Targeting Consumers According to Venue Categories in Los Angeles, USA

Business Problem

Advertising seeks to change consumer behavior

The most likely changes are those that remain within the bounds of normal behavior

A consumer's current location can be used to determine that consumer's likely locations in the near future

This information can be used to deliver targeted advertising

Approach: Use Foursquare data

Foursquare has a large database of venues

Each venue has a category

Many Foursquare users frequently check in at venues

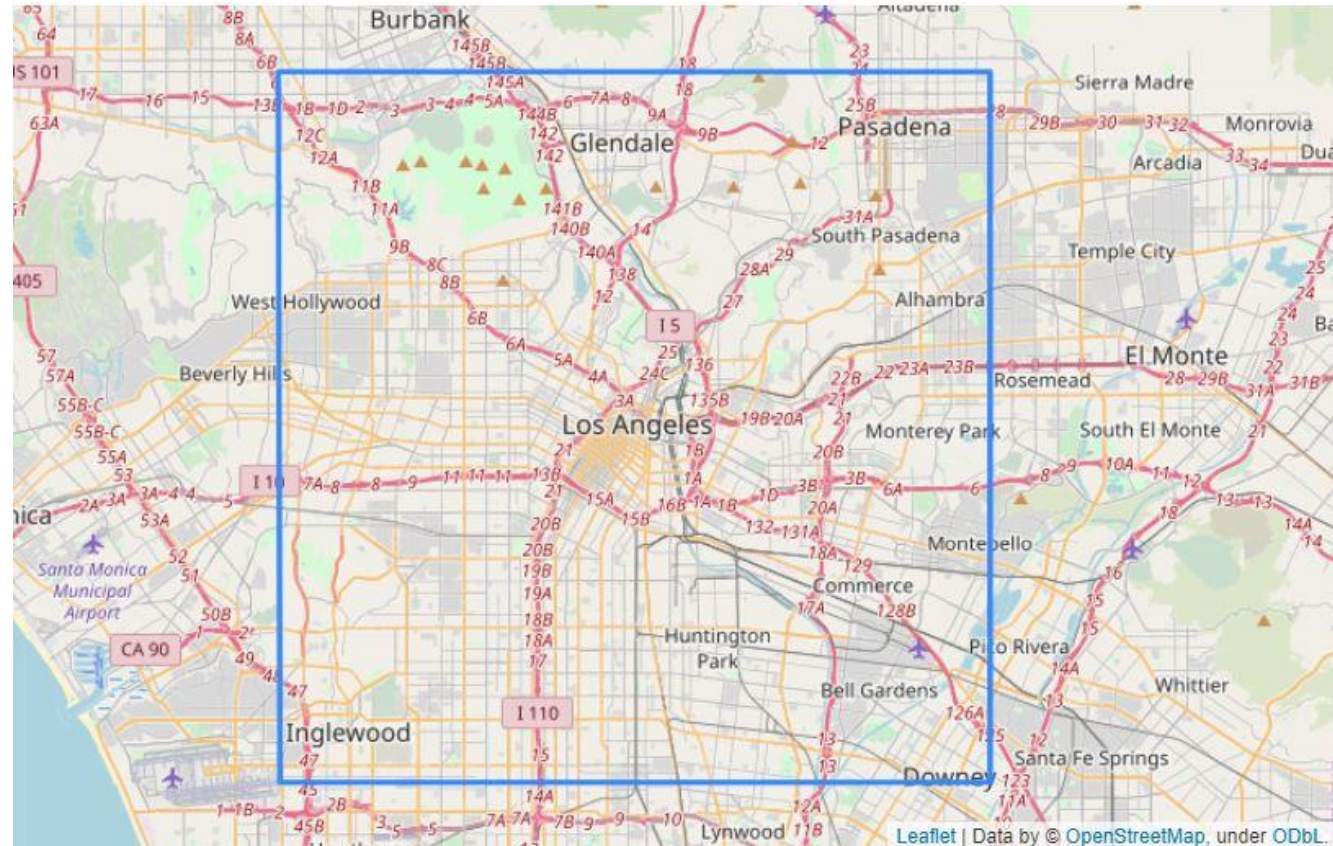Foursquare has an API for programmatic access to data

Foursquare's "nextvenues" call returns venues that people often check in to after a specified venue

For each venue category, determine the most likely categories of the next venue
◦ Aggregate nextvenues results for venues within a category

Study area:
a square, 25 kilometers by 25 kilometers, in the vicinity of Los Angeles

Data acquisition

Use Foursquare "explore" calls to choose 10,000 random venues within the study area

Use a Foursquare "nextvenues" call for each of these 10,000 venues
- Each call returns between 0 and 5 next venues
- 5045 venues had no next venues
- 1041 venues had one next venue
- 626 venues had two next venues
- 440 venues had three next venues
- 288 venues had four next venues
- 2560 venues had five next venues

Where do people at a Sports Bar go next?

