



# **RECOMMENDING VENUES TO NEW YORK CITY VISITORS**

# POTENTIAL INTERESTING VENUES FOR VISITORS IS IMPORTANT TO FIRST TIME VISITORS AND TOURIST COMPANIES

- Predicting clients interest is valuable to travel companies
- Generally, advertisers dwell on this kind of information. It allows targeted marketing and utilization of resources.
- Such value is when.
- Predicting visitors' interest venues can help investors to set up new ventures based on demand/locations or readily available market in specific
- This opens room for more sophisticated marketing analytics with machine learning tools

# DATA ACQUISITION

- Data acquisition and cleaning
- New York City Theaters data from New York Open Data portal
- In total, 117 rows and 8 features in the raw dataset.
- Duplicate, highly similar or highly correlated features were dropped.
- Cleaned data contains 5 features.

# KMEANS CLUSTERING

----45th Street Theater----

	venue	freq
0	Burger Joint	0.10
1	Bakery	0.10
2	Resort	0.05
3	Indie Theater	0.05
4	Chinese Restaurant	0.05

----47th Street Theater----

	venue	freq
0	Jazz Club	0.05
1	Resort	0.05
2	Coffee Shop	0.05
3	Performing Arts Venue	0.05
4	Sushi Restaurant	0.05

----59E59----

	venue	freq
0	Hotel	0.10
1	Spa	0.10
2	Indie Theater	0.05
3	French Restaurant	0.05
4	Food Truck	0.05

----August Wilson Theatre----

	venue	freq
0	Sandwich Place	0.05
1	Restaurant	0.05
2	Gym	0.05
3	Food Truck	0.05
4	Bar	0.05

----Barrow Street Theatre----

	venue	freq
0	Italian Restaurant	0.15
1	Cosmetics Shop	0.10
2	Pizza Place	0.10
3	Cheese Shop	0.10
4	Sandwich Place	0.05

----Beacon Theatre----

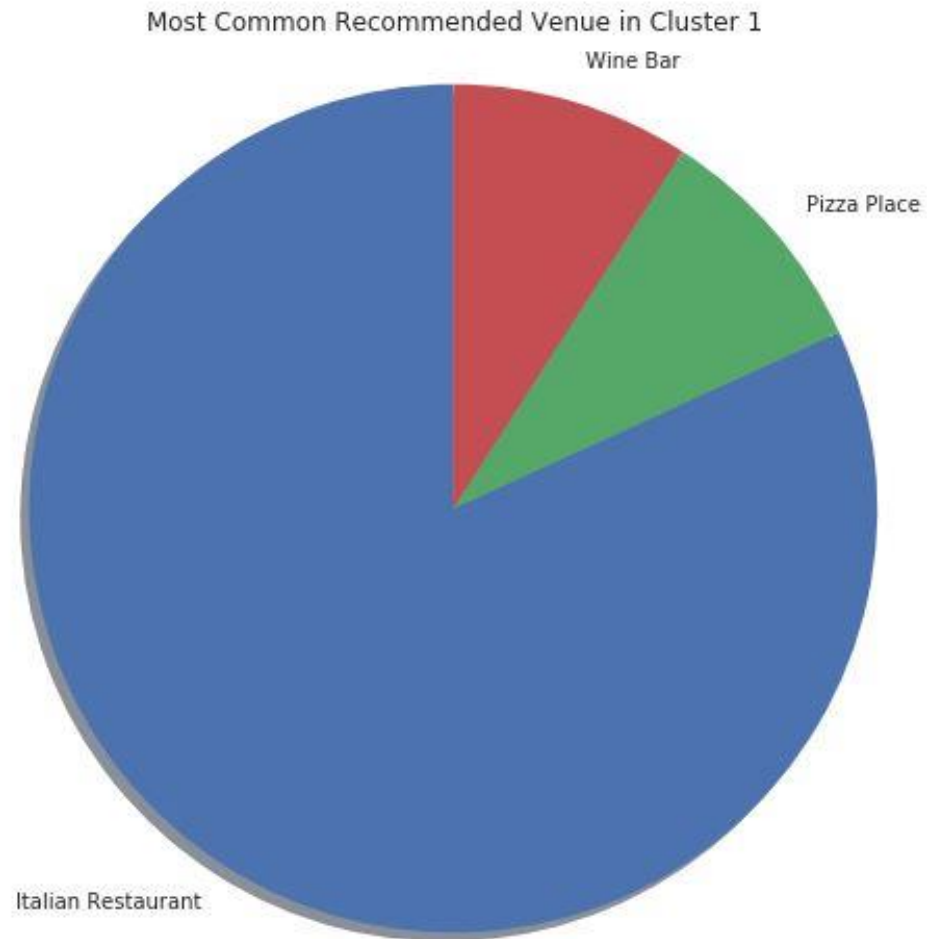
	venue	freq
0	Bakery	0.15
1	Italian Restaurant	0.10
2	Yoga Studio	0.05
3	Thai Restaurant	0.05
4	Israeli Restaurant	0.05



