

Vega-Hype
Vegan Restaurant

Target Cities for Expansions



Business Problem

In a hypothetical business scenario, I am a restaurant consultant who provides insights on the culinary scene across the U.S.

- My new client has a very successful vegan fine-dining restaurant in Los Angeles, California. The restaurant's name is Vega-Hype.
- The owner would like to get on the vegan bandwagon and needed help to expand his business. My task is to come up with a list of cities across the nation with similar characteristics to Vega-Hype's existing location, Los Angeles, California.
- The hypothesis is that if Vega-Hype succeeded in a city like Los Angeles, then we should start with a list of cities which are similar in structure.
- The target audience is the Vega-Hype restaurant owner.





Data

- » Coordinates of 1000 largest U.S. cities: {For the purpose of getting a list to fetch data through Foursquare API}
<https://public.opendatasoft.com/explore/dataset/1000-largest-us-cities-by-population-with-geographic-coordinates/table/>
- » Foursquare location data API {For the purpose of finding similarities through data extracted such as restaurants, entertainment complexes, cafe and so on. }
- » Given that a list of 1000 cities may be too large API fetching and not realistic in the business sense, we will narrow this down to the top 50 cities.

Data: Top cities with coordinates for an API fetch

	City	State	Growth From 2000 to 2013	Population	Latitude	Longitude
861	New York	New York	4.8	8405837	40.7127837	-74.0059413
924	Los Angeles	California	4.8	3884307	34.0522342	-118.2436849
565	Chicago	Illinois	-6.1	2718782	41.8781136	-87.6297982
617	Houston	Texas	11.0	2195914	29.7604267	-95.3698028
53	Philadelphia	Pennsylvania	2.6	1553165	39.9525839	-75.1652215
937	Phoenix	Arizona	14.0	1513367	33.4483771	-112.0740373
153	San Antonio	Texas	21.0	1409019	29.4241219	-98.4936282
304	San Diego	California	10.5	1355896	32.715738	-117.1610838
59	Dallas	Texas	5.6	1257676	32.7766642	-96.7969879
776	San Jose	California	10.5	998537	37.3382082	-121.8863286
994	Austin	Texas	31.7	885400	30.267153	-97.7430608
370	Indianapolis	Indiana	7.8	843393	39.768403	-86.158068
170	Jacksonville	Florida	14.3	842583	30.3321838	-81.655651
472	San Francisco	California	7.7	837442	37.7749295	-122.4194155

Methodology: K-means clustering

- » For each city in the data set, use corresponding coordinates to fetch venues around the proximity.

	City	City Latitude	City Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
0	New York	40.7127837	-74.0059413	The Bar Room at Temple Court	40.711448	-74.006802	Hotel Bar
1	New York	40.7127837	-74.0059413	Four Seasons Hotel New York Downtown	40.712612	-74.009380	Hotel
2	New York	40.7127837	-74.0059413	Korin	40.714824	-74.009404	Furniture / Home Store
3	New York	40.7127837	-74.0059413	Aire Ancient Baths	40.718141	-74.004941	Spa
4	New York	40.7127837	-74.0059413	9/11 Memorial North Pool	40.712077	-74.013187	Memorial Site

- » Prepare the data before assigning frequency values to venues in respective cities.

	City	Accessories Store	Adult Boutique	Afghan Restaurant	American Restaurant	Amphitheater	Antique Shop	Aquarium	Arcade	Arepa Restaurant	Argentinian Restaurant
0	Albuquerque	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00
1	Arlington	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00
2	Atlanta	0.00	0.00	0.00	0.04	0.00	0.00	0.01	0.00	0.01	0.00
3	Austin	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00
4	Baltimore	0.00	0.00	0.01	0.03	0.00	0.00	0.03	0.00	0.00	0.00

Methodology: K-means clustering

- » Sort venues based on the frequency values in the previous step.

