

# USING DATA SCIENCE TO FIND THE IDEAL NEW JERSEY SHORE TOWN FOR A NEW SUSTAINABLE MICROBREWERY BUSINESS

SUBMITTED AS THE CAPSTONE PROJECT  
FOR THE IBM DATA SCIENCE CERTIFICATE

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# INTRODUCTION

## IBM DATA SCIENCE CAPSTONE PROJECT

1. PYTHON CODE (GITHUB):

[https://github.com/maurnew/coursera\\_capstone/blob/master/MN's%20IBM%20CAPSTONE%20PROJECT%20CODE.ipynb](https://github.com/maurnew/coursera_capstone/blob/master/MN's%20IBM%20CAPSTONE%20PROJECT%20CODE.ipynb)

2. REPORT (PDF):

[https://github.com/maurnew/coursera\\_capstone/blob/master/IBM%20CAPSTONE%20PROJECT%20REPORT.pdf](https://github.com/maurnew/coursera_capstone/blob/master/IBM%20CAPSTONE%20PROJECT%20REPORT.pdf)

3. PRESENTATION (PPT)

# BACKGROUND

- MICROBREWERIES ARE INCREASINGLY POPULAR
- NEW JERSEY COAST – LOCALS AND TOURISTS
- ENVIRONMENTAL SUSTAINABILITY IS IMPORTANT

# PROBLEM & INTEREST

- PROBLEM: FIND AN IDEAL NEW JERSEY COAST TOWN TO OPEN A SUSTAINABLE MICROBREWERY
- SOLUTION: USE DATA SCIENCE TO COMPARE THREE TOWNS:
  - ASBURY PARK
  - ATLANTIC CITY
  - CAPE MAY

# DATA

- DATA SOURCES:
  - FOURSQUARE: [HTTPS://DEVELOPER.FOURSQUARE.COM/](https://developer.foursquare.com/)
  - SUSTAINABLE JERSEY CERTIFIED MUNICIPALITIES DATASET: [HTTP://NJOBGIS-  
NEWJERSEY.OPENDATA.ARCGIS.COM/DATASETS/SUSTAINABLE-JERSEY-CERTIFIED-MUNICIPALITIES](http://NJOBGIS-NEWJERSEY.OPENDATA.ARCGIS.COM/DATASETS/SUSTAINABLE-JERSEY-CERTIFIED-MUNICIPALITIES)
- CLEANED DATA
- SELECTED FEATURES

# METHODOLOGY

## FOURSQUARE DATA

- SETUP
- IDENTIFIED SIMILAR BUSINESSES IN EACH TOWN
- IDENTIFIED POPULAR VENUES IN EACH TOWN
- IDENTIFIED TRENDING VENUES IN EACH TOWN

# METHODOLOGY

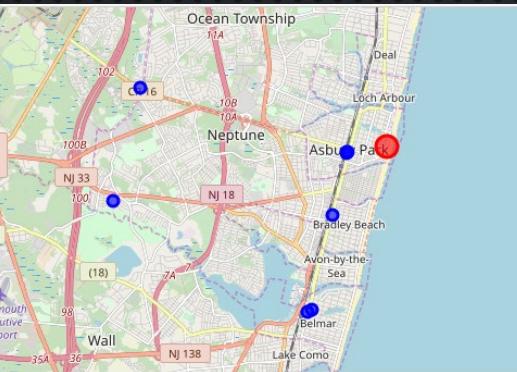
## SUSTAINABLE JERSEY CERTIFIED MUNICIPALITIES DATASET

- SETUP
- DATA CLEANUP
- ANALYZED COUNTY DATA: SIZE, POPULATION, POPULATION DENSITY
- ANALYZED CITY DATA: SIZE, POPULATION, POPULATION DENSITY
- ANALYZED SUSTAINABILITY AWARD LEVEL: SILVER OR BRONZE

