Finding an optimal suburb to open Asian supermarket in Melbourne

Introduction: Business Problem

- Supermarket scene in Australia is very much dominated by two supermarket chains - Woolworths and Coles. In 2018, the two together had more than 60% market share.

- They often sell similar varieties of products and compete at prices.

- Supermarket can differentiate itself with a different range of products to compete against established supermarket chains.

- In Melbourne, 24.4% of the population had Asian ancestry. There is a market for Asian grocery.

- We will look for an optimal suburb for opening Asian supermarket

Data sources

▶ suburb boundaries data of Victoria in the format of GeoJSON, produced by Department of Industry, Science, Energy and Resources, available at data.gov.au

▶ locations of existing supermarkets, obtained by using Foursquare API

▶ 2016 Census data, produced by Australian Bureau of Statistics

Suburb boundaries

- Suburbs within 5 km from Melbourne city centre, total 41 suburbs
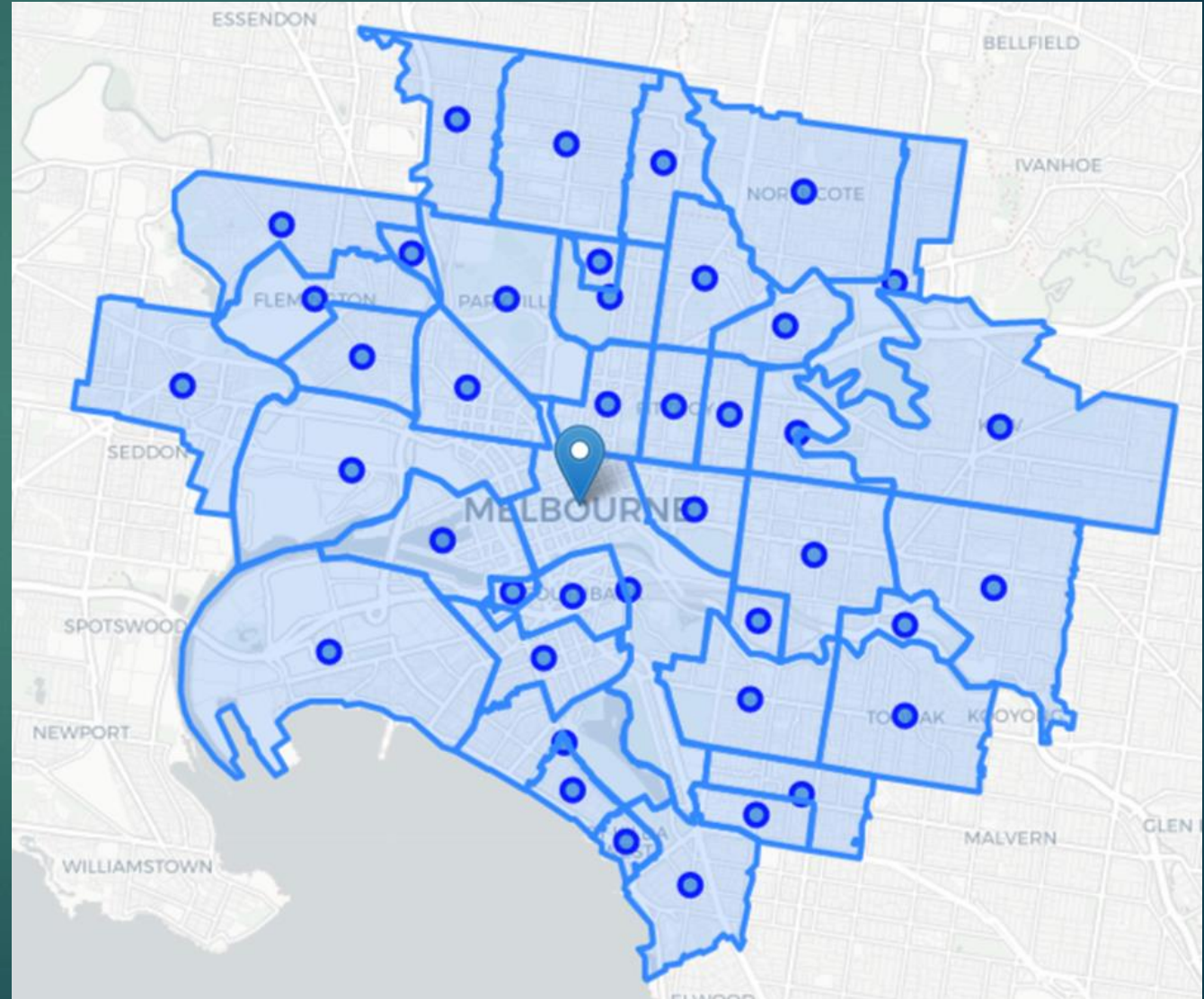
Foursquare

