



# CLUSTERING UNIVERSITIES NEIGHBORHOODS

A KNN analyses

# OBJECTIVE

Analyze universities' neighborhoods (from USA) using foursquare data.

Classify universities based on its surrounds.

This could help:

- Young people select a university with a neighborhood with the qualities that they prefer;
- University administrators could improve their decision making;
- Entrepreneurs seeking to invest in a business related with college audience.

# DATA

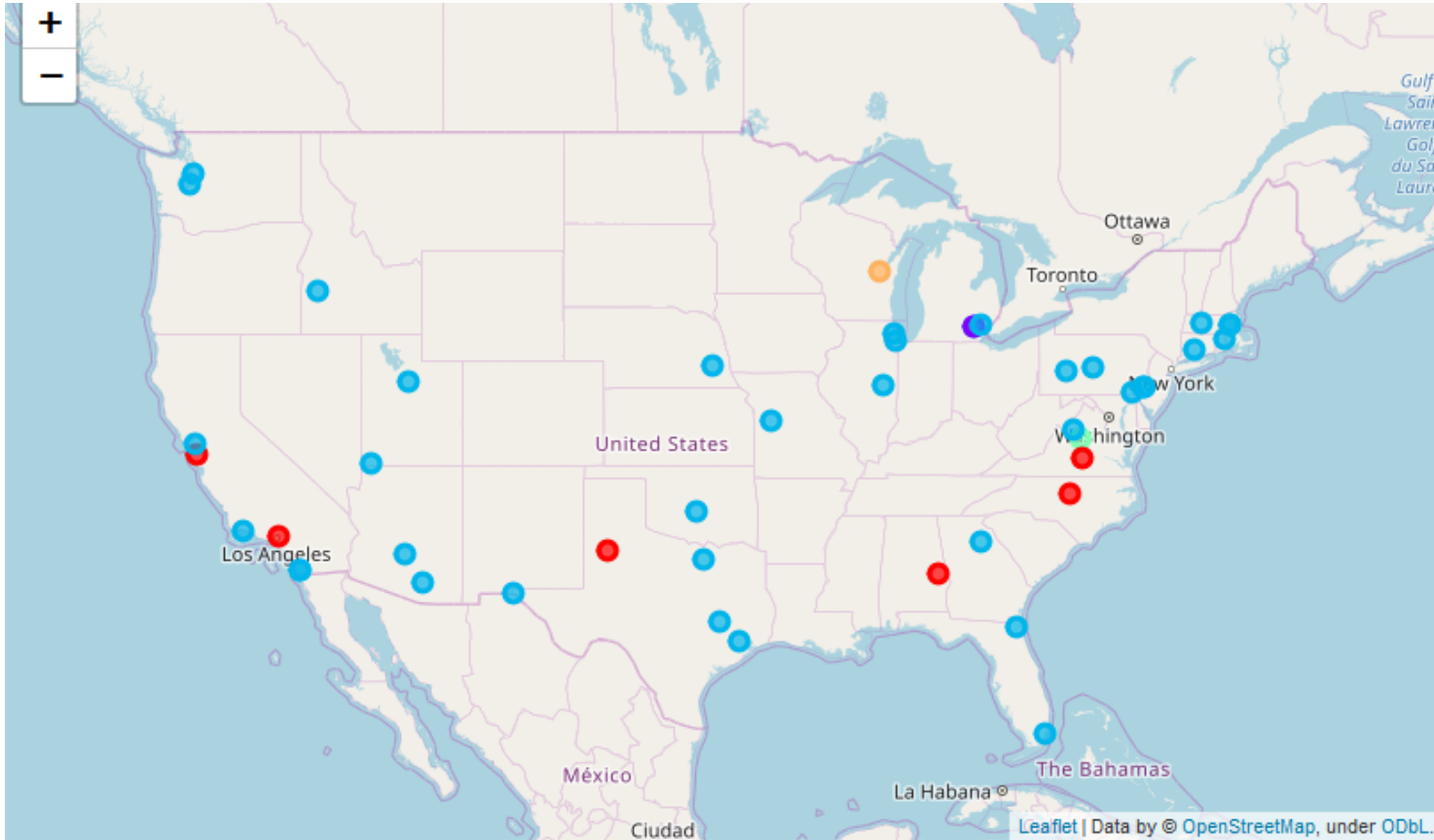
List of universities with latitude and longitude data (49 universities)

Place Name	Latitude	Longitude
Utah Valley University, Orem, UT, USA	40.277779	-111.713890
Indiana University of Pennsylvania, Indiana, PA, the USA	40.617001	-79.160004
University of Illinois, Champaign - Urbana, Illinois, the US	40.110558	-88.228333
Massachusetts Institute of Technology, Cambridge, MA, USA	42.360001	-71.092003
Stanford University, CA, USA	37.428230	-122.168861
Harvard University, Cambridge, MA, USA	42.374443	-71.116943
California Institute of Technology, Pasadena, CA, USA	34.138000	-118.125000
University of Chicago, Chicago, IL, USA	41.789722	-87.599724
Eastern University, St Davids, PA, USA	40.051529	-75.370407
University of Michigan, Ann Arbor, MI, USA	42.278046	-83.738220
The University of Massachusetts, Amherst, MA, USA	42.391155	-72.526711
Penn State University, State College, PA, USA	40.798214	-77.859909
Lawrence University, Appleton, WI, USA	44.260445	-88.397713