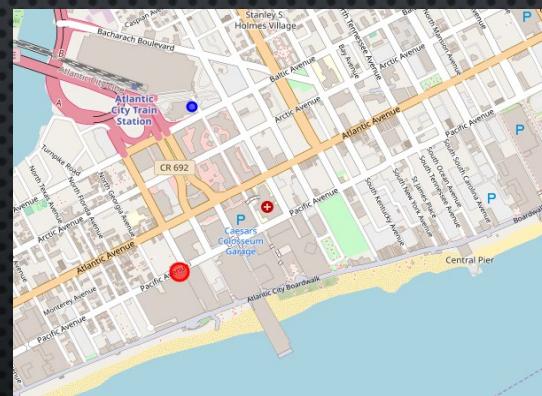
# RESULTS

## FOURSQUARE DATA: SIMILAR BUSINESSES IN EACH TOWN

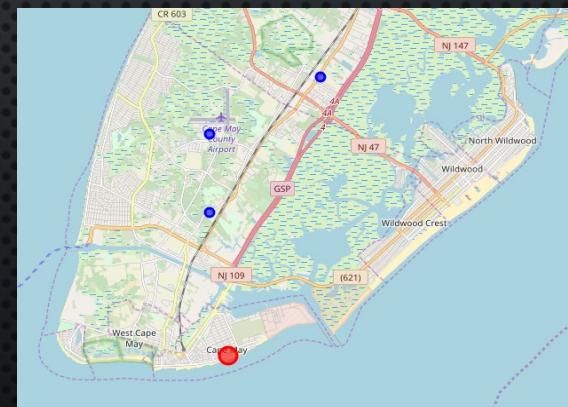
	name	categories	address	cc	city
0	Asbury Park Brewery	Distillery	810 Sewall Ave	US	Asbury Park
1	Asbury Park Brewery	Beer Garden	810 Sewall Ave	US	Asbury Park
2	Asbury Park Brewery	Brewery	810 Sewall Ave	US	Asbury Park
3	Beach Haus Brewery	Brewery	803 Main St	US	Belmar
4	Bradley Brew Project	Brewery	714 Main St	US	Bradley Beach
5	East Coast Brewery	Brewery	801 Main St	US	Belmar
6	Brown Jug Brewery	Brewery	NaN	US	Tinton Falls
7	meyer brewery	Brewery	NaN	US	Neptune Township



	name	categories	address	cc	city
0	Tun Tavern Restaurant & Brewery	Brewery	2 Convention Blvd	US	Atlantic City



	name	categories	address	cc	city
0	Cold Spring Brewery	Brewery	735 Seashore Rd	US	Cape May
1	7 Mile Brewery	Brewery	3156 Route 9 Soute	US	Rio Grande
2	Cape May Brewing Company	Brewery	1288 Hornet Rd	US	Rio Grande



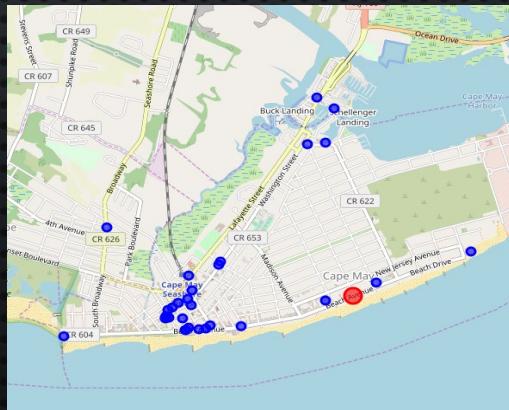
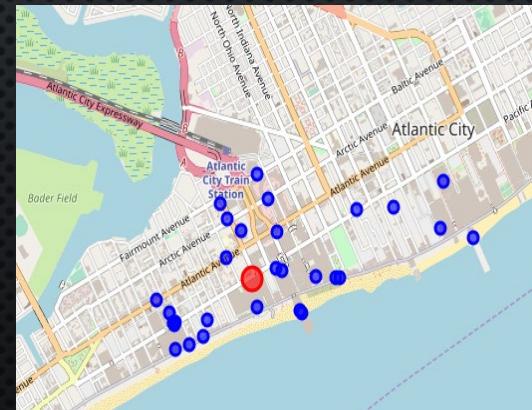
# RESULTS

