The BOTS

(Battle Of The Suburbs)

International Relocation

Introduction / Background

- Remotely identify suburbs to buy or rent when moving to a new city (Sydney)

Problem

- Too many suburbs to look at
    - Where to start?
- Unable to visit and get a feel of suburbs when living abroad

Suburb Recommendation System

We aim to build a model to recommend a short list of 10 suburbs to explore

Methodology

- Get list of recent transactions
- Identify clusters of distinct neighbourhoods
- Filter out neighbourhoods which are too far from City Centre
- Rank neighbourhoods based on number of schools, cafes etc and take top 3
- Rank suburbs within Top 3 neighbourshoods based on price

Benefits

- Exploratory analysis helps to give those looking to move a better understanding of different neighbourhoods
- Narrows initial search criteria
- Systematic approach means less likely to miss 'hidden gems'

Overview of Data

Data sources:

- Wikipedia list of suburbs
- Domain.com.au auction results
  - Each week or two weeks there are auctions which take place in the Sydney property market
  - Results are reported and include the address, dwelling type (e.g house, apartment, townhouse), attributes of property (number of bedrooms, bathrooms and car spaces), address, outcome of auction and price if sold
- Four Square location data (restaurants, cafes etc)
  - This data includes name of venue and venue type
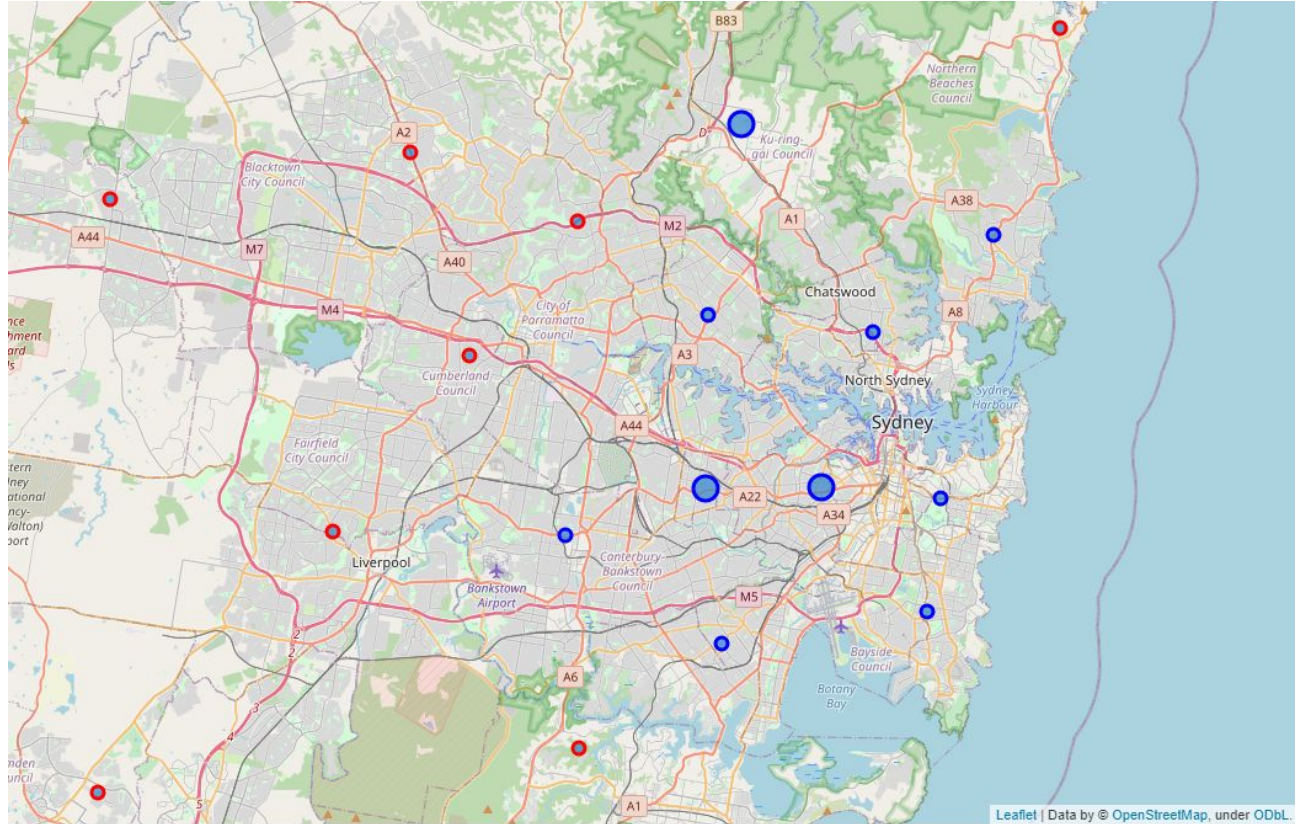- OpenMaps for visualisation of results