	City	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
0	Albuquerque	Pizza Place	Mexican Restaurant	Brewery	Café	Coffee Shop	Grocery Store	American Restaurant	Dessert Shop
1	Arlington	Mexican Restaurant	Bar	Pizza Place	Coffee Shop	Football Stadium	Sandwich Place	American Restaurant	Fried Chicken Joint
2	Atlanta	Trail	Mexican Restaurant	American Restaurant	Park	History Museum	Dessert Shop	Southern / Soul Food Restaurant	Pizza Place
3	Austin	Hotel	Coffee Shop	Grocery Store	Bar	Yoga Studio	Food Truck	Taco Place	Ice Cream Shop
4	Baltimore	Italian Restaurant	Aquarium	Park	Seafood Restaurant	Lounge	Theater	Hotel	Deli / Bodega

- » Deploy the K-means clustering method and put the cities into separate clusters.

	City	State	Growth From 2000 to 2013	Population	Latitude	Longitude	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue
861	New York	New York	4.8	8405837	40.7127837	-74.0059413	1	Park	Italian Restaurant	Memorial Site	Cycle Studio
924	Los Angeles	California	4.8	3884307	34.0522342	-118.2436849	3	Coffee Shop	Ice Cream Shop	Sushi Restaurant	Theater
565	Chicago	Illinois	-6.1	2718782	41.8781136	-87.6297982	3	Hotel	Theater	Park	Coffee Shop
617	Houston	Texas	11.0	2195914	29.7604267	-95.3698028	0	Bar	Hotel	Vietnamese Restaurant	Coffee Shop
53	Philadelphia	Pennsylvania	2.6	1553165	39.9525839	-75.1652215	3	Coffee Shop	Italian Restaurant	Wine Bar	Plaza

Result & Observation

- » Group the cities based on their corresponding cluster labels.
- » Los Angeles is in the “3” cluster, along with Chicago, Philadelphia, Pheonix, and etc.
- » We can observe one obvious similarity in the data; “Coffee Shop” is the most common venue among these cities.
- » Most of the cities in the result list are situated in the west coast. Beyond the coincidence, similar lifestyles could have a great influence.

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53	Philadelphia	Pennsylvania	2.6	1553165	39.9525839	-75.1652215	3	Coffee Shop	Italian Restaurant	Wine Bar	Plaza
937	Phoenix	Arizona	14.0	1513367	33.4483771	-112.0740373	3	Coffee Shop	Hotel	American Restaurant	Art Gallery
994	Austin	Texas	31.7	885400	30.267153	-97.7430608	3	Hotel	Coffee Shop	Grocery Store	Bar
472	San Francisco	California	7.7	837442	37.7749295	-122.4194155	3	Yoga Studio	Coffee Shop	Ice Cream Shop	Grocery Store
500	Seattle	Washington	15.6	652405	47.6062095	-122.3320708	3	Coffee Shop	Hotel	Cocktail Bar	Bakery
294	Washington	District of Columbia	13.0	646449	38.9071923	-77.0368707	3	Coffee Shop	Hotel	Ice Cream Shop	American Restaurant
94	Portland	Oregon	15.0	609456	45.5230622	-122.6764816	3	Coffee Shop	Hotel	Brewery	Grocery Store
167	Tucson	Arizona	7.5	526116	32.2217429	-110.926479	3	Coffee Shop	Pizza Place	Bar	Park
40	Sacramento	California	17.2	479686	38.5815719	-121.4943996	3	American Restaurant	Coffee Shop	Mexican Restaurant	Hotel
441	Long Beach	California	1.5	469428	33.7700504	-118.1937395	3	Hotel	Mexican Restaurant	Coffee Shop	Park
801	Virginia Beach	Virginia	5.1	448479	36.8529263	-75.977985	3	Beach	Hotel	Seafood Restaurant	American Restaurant
348	Oakland	California	1.3	406253	37.8043637	-122.2711137	3	Coffee Shop	Bar	Brewery	Beer Garden

Conclusion



- » Cities with common denominators should also imply similar lifestyles among residents. Moreover, the idea should coincide with a probability of success for a given business.
 - In the result list, a coffee shop is one of the most common venue.
 - A coffee shop can be interpreted as being associated with the new millennial-pop culture that is more eager to try new things and, also, more health conscious than the previous generations while willing to splurge on dining experiences.
 - As a result, the result list of 14 cities should provide a feasible scope for the vegan fine-dining restaurant, Vega-Hype, to open up new locations.