## FOURSQUARE DATA: POPULAR VENUES IN EACH TOWN

	name	categories	address	cc	city
0	Asbury Park Boardwalk	Beach	1100 Ocean Ave	US	Asbury Park
1	The Stone Pony	Rock Club	913 Ocean Ave	US	Asbury Park
2	Silverball Museum	Arcade	1000 Ocean Ave	US	Asbury Park
3	Porta Pizzeria	Pizza Place	911 Kingsley St	US	Asbury Park
4	Asbury Park Beach	Beach	Ocean Avenue	US	Asbury Park
5	The Asbury Hotel	Hotel	210 5th Avenue	US	Asbury Park
6	Ocean Grove Boardwalk	Beach	Nan	US	Ocean Grove
7	Café Volan	Coffee Shop	510 Bangs Ave	US	Asbury Park
8	Asbury Park Convention Hall	Concert Hall	1300 Ocean Ave	US	Asbury Park
9	MOGO Korean Fusion Tacos	Korean Restaurant	850 Ocean Ave	US	Asbury Park

	name	categories	address	cc	city
0	Chef Vola's	Italian Restaurant	111 S Albion Pl	US	Atlantic City
1	White House Subs	Sandwich Place	2301 Arctic Ave	US	Atlantic City
2	Buddakan	Asian Restaurant	1 Atlantic Ocean	US	Atlantic City
3	Dock's Oyster House	Seafood Restaurant	2405 Atlantic Ave	US	Atlantic City
4	Ruth's Chris Steak House - Atlantic City, NJ	Steakhouse	2020 Atlantic Ave	US	Atlantic City
5	Angelo's Fairmount Tavern	Italian Restaurant	2300 Fairmount Ave	US	Atlantic City
6	Wet Willie's	Bar	The Quarter at Tropicana	US	Atlantic City
7	Bass Pro Shop	Sporting Goods Shop	30 N Christopher Columbus Blvd	US	Atlantic City
8	Gordon Ramsay Pub and Grill	Restaurant	2100 Pacific Ave	US	Atlantic City
9	Kelsey's	Lounge	1545 Pacific Ave	US	Atlantic City

	name	categories	address	cc	city
0	Peter Shields Inn & Restaurant	Restaurant	1301 Beach Ave	US	Cape May
1	Cape May Beach and Kite Shop	Beach	1218 NJ-109	US	Cape May
2	Cape May Peanut Butter Company	Coffee Shop	516 Carpenter Ln	US	Cape May
3	Washington St. Mall	Shopping Mall	401 Washington St	US	Cape May
4	Oyster Bay	American Restaurant	615 Lafayette St	US	Cape May
5	Coffee Tyme	Café	315 Beach Ave	US	Cape May
6	Congress Hall	Hotel	251 County Highway 604	US	Cape May
7	Washington Inn	American Restaurant	801 Washington St	US	Cape May
8	Brown Room Congress Hotel	Lounge	Perry St	US	Cape May
9	The Ebbitt Room	American Restaurant	25 Jackson St	US	Cape May



# RESULTS

FOURSQUARE DATA: TRENDING VENUES IN EACH TOWN

- NO DATA

# RESULTS

## SUSTAINABLE JERSEY CERTIFIED MUNICIPALITIES DATASET

- COUNTY DATA: SIZE, POPULATION, POPULATION DENSITY

COUNTY	SQUARE MILES
ATLANTIC	366.472246
MONMOUTH	218.181419
CAPE MAY	187.837991

COUNTY	POPULATION
MONMOUTH	302028
ATLANTIC	195499
CAPE MAY	58734

COUNTY	POPULATION DENSITY
MONMOUTH	52771
ATLANTIC	21051
CAPE MAY	7843

# RESULTS

## SUSTAINABLE JERSEY CERTIFIED MUNICIPALITIES DATASET

- CITY DATA: SIZE

CITY	SQUARE MILES
Hamilton Township	112.924090
Galloway Township	111.251374
Middle Township	82.710932
Upper Township	68.414485
Howell Township	61.170255
Middletown Township	43.538520
Buena Vista Township	41.574907
Hammonton	41.310832
Wall Township	31.700737
Marlboro Township	30.433504
Holmdel Township	18.064123
Atlantic City	15.905108
Ocean City	11.801411
Egg Harbor City	11.426255
Ocean Township	10.985099
Brigantine	10.704999
Woodbine Borough	8.018742
Pleasantville	7.262592
Eatontown Borough	5.890035
Somers Point	4.975879
Avalon Borough	4.967886
Linwood	4.380875
Little Silver Borough	3.180725
Cape May	2.882549
Sea Isle City	2.757348
Ventnor City	2.549335
North Wildwood	2.490038
Stone Harbor Borough	2.312428
Shrewsbury Borough	2.176598
Red Bank Borough	2.180315
Roosevelt Borough	1.947676
Margate City	1.632162
Asbury Park	1.524615
Keyport Borough	1.449759
Atlantic Highlands Borough	1.236279
Sea Bright Borough	1.221324
West Cape May Borough	1.182092
Highlands Borough	0.855989
Bradley Beach Borough	0.645866
Longport Borough	0.594037
Cape May Point Borough	0.300080