Overview of Methodology

- Obtain recent auction price results
- Clean the data by removing entries with bad or missing GPS coordinates
- Run a model to identify neighbourhood clusters based on GPS coordinates
- For the center of each neighbourhood
  - Filter out those that are too far from city center (> 20km)
  - Find number of nearby schools and cafes
- Find top 3 neighbourhoods and all the auction records in these neighbourhoods and sort suburbs by average price and recommend the top 10.

Results - The different neighbourhoods

Blue clusters are those within 20km of Sydney CBD.

3 larger clusters are the 3 with the highest number of schools

Results - Recommended Suburbs

1. St Ives
2. Balmain
3. Stanmore
4. Ashfield
5. Erskineville

6. Marrickville
7. Camperdown
8. Newton
9. Strathfield
10. Turramurra

Thank you!

Appendix I: Results of clustering

Class	CentroidLatitude	CentroidLongitude	CentroidWithin20km	CentroidDistance	CentroidSchools	CentroidCafes
2	-33.885318	151.170859	True	3.624692	19	47
10	-33.717109	151.126612	True	19.559195	13	5
6	-33.885654	151.106509	True	9.542437	12	41
0	-33.813660	151.200120	True	7.335934	9	50
18	-33.890097	151.238077	True	2.910386	9	50
11	-33.943038	151.230105	True	7.320358	7	17
12	-33.768298	151.267171	True	13.428934	6	27
19	-33.907652	151.028462	True	17.026894	4	17
3	-33.957665	151.115297	True	12.294884	4	3
15	-33.805360	151.108086	True	12.459454	4	15
1	-33.824175	150.974568	False	22.575785	4	1
16	-34.046337	151.123774	False	20.142188	4	8
8	-33.672352	151.304306	False	24.585360	4	13
4	-33.905835	150.898571	False	28.899876	4	2
7	-33.729953	150.942144	False	29.780552	4	13
13	-34.006160	151.035859	False	21.335298	3	0
9	-33.751985	150.774323	False	42.684600	2	1
5	-33.762142	151.035150	False	20.716510	2	5
17	-33.520345	151.331002	False	41.384690	1	12
14	-34.026644	150.767228	False	44.015376	0	0

Appendix II: Results of top suburbs

Suburb	PostCode	KPrice	Latitude	Longitude	Distance to Sydney
St Ives	2075.0	652.222222	-33.726897	151.167501	17.357273
Balmain	2041.0	815.384615	-33.859513	151.180362	3.490000
Stanmore	2048.0	902.909091	-33.891271	151.167791	4.080909
Ashfield	2131.0	1012.882353	-33.886931	151.127924	7.595556
Erskineville	2043.0	1051.363636	-33.903502	151.184830	3.516364
Marrickville	2204.0	1192.122500	-33.911405	151.151615	6.427143
Camperdown	2050.0	1241.339286	-33.888191	151.175908	3.266429
Newtown	2042.0	1410.125000	-33.900790	151.176798	3.862941
Strathfield	2135.0	2053.833333	-33.879597	151.082644	11.753810
Turramurra	2074.0	2434.428571	-33.732508	151.128005	17.983636