▶ There are 108 supermarkets in the 41 suburbs.

|	id	name	categories	suburb	postalCode	lat	lng	formattedAddress
0	55f76d71498e11ecf6921ecd	Woolworths Metro Swanston	Supermarket	MELBOURNE	3000	-37.813828	144.965938	[160 Swanston St, Melbourne VIC 3000, Australia]
1	4b7fbe7bf964a520d33b30e3	Coles	Supermarket	MELBOURNE	3008	-37.814913	144.952310	[201 Spencer St, Docklands VIC 3008, Australia]
2	5681d74c498e9e6f447639b5	Woolworths Metro	Supermarket	MELBOURNE	3000	-37.816746	144.964368	[60 Elizabeth St, Melbourne CBD VIC 3000, Aust...
3	4b058750f964a520728b22e3	Coles	Supermarket	MELBOURNE	3000	-37.817720	144.964749	[26 Elizabeth St (Btwn Flinders St & Flinders ...
4	4b1f5352f964a520802524e3	Coles Central	Supermarket	MELBOURNE	3000	-37.810299	144.963081	[Melbourne Central Shopping Centre (211 La Tro...

2016 Census - population data

	SSC_CODE_2016	Census_Name_2016	suburb	Total_Persons_Persons
0	SSC20002	Abbotsford (Vic.)	ABBOTSFORD	8184
1	SSC20017	Albert Park (Vic.)	ALBERT PARK	6215
2	SSC20074	Ascot Vale	ASCOT VALE	14750
3	SSC20359	Brunswick (Vic.)	BRUNSWICK	24473
4	SSC20360	Brunswick East	BRUNSWICK EAST	11504

2016 Census - ancestry data

	SSC (UR)	suburb	asian_1st_response	asian_2nd_response	asian_ancestry	total_individuals	asian_proportion
0	Abbotsford (Vic.)	ABBOTSFORD	1662	176	1838	8167	0.225052
1	Albert Park (Vic.)	ALBERT PARK	303	80	383	6214	0.061635
2	Ascot Vale	ASCOT VALE	1784	216	2000	14717	0.135897
3	Brunswick (Vic.)	BRUNSWICK	2807	425	3232	24455	0.132161
4	Brunswick East	BRUNSWICK EAST	1259	208	1467	11479	0.127799