# RESULTS

## SUSTAINABLE JERSEY CERTIFIED MUNICIPALITIES DATASET

- CITY DATA: , POPULATION DENSITY

CITY	POPULATION DENSITY
Asbury Park	10803
Bradley Beach Borough	6716
Highlands Borough	5888
Red Bank Borough	5651
Keyport Borough	5028
Ventnor City	4193
Margate City	3898
Atlantic Highlands Borough	3565
Pleasantville	2789
Atlantic City	2488
Ocean Township	2486
Somers Point	2172
Eatontown Borough	2158
Little Silver Borough	1871
Shrewsbury Borough	1755
North Wildwood	1629
Linwood	1627
Middletown Township	1528
Longport Borough	1517
Marlboro Township	1321
Cape May	1252
Sea Bright Borough	1157
Ocean City	992
Cape May Point Borough	970
Holmdel Township	929
Brigantine	883
West Cape May Borough	868
Howell Township	835
Wall Township	825
Sea Isle City	769
Roosevelt Borough	455
Stone Harbor Borough	375
Egg Harbor City	373
Hammonton	358
Galloway Township	336
Woodbine Borough	309
Avalon Borough	269
Hamilton Township	235
Middle Township	229
Buena Vista Township	182
Upper Township	181

# RESULTS

## SUSTAINABLE JERSEY CERTIFIED MUNICIPALITIES DATASET

- CITY DATA: , POPULATION

CITY	POPULATION
Middletown Township	68522
Howell Township	51075
Marlboro Township	40191
Atlantic City	39558
Galloway Township	37349
Ocean Township	27291
Hamilton Township	26503
Wall Township	26164
Pleasantville	20249
Middle Township	18911
Holmdel Township	16773
Asbury Park	16116
Hammonton	14791
Eatontown Borough	12709
Upper Township	12373
Red Bank Borough	12206
Ocean City	11701
Somers Point	10795
Ventnor City	10650
Brigantine	9450
Buena Vista Township	7570
Keyport Borough	7240
Linwood	7092
Margate City	6354
Little Silver Borough	5950
Highlands Borough	5005
Atlantic Highlands Borough	4385
Bradley Beach Borough	4298
Egg Harbor City	4243
North Wildwood	4041
Shrewsbury Borough	3809
Cape May	3607
Woodbine Borough	2472
Sea Isle City	2114
Sea Bright Borough	1412
Avalon Borough	1334
West Cape May Borough	1024
Longport Borough	895
Roosevelt Borough	882
Stone Harbor Borough	866
Cape May Point Borough	291

