

## Capstone Project – The Battle of Neighbourhood

### One Stop Immigration Services by Smart Living Sydney

#### Sydney Background Information

Sydney is located on the east coast of Australia. It is the state capital city of New South Wales. The population of Sydney is estimated to be around 5 millions and it is considered the most populous city in Australia and Oceania. Sydney is made up of over 650 suburbs, 40 local government areas and 15 contiguous regions. The regions consist of Blue Mountain, City, Eastern Suburbs, Forest Districts, Greater Western Sydney, Inner West, Northern Beaches, Upper North Shore, Lower North Shore, Northern Suburbs, South-Eastern Sydney, Southern Sydney and St. George.

#### Data Source

The first data that we need is a complete list of suburbs of Sydney. This list can be attained from the following website:

<https://www.intosydneydirectory.com.au/sydney-postcodes.php>

In this website, we will find a list of Sydney suburb names, state (which is NSW) and postcodes.

Example of the list found in this website is showed as below:



## Sydney Postcodes - Sydney

# Suburbs

Abbotsbury	NSW	2176
Abbotsford	NSW	2046
Agnes Banks	NSW	2753
Airds	NSW	2560
Alexandria	NSW	2015
Alfords Point	NSW	2234
Allambie Heights	NSW	2100
Allawah	NSW	2218
Ambarvale	NSW	2560
Annandale	NSW	2038
Annangrove	NSW	2156
Appin	NSW	2560
Arcadia	NSW	2159
Arncliffe	NSW	2205
Arndell Park	NSW	2148
Artarmon	NSW	2064

As the column, 'State' has constant value of NSW, this column will be discarded because it does not provide any valuable information. From this list, we will use Python library, Geocoder to retrieve the location data (i.e. Latitude and Longitude) for all the suburbs.

Our dataframe will look like:

	Suburb	Postcode	Longitude	Latitude
0	Abbotsbury	2176		
1	Abbotsford	2046		
2	Agnes Banks	2153		
3	Airds	2560		

Once we have the location, FourSquare will be used to retrieve venue information to perform our data analysis. The venue categories that we will be interested are restaurant, school, public transport and grocery store. We will further examine the types of restaurant and grocery store available in the suburbs of Sydney.

For example we can use the following FourSquare API to retrieve venues of Indian restaurant in a suburb with the following code :

```
search_query = 'Indian'
```

```
radius = 500
```

```
url =
```

```
'https://api.foursquare.com/v2/venues/search?client_id={}&client_secret={}&ll  
={},{&v={}&query={}&radius={}&limit={}'.format(CLIENT_ID, CLIENT_SECRET,  
latitude, longitude, VERSION, search_query, radius, LIMIT)
```

```
results = requests.get(url).json()
```

The result returned by the request is in JSON format, so we need to retrieve the relevant venues information from the JSON data.