

RECOMMENDATION OF OFFLINE STORES – ECOMMERCE ORGANIZATION

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AGENDA

- BUSINESS CONTEXT
- APPROACH
- ANALYSIS
- RECOMMENDATIONS

BUSINESS CONTEXT



Image courtesy - ftwonline.co.za

LAST MILE DELIVERY – AN OPPORTUNITY

- Urbanization and infrastructure pose challenges for last mile delivery
- Millennials prefer pickup rather than drop off
- Ecommerce companies need to establish more offline customer connect

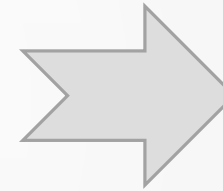


Image courtesy boardretailers.org

OFFLINE STORE

APPROACH



Image courtesy = [Lynda.com](https://www.lynda.com)

FACTORS INFLUENCING FOOTFALLS



METHODOLOGY



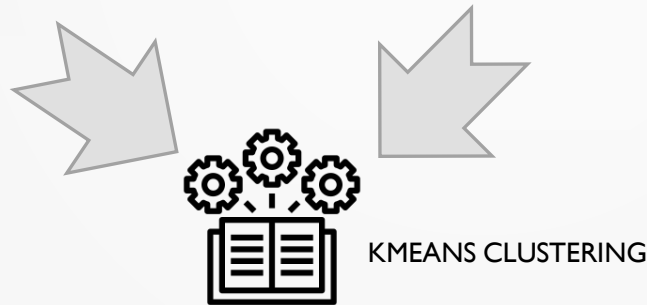
LOCATION COORDINATES



POPULATION DENSITY



RECOMMENDED
VENUES



- Pilot city considered as Los Angeles, CA, USA
- Get the zip codes for Los Angeles
- Get the trending venues for each zip codes
- Use Clustering Algorithm- K Means to determine the clusters of similar zip codes
- Plot the zip codes with their population density and then the clusters
- Analyze the clusters for likeliness and type of venues. Also look for densely populated areas(use geo json)
- Recommend the locations for pilots

STEPS

1. Zip codes for Los Angeles with latitude, longitude and population density

2. Recommended venues for each zip code

1. Considered the zip codes with recommended venues ≥ 10

3. Processed data using one hot encoding

4. Running K-means clustering algorithm. Use Elbow method for optimal number of clusters

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	zip	lat	lng	city	state	state	zcta	parent	population	density	county_fips	county	all_cou	imprec	militar	timezo	
29995	90001	33.974	-118.25	Los Angeles	CA	California	TRUE		57110	6295.9	06037	Los Angeles	{'06037':1}	FALSE	FALSE	America/Los_Angeles	
29996	90002	33.9491	-118.247	Los Angeles	CA	California	TRUE		51223	6458.8	06037	Los Angeles	{'06037':1}	FALSE	FALSE	America/Los_Angeles	
29997	90003	33.9641	-118.274	Los Angeles	CA	California	TRUE		66266	7204.7	06037	Los Angeles	{'06037':1}	FALSE	FALSE	America/Los_Angeles	
29998	90004	34.0762	-118.311	Los Angeles	CA	California	TRUE		62180	7876.3	06037	Los Angeles	{'06037':1}	FALSE	FALSE	America/Los_Angeles	
29999	90005	34.0551	-118.265	Los Angeles	CA	California	TRUE		67594	7331.3	06037	Los Angeles	{'06037':1}	FALSE	FALSE	America/Los_Angeles	
30000	90006																'Los_Angeles
30001	90007																'Los_Angeles
30002	90008																'Los_Angeles
30003	90009																'Los_Angeles
30004	90010																'Los_Angeles