# MOST COMMON VENUES CLUSTER I

	Theater	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	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
12	Barrow Street Theatre	0	Italian Restaurant	Cosmetics Shop	Pizza Place	Cheese Shop	New American Restaurant	Candy Store	Seafood Restaurant	French Restaurant	Sushi Restaurant	Sandwich Place
23	Cherry Lane Theatre	0	Pizza Place	American Restaurant	Cheese Shop	Japanese Restaurant	Italian Restaurant	Beer Store	New American Restaurant	Sandwich Place	Seafood Restaurant	Food & Drink Shop
25	Connelly Theater	0	Italian Restaurant	Moroccan Restaurant	Gift Shop	Bookstore	Garden	Furniture / Home Store	Tea Room	Breakfast Spot	Thai Restaurant	Southern / Soul Food Restaurant
40	Here Theater	0	Italian Restaurant	Gym	Sushi Restaurant	Bakery	American Restaurant	Coffee Shop	Seafood Restaurant	Optical Shop	Grocery Store	Wine Bar
43	Jane Street Theatre	0	Italian Restaurant	Bistro	Hotel	New American Restaurant	Optical Shop	Park	Playground	Clothing Store	Roof Deck	Shoe Store
46	Kraime Theater	0	Italian Restaurant	Hotel	Japanese Restaurant	BBQ Joint	Gift Shop	Market	Flower Shop	Pizza Place	Ice Cream Shop	Coffee Shop
47	La Mama Experimental Theatre	0	Italian Restaurant	Hotel	Japanese Restaurant	Thai Restaurant	Gym	Gift Shop	Market	Flower Shop	New American Restaurant	Coffee Shop