# RESULTS

## SUSTAINABLE JERSEY CERTIFIED MUNICIPALITIES DATASET

- SUSTAINABILITY

SUSTAINABILITY AWARD	COUNTY	CITY
Silver	CAPE MAY	Stone Harbor Borough
Silver	CAPE MAY	Ocean City
Silver	CAPE MAY	Cape May
Silver	ATLANTIC	Hammonton
Silver	ATLANTIC	Galloway Township
Silver	ATLANTIC	Buena Vista Township
Bronze	MONMOUTH	Wall Township
Bronze	MONMOUTH	Shrewsbury Borough
Bronze	MONMOUTH	Sea Bright Borough
Bronze	MONMOUTH	Roosevelt Borough
Bronze	MONMOUTH	Red Bank Borough
Bronze	MONMOUTH	Ocean Township
Bronze	MONMOUTH	Middletown Township
Bronze	MONMOUTH	Marlboro Township
Bronze	MONMOUTH	Little Silver Borough
Bronze	MONMOUTH	Keyport Borough
Bronze	MONMOUTH	Howell Township
Bronze	MONMOUTH	Holmdel Township
Bronze	MONMOUTH	Highlands Borough
Bronze	MONMOUTH	Eatontown Borough
Bronze	MONMOUTH	Bradley Beach Borough
Bronze	MONMOUTH	Atlantic Highlands Borough
Bronze	MONMOUTH	Asbury Park
Bronze	CAPE MAY	Woodbine Borough
Bronze	CAPE MAY	West Cape May Borough
Bronze	CAPE MAY	Upper Township
Bronze	CAPE MAY	Sea Isle City
Bronze	CAPE MAY	North Wildwood
Bronze	CAPE MAY	Middle Township
Bronze	CAPE MAY	Cape May Point Borough
Bronze	CAPE MAY	Avalon Borough
Bronze	ATLANTIC	Ventnor City
Bronze	ATLANTIC	Somers Point
Bronze	ATLANTIC	Pleasantville
Bronze	ATLANTIC	Margate City
Bronze	ATLANTIC	Longport Borough
Bronze	ATLANTIC	Linwood
Bronze	ATLANTIC	Hamilton Township
Bronze	ATLANTIC	Egg Harbor City
Bronze	ATLANTIC	Brigantine
Bronze	ATLANTIC	Atlantic City

# DISCUSSION

## FOURSQUARE DATA: SIMILAR BUSINESSES IN EACH TOWN

- OBSERVATIONS
  - ASBURY PARK HAS 6 BREWERIES – THE MOST COMPETITION
  - CAPE MAY HAS 3 BREWERIES
  - ATLANTIC CITY HAS 1 BREWERIES – THE LEAST COMPETITION

# DISCUSSION

## FOURSQUARE DATA: POPULAR VENUES IN EACH TOWN

- OBSERVATIONS
  - ASBURY PARK: 3 BEACHES, MUSIC VENUES
  - CAPE MAY: 1 BEACH, VARIED VENUES
  - ATLANTIC CITY: RESTAURANTS

# DISCUSSION

## FOURSQUARE DATA: POPULAR VENUES IN EACH TOWN

- OBSERVATIONS
  - ASBURY PARK: 3 BEACHES, MUSIC VENUES
  - CAPE MAY: 1 BEACH, VARIED VENUES
  - ATLANTIC CITY: RESTAURANTS

# DISCUSSION

FOURSQUARE DATA: TRENDING VENUES IN EACH TOWN

- NO DATA!

# DISCUSSION

## SUSTAINABLE JERSEY CERTIFIED MUNICIPALITIES DATASET

- COUNTY DATA
  - LARGEST IN SIZE: MONMOUTH COUNTY (ASBURY PARK)
  - LARGEST POPULATION: MONMOUTH COUNTY (ASBURY PARK)
  - LARGEST POPULATION DENSITY: MONMOUTH COUNTY (ASBURY PARK)

# DISCUSSION

## SUSTAINABLE JERSEY CERTIFIED MUNICIPALITIES DATASET

- CITY DATA
  - LARGEST IN SIZE: ATLANTIC CITY
  - LARGEST POPULATION: ATLANTIC CITY
  - LARGEST POPULATION DENSITY: ASBURY PARK

# DISCUSSION

## SUSTAINABLE JERSEY CERTIFIED MUNICIPALITIES DATASET

- SUSTAINABILITY DATA
  - SILVER AWARD: CAPE MAY
  - BRONZE AWARD: ASBURY PARK, ATLANTIC CITY

# RECOMMENDATIONS

## BEST TOWN FOR A NEW SUSTAINABLE CRAFT BREWERY

1. ASBURY PARK: LARGE POPULATION, FOOT TRAFFIC, OTHER BREWERIES (POSSIBLE BREWERY DESTINATION)
2. ATLANTIC CITY: LARGE POPULATION, LARGE SIZE, MINIMAL COMPETITION
3. CAPE MAY: PROBABLY TOO SLEEPY

# CONCLUSIONS

I WAS ABLE TO SOLVE THE PROBLEM OF IDENTIFYING THE BEST BUSINESS LOCATION, USING DATA SCIENCE METHODS. THIS WILL ALLOW FOR DATA-DRIVEN DECISION-MAKING IN THIS NEW BUSINESS ENDEAVOR.