2	3	90001	33.9740	-118.2495	6295.9	Jack in the Box					33.975167	-118.250313	Fast Food Restaurant						
	3	90001	33.9740	-118.2495	6295.9	SUBWAY					33.975311	-118.248038	Sandwich Place						
	4	90001	33.9740	-118.2495	6295.9	Billie's Deli					33.974500	-118.244295	Burger Joint						
	5	90001	3	Area	ATM	Accessories Store	American Restaurant	Arcade	Art Gallery	Art Museum	Arts & Crafts Store	Asian Restaurant	Athletics & Sports	...	Vegetarian / Vegan Restaurant	Video Game Store	Video Store	Vietnamese Restaurant	Weight Loss Center
3	6	90001	3																
	0	90001	0.0		0.0	0.00	0.000000	0.000000	0.0	0.000000	0.000000	0.0	...	0.000000	0.000000	0.0	0.000000	0.0	
	1	90004	0.0		0.0	0.00	0.000000	0.000000	0.0	0.000000	0.000000	0.0	...	0.000000	0.000000	0.0	0.018519	0.0	
	2	90005	0.0		0.0	0.00	0.000000	0.000000	0.0	0.000000	0.000000	0.0	...	0.000000	0.000000	0.0	0.000000	0.0	
	3	90006	0.0		0.0	0.00	0.000000	0.000000	0.0	0.000000	0.000000	0.0	...	0.000000	0.076923	0.0	0.000000	0.0	
	4	90007	0.0		0.0	0.00	0.000000	0.000000	0.0	0.000000	0.000000	0.0	...	0.000000	0.000000	0.0	0.000000	0.0	
	5	90010	0.0		0.0	0.00	0.000000	0.000000	0.0	0.000000	0.043478	0.0	...	0.000000	0.000000	0.0	0.000000	0.0	
	6	90011	0.0		0.0	0.00	0.000000	0.000000	0.0	0.000000	0.000000	0.0	...	0.000000	0.000000	0.0	0.000000	0.0	
	7	90012	0.0		0.0	0.00	0.000000	0.037037	0.0	0.000000	0.000000	0.0	...	0.000000	0.000000	0.0	0.074074	0.0	
	8	90013	0.0		0.0		Cluster Labels	Area	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue		

Cluster Labels	Area	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
0	0 90001	Pizza Place	Donut Shop	Mexican Restaurant	Fruit & Vegetable Store	Shoe Store	Fast Food Restaurant	Grocery Store	Sandwich Place	Burger Joint	Pharmacy
1	1 90004	Korean Restaurant	Bakery	Bar	Coffee Shop	Seafood Restaurant	Sandwich Place	Cocktail Bar	Bridal Shop	Japanese Restaurant	Mattress Store
2	1 90005	Korean Restaurant	Café	Japanese Restaurant	Coffee Shop	Yoga Studio	Steakhouse	Gift Shop	Noodle House	Beer Bar	Concert Hall
3	0 90006	Donut Shop	Ice Cream Shop	Video Game Store	Pizza Place	Bus Station	Food Truck	Sandwich Place	Latin American Restaurant	Grocery Store	Spa
4	0 90007	Coffee Shop	Shipping Store	Yoga Studio	College Residence Hall	Caribbean Restaurant	Food Truck	Mediterranean Restaurant	Gastropub	Big Box Store	Farmers Market