Foursquare data about universities surrounds

	university	latitude	longitude	Cluster Labels	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
0	Utah Valley University, Orem, UT, USA	40.277779	-111.713890	2	Fast Food Restaurant	Hotel	Juice Bar	College Library	College Gym	Bus Station	Baseball Stadium
1	Indiana University of Pennsylvania, Indiana, P...	40.617001	-79.160004	2	Fast Food Restaurant	Coffee Shop	Food Service	American Restaurant	Video Store	Sandwich Place	Pizza Place
2	University of Illinois, Champaign - Urbana, Illi...	40.110558	-88.228333	2	Coffee Shop	Chinese Restaurant	Sandwich Place	Mexican Restaurant	Pizza Place	Korean Restaurant	Bagel Shop
3	Massachusetts Institute of Technology, Cambrid...	42.360001	-71.092003	2	Coffee Shop	Pizza Place	Park	College Gym	Burrito Place	Greek Restaurant	Soccer Field
4	Stanford University, CA, USA	37.428230	-122.168861	0	Coffee Shop	Fountain	Sculpture Garden	Café	Monument / Landmark	Sandwich Place	Food Court



# CLUSTER ANALYSES

- We use K-Nearest Neighbors to cluster the universities neighborhoods.
- The data was clustered in 5 groups.
- 77% of the universities were classified on the same group.
- This indicates the existence of a university neighborhood profile.
- In the next slide we analyze this group

# COLLEGE CITY

- A lot of quick meals shops (pizza, coffee, bagel) and college related entertainment.
- 77% of the universities fall on this category.
- This number is considerable high, means that universities could favorable certain business.
- Therefore, the other categories might need business or could be a unique factor to differentiate the university from others.

	latitude	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	40.277779	Hotel	Juice Bar	College Library	College Gym	Bus Station	Baseball Stadium	Theater	Breakfast Spot	Video Store
1	40.617001	Coffee Shop	Food Service	American Restaurant	Video Store	Sandwich Place	Pizza Place	Mediterranean Restaurant	Farmers Market	Falafel Restaurant
2	40.110558	Chinese Restaurant	Sandwich Place	Mexican Restaurant	Pizza Place	Korean Restaurant	Bagel Shop	Clothing Store	Fast Food Restaurant	Café
3	42.360001	Pizza Place	Park	College Gym	Burrito Place	Greek Restaurant	Soccer Field	Concert Hall	Food Truck	New American Restaurant
5	42.374443	Pizza Place	Gastropub	Bookstore	Coffee Shop	American Restaurant	Mexican Restaurant	Vegetarian / Vegan Restaurant	Burger Joint	Ice Cream Shop
7	41.789722	Coffee Shop	Bookstore	Sandwich Place	History Museum	Food Truck	College Cafeteria	Student Center	Mexican Restaurant	Frozen Yogurt Shop
8	40.051529	College Quad	Café	Dance Studio	Yoga Studio	Discount Store	Flower Shop	Fast Food Restaurant	Farmers Market	Falafel Restaurant
9	42.278046	Bar	Sandwich Place	Pizza Place	Noodle House	American Restaurant	Clothing Store	Bakery	Ice Cream Shop	Burger Joint
10	42.391155	Bus Stop	Coffee Shop	College Auditorium	College Cafeteria	Café	Snack Place	College Arts Building	Pub	Sandwich Place
11	40.798214	Sandwich Place	Clothing Store	Pizza Place	American Restaurant	Coffee Shop	Ice Cream Shop	Café	Salon / Barbershop	Burger Joint
13	41.421440	Coffee Shop	Café	Trail	Flower Shop	Fast Food Restaurant	Farmers Market	Falafel Restaurant	Empanada Restaurant	Electronics Store
15	40.034901	Pool	Juice Bar	College Cafeteria	College Basketball Court	Coffee Shop	Disc Golf	Fast Food Restaurant	Farmers Market	Falafel Restaurant
16	43.603600	Juice Bar	Sandwich Place	Bagel Shop	Performing Arts Venue	Pizza Place	Gastropub	Coffee Shop	Breakfast Spot	College Library

A map of the Eastern United States, including parts of New York, Pennsylvania, New Jersey, Delaware, Maryland, Virginia, North Carolina, and South Carolina. Blue dots are placed on various cities, likely representing university neighborhoods. The dots are located in areas like New York City, Philadelphia, Washington D.C., and the Southeast. A vertical blue line is positioned to the left of the text blocks.

# CONCLUSION

- Most university neighborhoods are similar.
- Profiles that do not fit the usual “college city” may present a business opportunity.
- And, could be a differential factor for attract certain student profile.