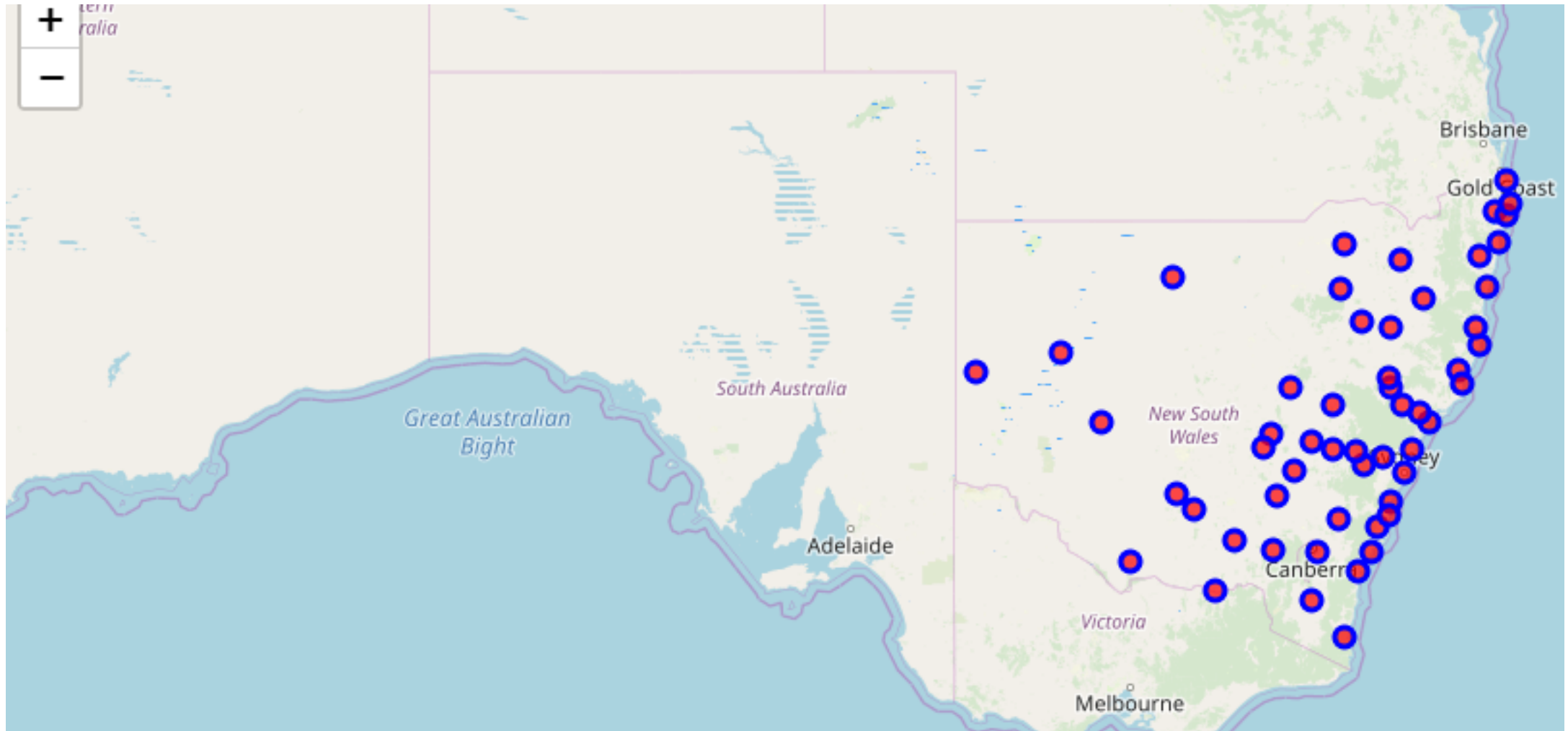
- By Using the data from world population site, firstly we choose most population state and city then will choose we can focus on and open Hotel in which location according to the data. Then by leveraging the Foursquare data, we will compare and try to find the best locality. Based on weights we will try to determine the Locality in similar way.

Import Data with csv file for Australia Data Source

- 1) Firstly import data with csv file
- 2) Remove unnecessary column and updated the column name
- 3) Choose the State with highest population

	city	lat	lng	country	iso2	admin	capital	population	population_proper
0	Sydney	-33.861481	151.205475	Australia	AU	New South Wales	admin	4630000.0	3641422.0
1	South Melbourne	-37.833333	144.966667	Australia	AU	Victoria	NaN	4170000.0	93625.0
2	Brisbane	-27.471010	153.024292	Australia	AU	Queensland	admin	1860000.0	926353.0
3	Perth	-31.952240	115.861397	Australia	AU	Western Australia	admin	1532000.0	880216.0
4	Adelaide	-34.928661	138.598633	Australia	AU	South Australia	admin	1145000.0	836354.0