ANALYSIS



Image courtesy – teassist.com

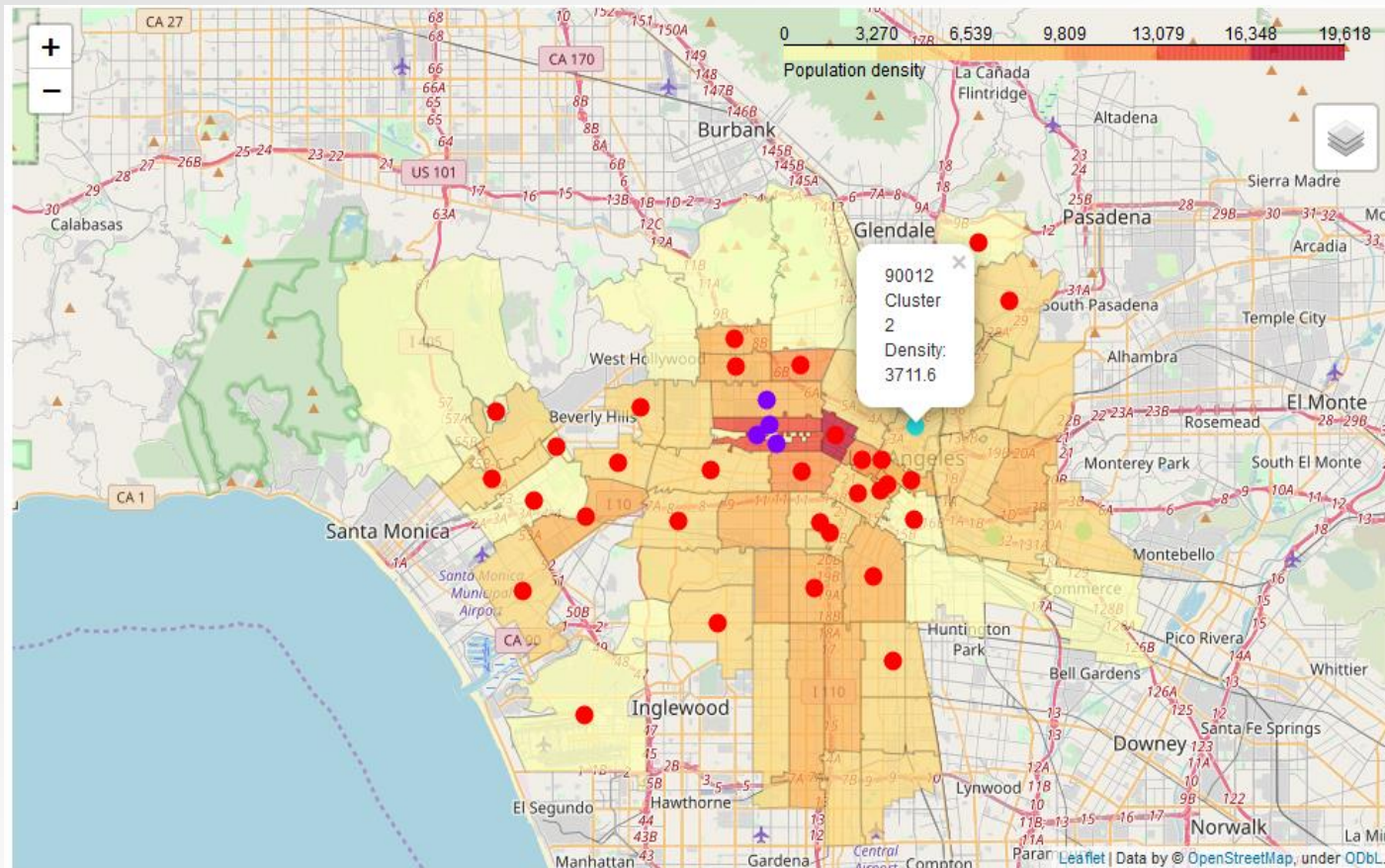
RESULTS

A r e a	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
90001	Pizza Place	Donut Shop	Mexican Restaurant	Fruit & Vegetable Store	Shoe Store	Fast Food Restaurant	Grocery Store	Sandwich Place	Burger Joint	Pharmacy
90004	Korean Restaurant	Bakery	Bar	Coffee Shop	Seafood Restaurant	Sandwich Place	Cocktail Bar	Bridal Shop	Japanese Restaurant	Mattress Store
90005	Korean Restaurant	Café	Japanese Restaurant	Coffee Shop	Yoga Studio	Steakhouse	Gift Shop	Noodle House	Beer Bar	Concert Hall
90006	Donut Shop	Ice Cream Shop	Video Game Store	Pizza Place	Bus Station	Food Truck	Sandwich Place	Latin American Restaurant	Grocery Store	Spa
90007	Coffee Shop	Shipping Store	Yoga Studio	College Residence Hall	Caribbean Restaurant	Food Truck	Mediterranean Restaurant	Gastropub	Big Box Store	Farmers Market
90010	Korean Restaurant	Coffee Shop	Japanese Restaurant	Pizza Place	Construction & Landscaping	Tea Room	Martial Arts Dojo	Fast Food Restaurant	Convenience Store	Asian Restaurant
90011	Fast Food Restaurant	Mexican Restaurant	Ice Cream Shop	Pizza Place	Fried Chicken Joint	Discount Store	Donut Shop	Park	Food	Flea Market
90012	Chinese Restaurant	Bakery	Bar	Vietnamese Restaurant	Monument / Landmark	Café	Brewery	Recreation Center	Bubble Tea Shop	Burger Joint
90013	Japanese Restaurant	Sushi Restaurant	Ice Cream Shop	Ramen Restaurant	Gift Shop	Brewery	Cocktail Bar	Coffee Shop	Bakery	Bubble Tea Shop
90014	Bar	Coffee Shop	Burger Joint	Music Venue	Hotel	Italian Restaurant	Theater	Yoga Studio	Juice Bar	Pharmacy
90015	Food Truck	Coffee Shop	Bar	Sports Bar	Mexican Restaurant	Breakfast Spot	Book Store	Pharmacy	Pharmacy	Pharmacy
90016	Mexican Restaurant	Latin American Restaurant	Performing Arts Venue	Park	Sandwich Place	Pharmacy	Pharmacy	Pharmacy	Pharmacy	Pharmacy

4 clusters are formed

- 2 are large in number,
- 2 contain only 1 zip code each

OBSERVATIONS



- **Cluster 0** appears to have a good mix of fast food places, cafes, restaurants and shopping areas. Within Cluster 0, the zip codes with high population density are more suited for higher footfalls and therefore the target areas of offline stores. Top 5 Zip codes based on Population Density are 90006, 90017, 90029, 90057, 90014
- **Cluster 1** appears to be concentrated around restaurants with few instances of other categories like shops, fitness centers etc. Also, cluster 1 is in relatively high dense areas of the city. With these two conditions, the entire cluster is likely to get high percentage of footfalls throughout the day
- **Cluster 2 and 3** are single zip code clusters and so not ideally suited for an offline store