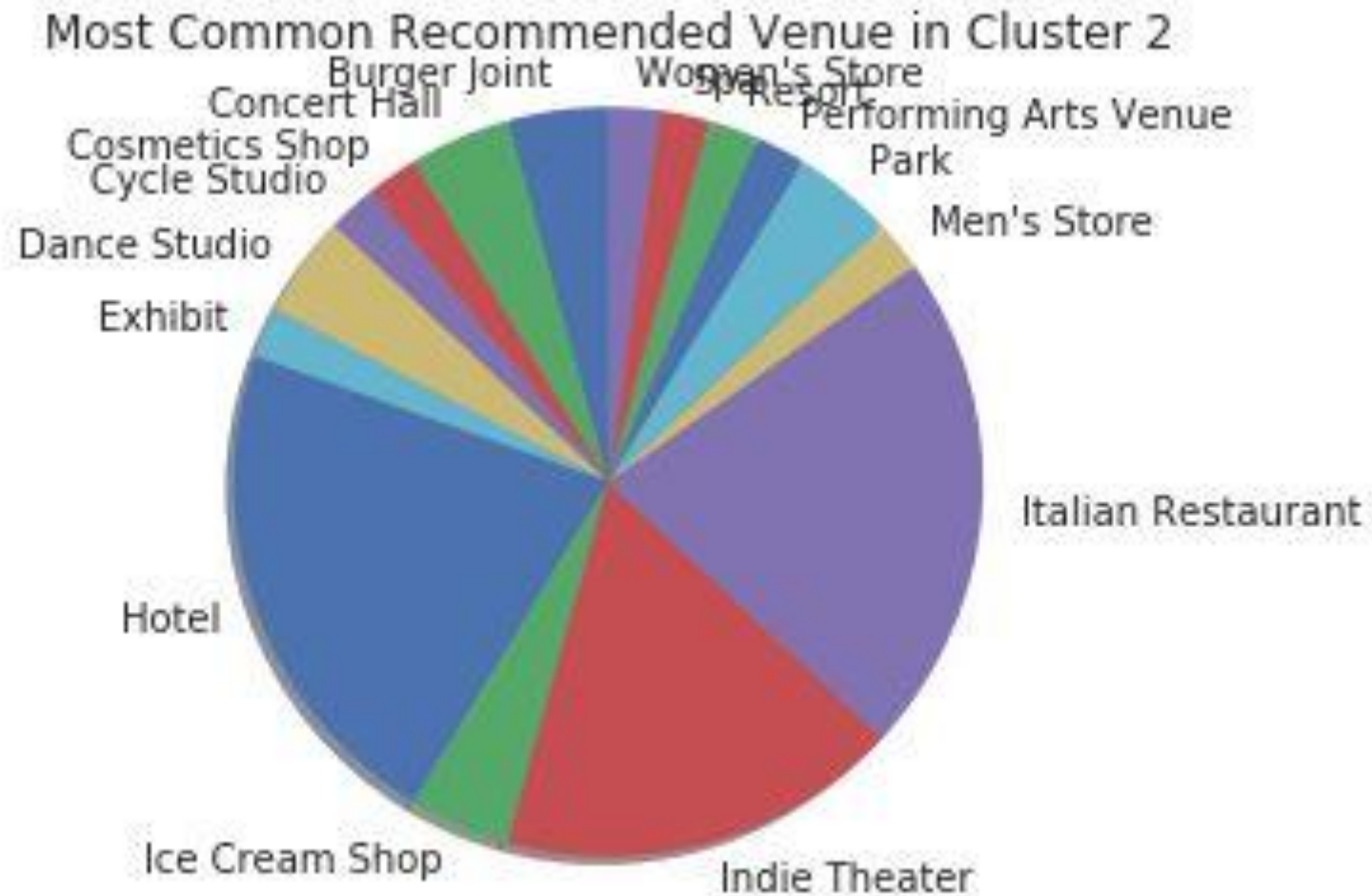
# MOST COMMON VENUES CLUSTER I PIE CHART



# MOST COMMON VENUES CLUSTER 2

	Theater	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	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
0	45th Street Theater	1	Burger Joint	Bakery	Cosmetics Shop	Sushi Restaurant	Ice Cream Shop	Hotel	Japanese Restaurant	Jazz Club	Juice Bar	Dance Studio
1	47th Street Theater	1	Italian Restaurant	Jazz Club	Sushi Restaurant	Resort	Coffee Shop	Vegetarian / Vegan Restaurant	Performing Arts Venue	Dance Studio	American Restaurant	Ice Cream Shop
2	59E59	1	Spa	Hotel	French Restaurant	Shoe Store	Food Truck	Mediterranean Restaurant	Steakhouse	Salon / Barbershop	Boutique	Liquor Store
4	Al Hirschfeld Theater	1	Dance Studio	Jazz Club	Bakery	Resort	Performing Arts Venue	Indie Theater	Burger Joint	Japanese Restaurant	Ice Cream Shop	American Restaurant
6	American Airlines Theatre	1	Italian Restaurant	Taco Place	Hotel	Music Store	Exhibit	Comic Shop	Cajun / Creole Restaurant	Burger Joint	Indie Theater	Asian Restaurant
10	Atlantic Theatre	1	Ice Cream Shop	American Restaurant	Cupcake Shop	Italian Restaurant	Poke Place	Burger Joint	Shoe Repair	Speakeasy	Beer Bar	Bar
14	Belasco Theatre	1	Hotel	Coffee Shop	Italian Restaurant	Sushi Restaurant	Indian Restaurant	Grocery Store	Fast Food	Deli / Deli	Cuban	Plaza