	City	Lat	Lng	State	Population
0	Sydney	-33.861481	151.205475	New South Wales	4630000.0
1	Newcastle	-32.927792	151.784485	New South Wales	1134616.0
2	Wollongong	-34.424000	150.893448	New South Wales	260914.0
3	Albury	-36.074823	146.924006	New South Wales	104258.0
4	Nowra	-34.884220	150.600357	New South Wales	94781.0

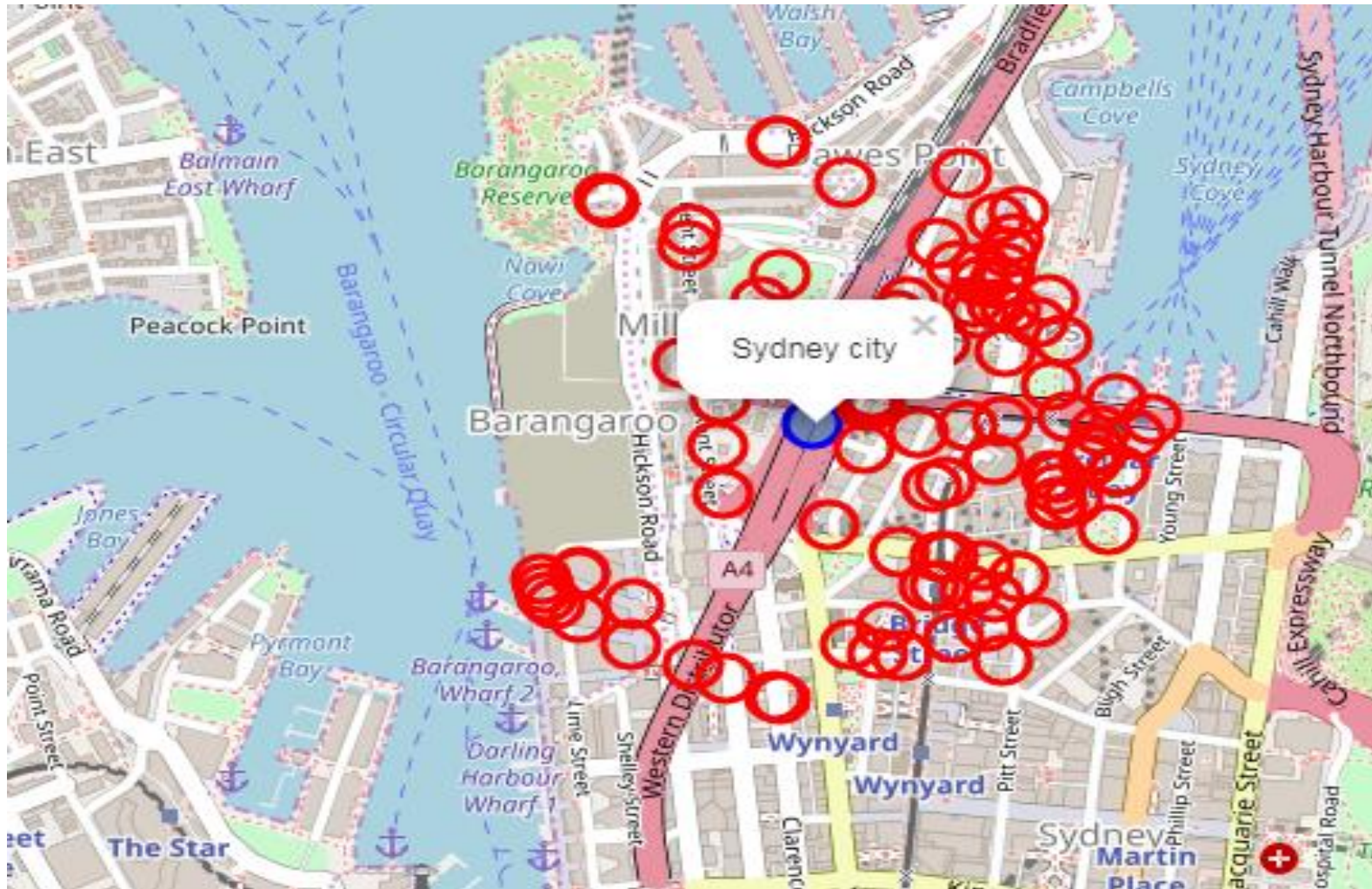


Visualization - Drawing City Map of New South Wales State

Finding Venues for all city and get particular city

- It has 49 cities and 124 Venue Category.
- Get the city with most population and related venues.
- Take Sydney with -33.861481 Lat and 151.205475 long location and its related 50 venues using Foursquare API

	City	Population	City Latitude	City Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
0	Sydney	4630000.0	-33.861481	151.205475	Sydney Harbour YHA	-33.860128	151.206844	Hostel
1	Sydney	4630000.0	-33.861481	151.205475	Shangri-La Hotel	-33.861141	151.206460	Hotel
2	Sydney	4630000.0	-33.861481	151.205475	The Langham Hotel Sydney	-33.860517	151.203437	Hotel
3	Sydney	4630000.0	-33.861481	151.205475	Harts Pub	-33.861870	151.206314	Pub
4	Sydney	4630000.0	-33.861481	151.205475	Blu Bar On 36	-33.861067	151.206361	Hotel Bar