id	category	num next	next1	next2	next3	next4	next5
5a29fc9f9d(	Sports Bar	2	Basketball Stadium	Basketball Court			
4f31d5efe4	Sports Bar	1	Basketball Stadium				
52f7dd7111	Sports Bar	5	Basketball Stadium	General Entertainment	Movie Theater	Rock Club	Bar
5875af81d4	Sports Bar	2	College Football Field	Soccer Stadium			
54642cba49	Sports Bar	4	Cocktail Bar	Shopping Plaza	Burger Joint	Dumpling Restaurant	
4ac5aa87f9	Sports Bar	5	Performing Arts Venue	Cocktail Bar	Shopping Plaza	Bakery	Gym / Fitness Center
561db7a349	Sports Bar	1	Basketball Stadium				
4c2035fdb3	Sports Bar	2	Casino	Outlet Mall			
4c33afec45	Sports Bar	4	Baseball Stadium	Baseball Field	Clothing Store	Lounge	
535c92de49	Sports Bar	1	Baseball Stadium				
4c6c84fc99l	Sports Bar	5	College Football Field	Sports Bar	Rock Club	Gastropub	American Restaurant
53f6bcec49	Sports Bar	5	Shopping Mall	Movie Theater	Chocolate Shop	Movie Theater	Music Venue
4aff7f64f96	Sports Bar	5	Korean Restaurant	Asian Restaurant	Korean Restaurant	Karaoke Bar	Seafood Restaurant
5be86c4df0	Sports Bar	0					
4aabedbcf9	Sports Bar	5	Concert Hall	Chinese Restaurant	College Football Field	Fast Food Restaurant	Gastropub

- 15 Sports Bar venues found
- 14 out of 15 have at least one next venue
- 47 total next venues in 34 different categories
- For each of these 34:
  - Score 10 points for each occurrence in column next1
  - 9 points for next2, 8 for next3, 7 for next4, 6 for next5
- Divide each category score by the total of all scores to get a percentage
- Find the top 5 results

Where do people at a Sports Bar go next?

id	category	num next	next1	next2	next3	next4	next5
5a29fc9f9d	Sports Bar	2	Basketball Stadium	Basketball Court			
4f31d5efe4	Sports Bar	1	Basketball Stadium				
52f7dd7111	Sports Bar	5	Basketball Stadium	General Entertainment	Movie Theater	Rock Club	Bar
5875af81d4	Sports Bar	2	College Football Field	Soccer Stadium			
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- The five most likely next destination categories are
  - Basketball Stadium, 10.1 %
  - College Football Field, 7.1 %
  - Movie Theater, 6.1 %
  - Baseball Stadium, 5.1 %
  - Cocktail Bar, 4.8 %

Data filtering

This analysis was done for all categories where there were

◦ At least 10 venues with next venues

◦ At least 20 total next venues

122 such categories

Full results at

https://github.com/david-r-wasserman/Coursera_Capstone/blob/master/FinalProject/results.xlsx

Selected results

	# of Venues	# of Venues With Next	Total # of Next Venues	Next Category #1	Pct. #1	Next Category #2	Pct. #2	Next Category #3	Pct. #3	Next Category #4	Pct. #4	Next Category #5	Pct. #5
Garden	26	21	64	Garden	45.37	Tea Room	16.111	Museum	11.852	Park	7.7778	Grocery Store	3.5185
Golf Course	14	10	27	Golf Course	33.476	Diner	8.5837	Park	8.1545	American Restaurant	6.4378	Grocery Store	6.4378
Yoga Studio	41	27	65	Grocery Store	32.056	Coffee Shop	17.944	Juice Bar	8.0139	Café	6.2718	Supermarket	6.0976
Thrift / Vintage Store	42	19	70	Thrift / Vintage Store	31.088	Big Box Store	7.5993	Shopping Mall	7.2539	Grocery Store	6.9085	Clothing Store	6.3903
Trail	147	35	113	Trail	29.979	Park	16.457	Observatory	10.587	Scenic Lookout	9.8532	Mountain	4.0881
Art Museum	20	14	59	Art Museum	28.392	Coffee Shop	11.482	Sculpture Garden	7.3069	New American Restaurant	6.8894	Historic Site	6.8894
Wine Shop	15	13	50	Grocery Store	27.981	American Restaurant	7.056	Big Box Store	6.5693	Cocktail Bar	4.8662	Shopping Mall	4.3796
Southern / Soul Food Restaurant	25	12	43	Shopping Mall	27.701	Stadium	12.465	Donut Shop	7.4792	Beach	6.0942	Multiplex	4.7091
Brewery	17	17	80	Brewery	27.245	Bar	12.384	German Restaurant	4.7988	Mexican Restaurant	4.3344	Cocktail Bar	3.87
Men's Store	24	14	53	Clothing Store	25.285	Shopping Mall	9.3394	Coffee Shop	8.4282	Boutique	8.2005	Department Store	7.2893
Art Gallery	87	46	156	Art Gallery	24.694	Bar	6.8043	Art Museum	5.581	Garden	2.9052	Gastropub	2.7523
Women's Store	21	12	42	Clothing Store	24.138	Boutique	9.7701	Coffee Shop	7.1839	Department Store	5.4598	Juice Bar	4.8851
Discount Store	49	27	85	Grocery Store	23.823	Big Box Store	12.465	Supermarket	10.111	Pharmacy	7.8947	Discount Store	7.4792
Pharmacy	136	80	305	Grocery Store	22.332	Fast Food Restaurant	10.079	Coffee Shop	8.9328	Supermarket	8.6561	Big Box Store	5.7708
Shipping Store	39	20	55	Grocery Store	21.702	Coffee Shop	19.362	Big Box Store	9.3617	Supermarket	6.1702	Shopping Mall	5.3191

Conclusion

These results can be used for targeted advertising in the Los Angeles area, in combination with other available data

The study can be repeated for other areas
◦ Study can be executed up to nine times per day with a free verified Foursquare developer account