# MOST COMMON VENUES CLUSTER 2 PIE CHART



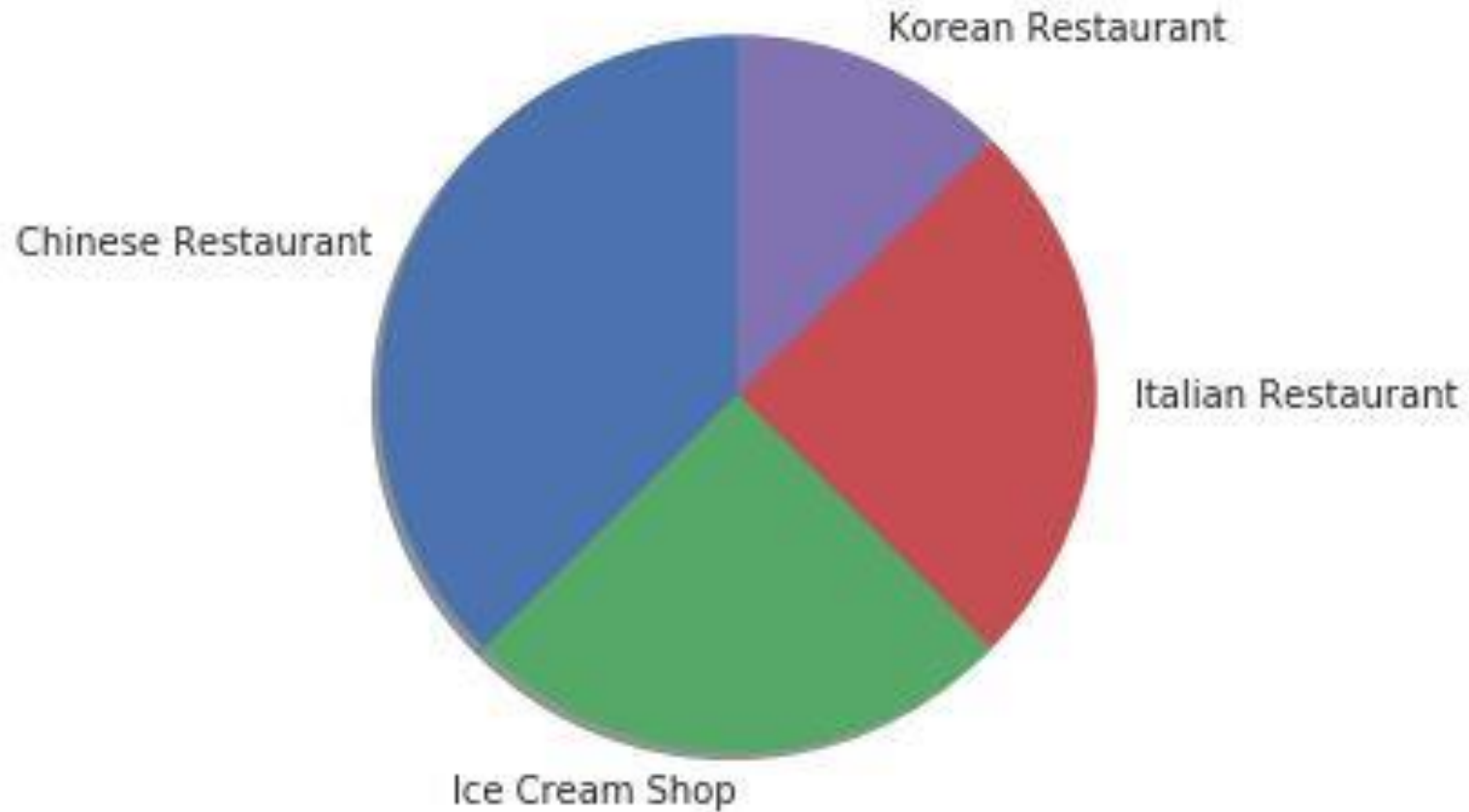


# MOST COMMON VENUES CLUSTER 3

	Theater	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	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
59	Mazer Theatre	2	Chinese Restaurant	Coffee Shop	Cocktail Bar	Organic Grocery	Mexican Restaurant	Gift Shop	Malay Restaurant	Grocery Store	French Restaurant	Gym / Fitness Center
71	Next Stage Theater	2	Italian Restaurant	Cocktail Bar	Bakery	Gastropub	Chinese Restaurant	Park	Ethiopian Restaurant	Gourmet Shop	Boutique	Mediterranean Restaurant
76	P.S.122 Performance Space	2	Korean Restaurant	Coffee Shop	Chinese Restaurant	Japanese Restaurant	Ice Cream Shop	Organic Grocery	Seafood Restaurant	Moroccan Restaurant	Food & Drink Shop	Gourmet Shop
78	Pearl Theatre	2	Ice Cream Shop	Japanese Restaurant	Chinese Restaurant	Seafood Restaurant	Beer Store	Jewelry Store	Korean Restaurant	Mexican Restaurant	Moroccan Restaurant	Organic Grocery
102	Theater For The New City	2	Chinese Restaurant	Korean Restaurant	Organic Grocery	Jewelry Store	Gourmet Shop	Beer Store	Coffee Shop	Moroccan Restaurant	Bakery	Mexican Restaurant
104	Theatre 80 St Marks	2	Ice Cream Shop	Japanese Restaurant	Chinese Restaurant	Seafood Restaurant	Beer Store	Jewelry Store	Korean Restaurant	Mexican Restaurant	Moroccan Restaurant	Organic Grocery
106	Under St. Marks	2	Chinese Restaurant	Seafood Restaurant	Japanese Restaurant	Art Gallery	Korean Restaurant	Caribbean Restaurant	Cocktail Bar	Coffee Shop	Organic Grocery	Beer Store
108	Village Theater	2	Italian Restaurant	Café	Gourmet Shop	Sushi Restaurant	American Restaurant	Beer Bar	Caribbean Restaurant	Chinese Restaurant	Cocktail Bar	Coffee Shop