RECOMMENDATIONS

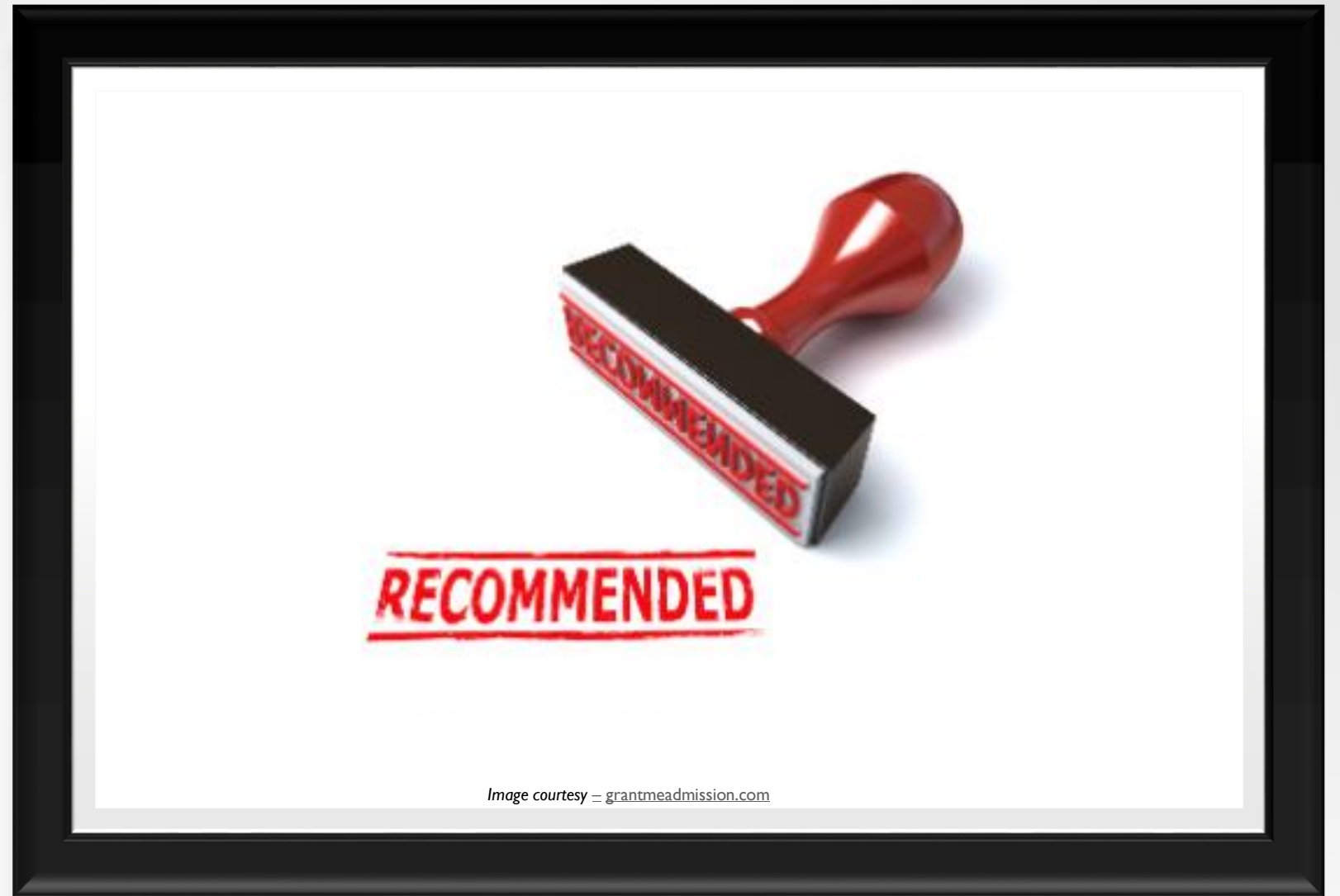


Image courtesy – grantmeadmission.com

RECOMMENDATION

The ecommerce store may choose to launch only a handful offline stores in each of the priority areas or only in the highest priority areas.

Priority 1

Cluster 0 - top 5 zip codes and Cluster 1 - are both concentrated in relatively high population density and with a balanced mix of food joints, shopping centers, fitness areas. These areas will have high footfalls throughout the day/evening on all days.

Priority 2

Cluster 0 remaining zip codes or Cluster 2/3 could be the next locations for offline stores. If the Cluster 0 locations in Priority 1 are handling a good frequency of pickups, it may be a good idea to expand to Cluster 0 next set of zip codes before moving to Cluster 2 and 3 which are anyway a set of single zip codes.

Additional analysis

Assuming there is a customer demographic data from the ecommerce company, we can enrich this analysis using the zip codes of the customers to refine the likelihood of the footfalls and therefore the location of the offline stores.