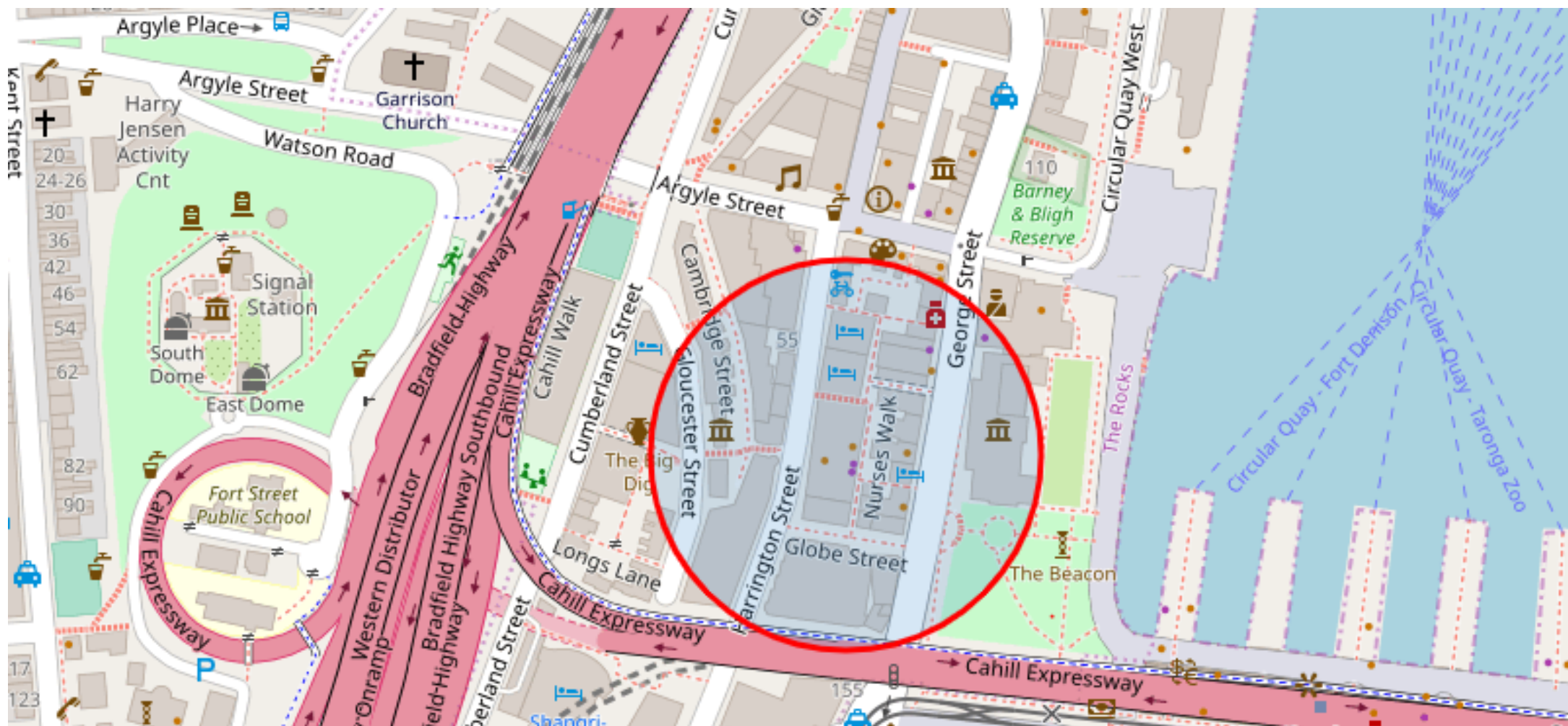


Visualization - Drawing Sydney City Map of New South Wales State

Apply K-mean
cluster for
segmentation of
venue category

	Venue Category	weights	Venue Latitude	Venue Longitude	clusters
0	Art Museum	1	-33.859859	151.209018	0
1	Australian Restaurant	2	-33.860805	151.206250	0
2	Bakery	4	-33.861649	151.207965	2
3	Bar	4	-33.865069	151.203811	1
4	Bed & Breakfast	4	-33.865210	151.208464	1

	weights	Venue Latitude	Venue Longitude
clusters			
0	1.736842	-33.860244	151.207538
1	3.315789	-33.863634	151.206199
2	5.000000	-33.860205	151.208122



Visualization - Drawing map near by Venue location to open Hotel



Conclusion

- Finally choose high weights with cluster and venue.
- Sydney city in New South Wales of Australia is the best to open Hotel and focus on near red circle such as Harrington street.