# MOST COMMON VENUES CLUSTER 3 PIE CHART

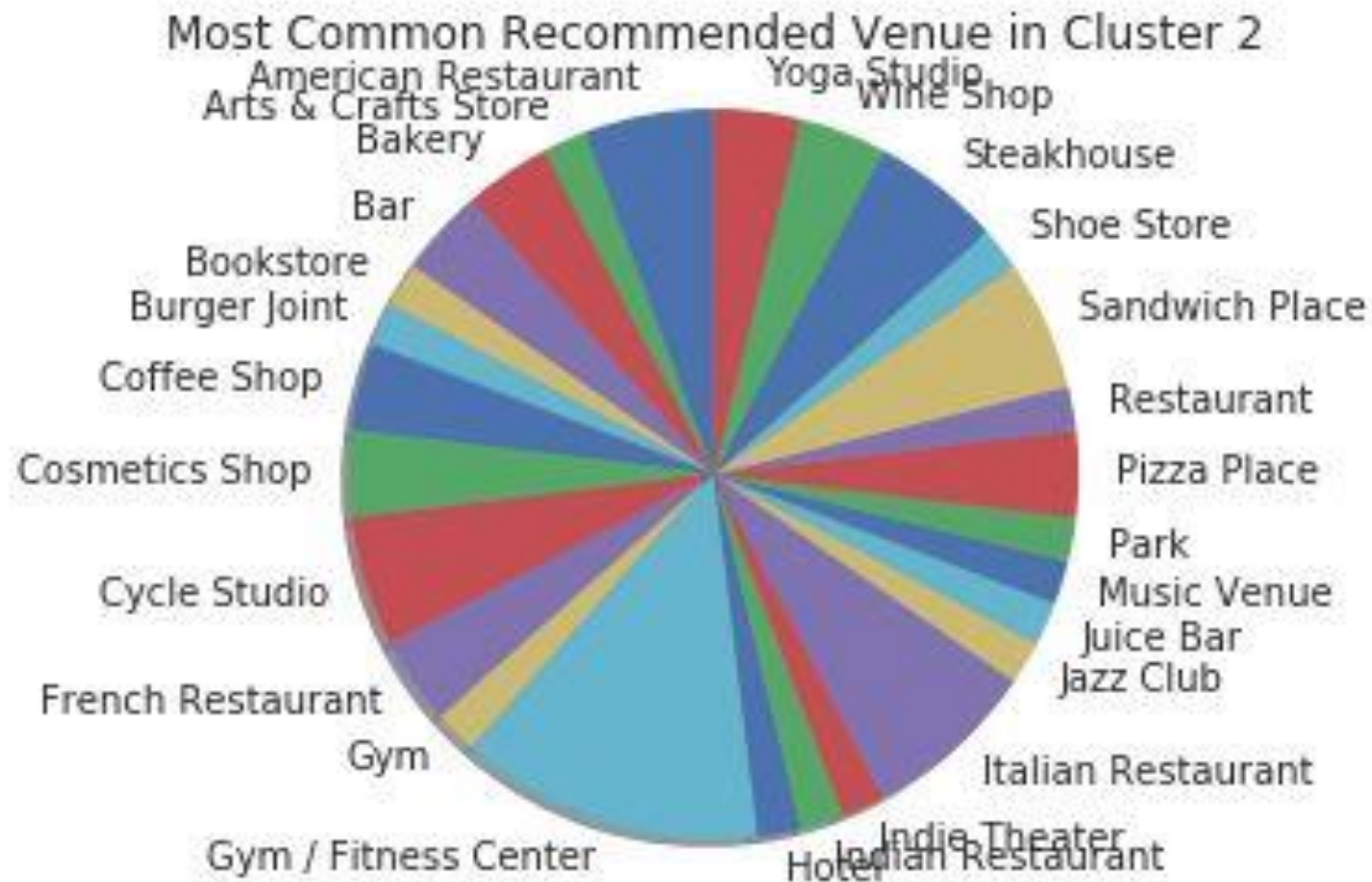
Most Common Recommended Venue in Cluster 2