Supermarket to population ratio
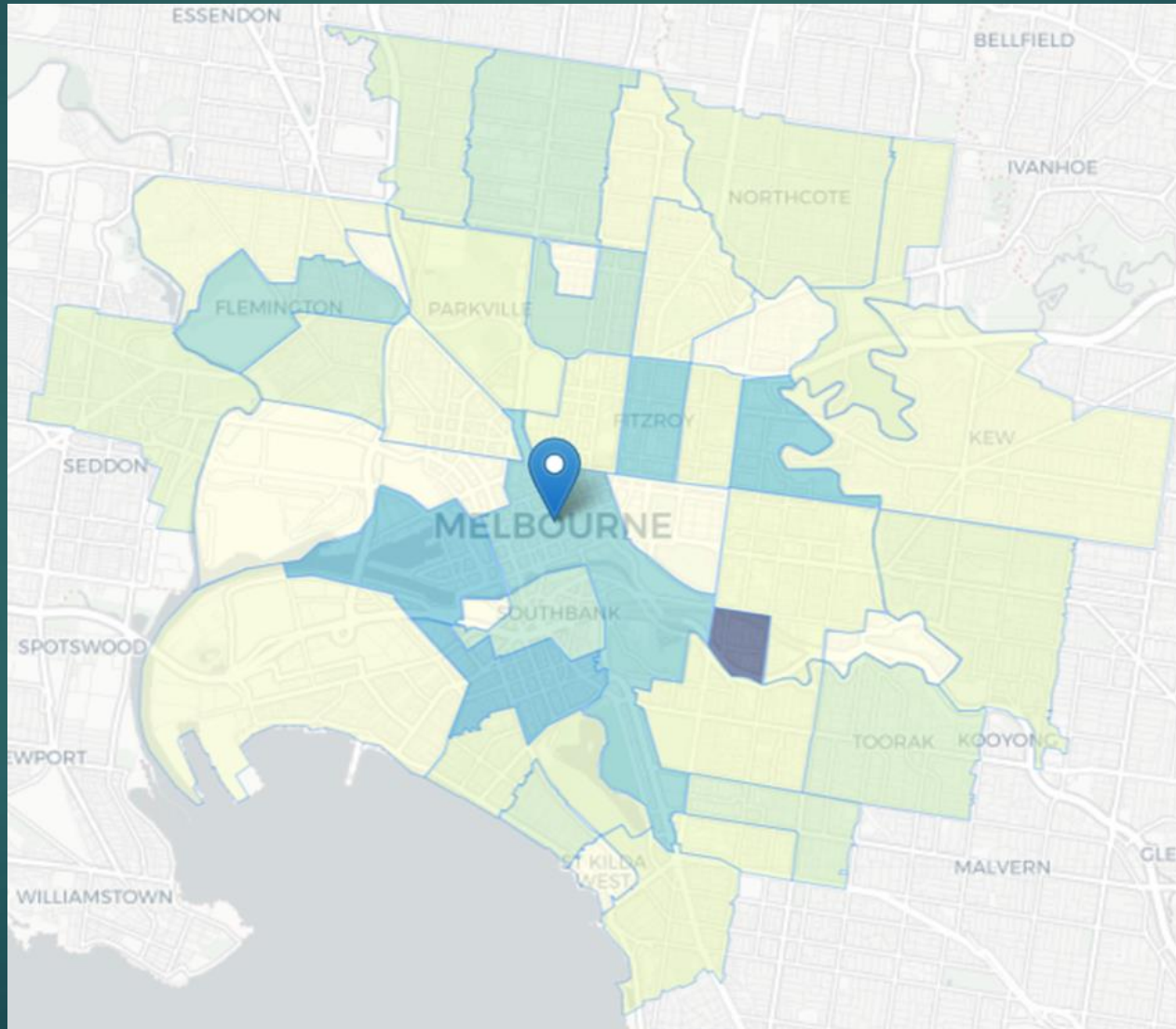
Asian ancestry proportion
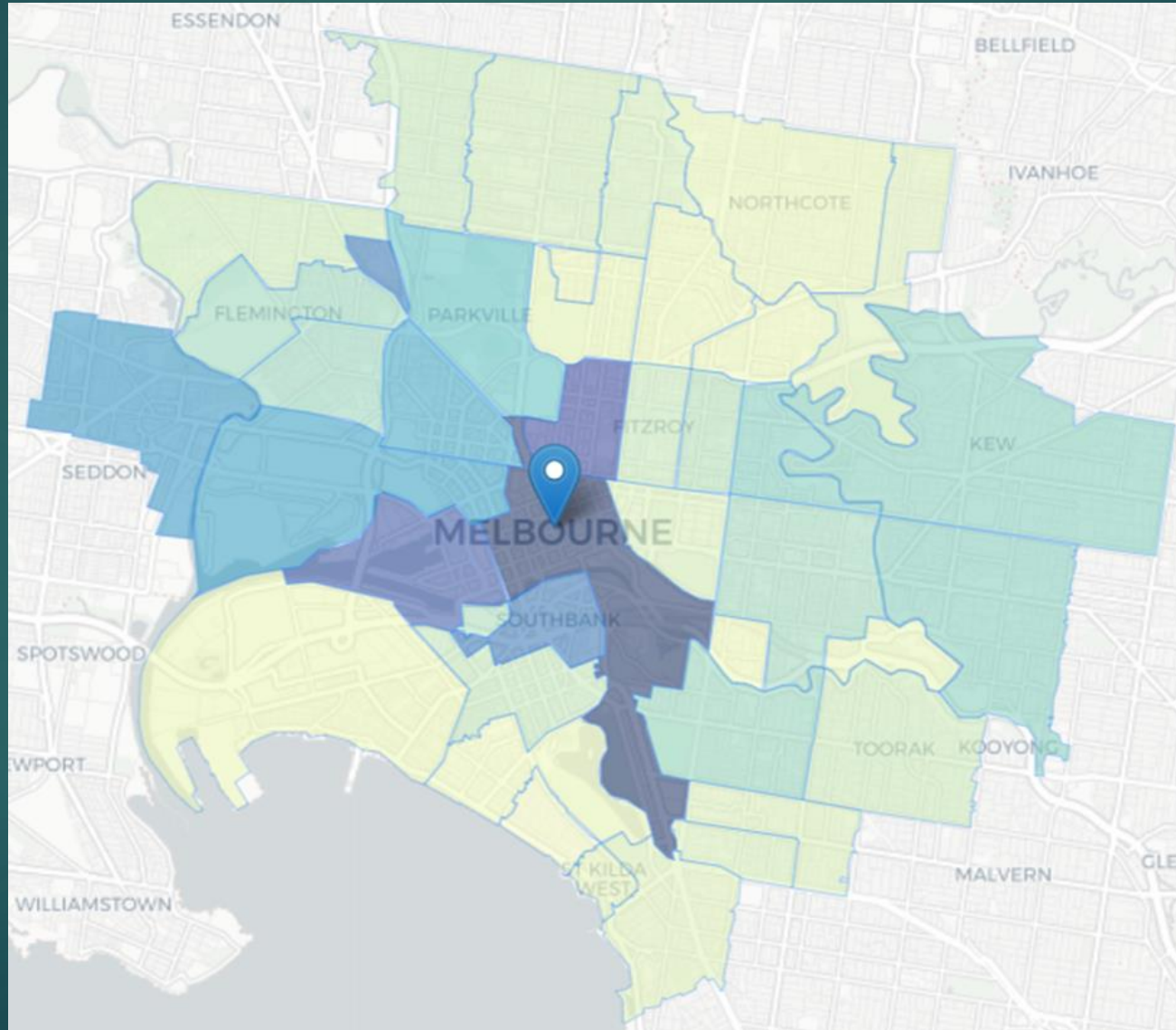
Best 5 suburbs

- Population is equal to or higher than 10920, which is the median of the 41 suburbs

- Supermarket to population ratio is equal to or lower than 0.000148, which is the median of the 41 suburbs

- 5 suburbs with the highest Asian proportion after meeting the above 2 criteria

	suburb	Total_Persons_Persons	supermarket_to_population_ratio	asian_proportion
7	CARLTON	18535	0.000108	0.504290
24	NORTH MELBOURNE	14940	0.000067	0.332573
21	KEW	24605	0.000081	0.217153
33	SOUTH YARRA	25147	0.000119	0.201518
30	RICHMOND	27705	0.000108	0.190466

Conclusion

- We used population, supermarket to population ratio, Asian ancestry proportion as selection criteria for optimal suburbs to open Asian supermarket.

- Best 5 suburbs were selected.

- Further researches: exact locations of existing supermarkets and where population resides in the suburb.