# MOST COMMON VENUES CLUSTER 4

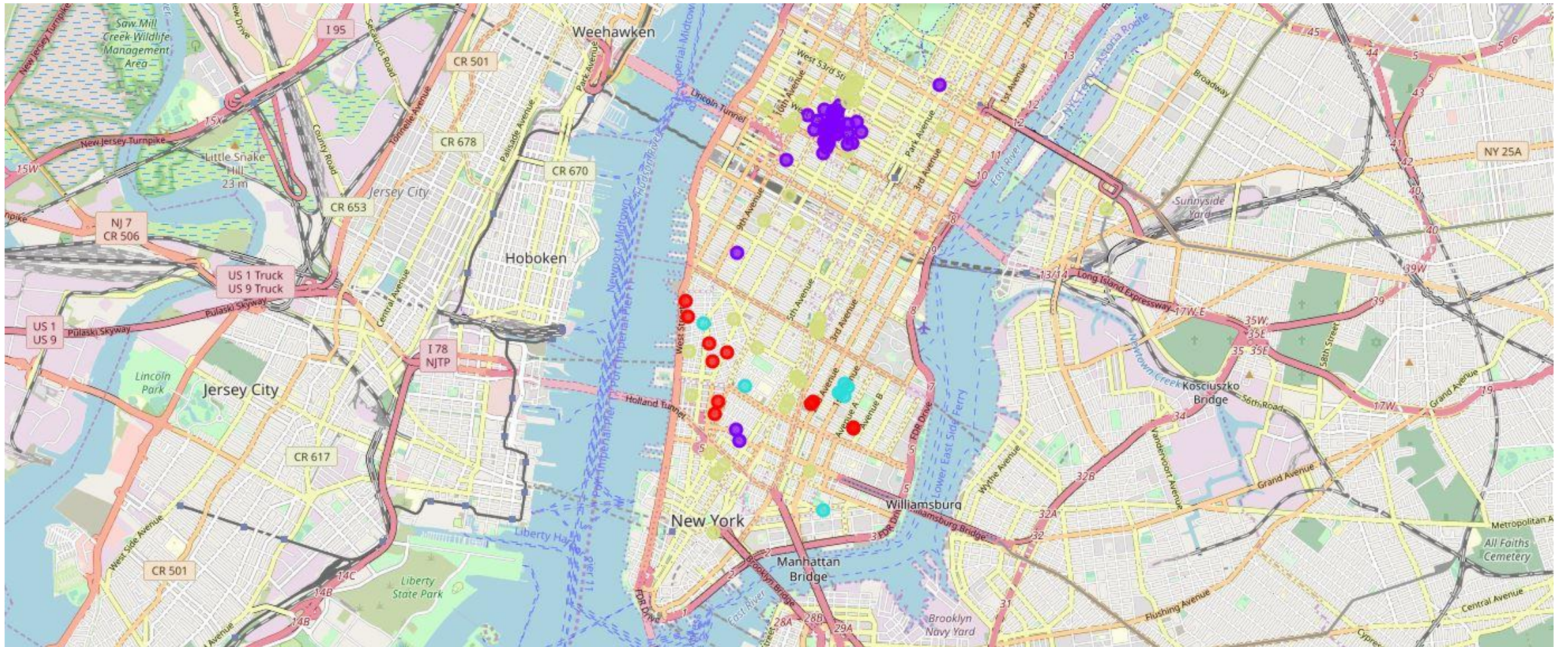
	Theater	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
3	Acorn Theater	3	Gym / Fitness Center	Pie Shop	Sandwich Place	Dive Bar	Gift Shop	French Restaurant	Steakhouse	New American Restaurant	Chinese Restaurant	Peruvian Restaurant
5	Ambassador Theatre	3	Italian Restaurant	Vegetarian / Vegan Restaurant	Coffee Shop	Restaurant	Mexican Restaurant	Bar	Gym	Food Truck	Pizza Place	Hotel
7	Apollo Theater	3	Arts & Crafts Store	Yoga Studio	Gym / Fitness Center	Pizza Place	Indian Restaurant	Caribbean Restaurant	Shoe Store	Spanish Restaurant	French Restaurant	Sporting Goods Shop
8	Arclight Theatre	3	Juice Bar	Italian Restaurant	Wine Bar	Coffee Shop	Gym / Fitness Center	Spa	Bakery	Bookstore	Church	French Restaurant
9	Astor Place Theatre	3	Cycle Studio	Gym	Bagel Shop	Cosmetics Shop	Coffee Shop	Ramen Restaurant	Salad Place	Music Venue	Soba Restaurant	Miscellaneous Shop
11	August Wilson Theatre	3	Bar	Mexican Restaurant	Restaurant	Steakhouse	Grocery Store	Gym	Ramen Restaurant	Sandwich Place	Karaoke Bar	Food Truck
13	Beacon Theatre	3	Bakery	Italian Restaurant	Salad Place	Chinese Restaurant	Cocktail Bar	Coffee Shop	Concert Hall	Cultural Center	Dance Studio	Dessert Shop

# MOST COMMON VENUES CLUSTER 4 PIE CHART





# NEW YORK MOST COMMON VENUES CLUSTERED





## RESULTS – COMMON VENUES FOR RECOMMENDING



- Most common venues around theaters were found to be
  1. Italian Restaurants
  2. Chinese Restaurants
  3. Gym/Fitness Centers

# CONCLUSION AND FUTURE DIRECTIONS

- Built useful models to predict whether and how much a visitor is willing to spend in a venue
- Accuracy of the models has room for improvement.
- Capture more of visitors' individual traits.
- Ideas include: ○ Physical data (movement.) ○ Financial data



# THANK YOU

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