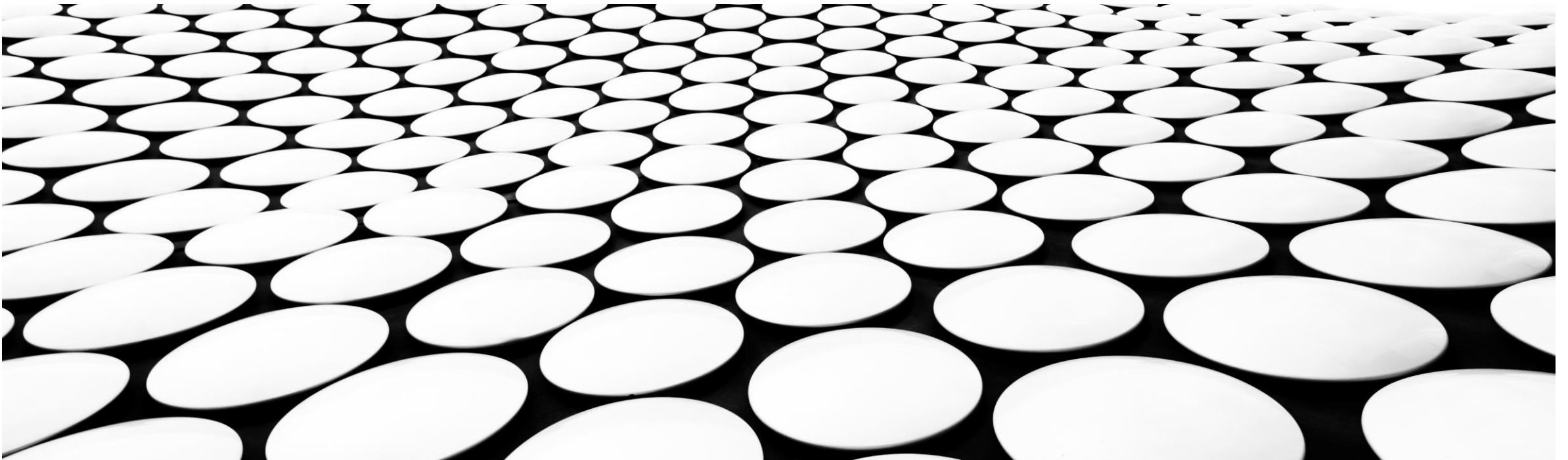# BEST LOCATION FOR NEW GYM IN POUGHKEEPSIE, NY USA

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FINDING THE BEST LOCATION FOR A NEW GYM IN POUGHKEEPSIE

Introduction: Business Problem

In this project we will try to find an optimal location for a gym/fitness center. Specifically, this report will be targeted to stakeholders interested in opening a **Gym / Fitness Center** in **Pougkeepsie, NY**, USA.

Gyms and Fitness Centers are important for people's health, both physical and mental well-being of all age groups. Gyms need to convenient for members to travel to where they should not need to drive over 7 miles to get to the gym.

While there are not many fitness centers in Poughkeepsie, we will try to detect **locations where members do not need to drive over 7 miles to the gym.** We are also particularly interested in **areas with no fitness centers in the vicinity**. We would also prefer locations **as close to the city center,** and located on major roadways. The candidate gym should not have a gym within one mile of an existing gym.

We will use our data science powers to generate a few most promising locations based on this criteria. Advantages of each area will then be clearly expressed so that best possible final location can be chosen by stakeholders.

FINDING THE BEST LOCATION FOR A NEW GYM IN POUGHKEEPSIE

Data

- Based on definition of our problem, factors that will influence our decision are:
  - number of existing fitness centers in each zipcode
  - number of and distance to fitness centers in the neighborhood, if any
  - distance of neighborhood from city center within 7 miles
  - location should not be within 1 mile of an existing gym.
  - location of major roads and traffic patterns
  - Availability of empty space for the gym
- I will use zipcodes, centered around the city center, to define our neighborhoods.
- The following data sources will be needed to extract/generate the required information:
  - Number of gym/fitness centers and their location in every neighborhood will be obtained using **Foursquare API**

FINDING THE BEST LOCATION FOR A NEW GYM IN POUGHKEEPSIE

Data Acquisition of Neighborhoods using Foursquare

A dataframe containing the 4 zipcode neighborhoods in Poughkeepsie is hardcode defined by looking up information on wikipedias and https://www.unitedstateszipcodes.org/. Thru this in data, I created the dataframe for the Poughkeepsie 4 neighborhoods.

	Zipcode	Town	Neighbourhood	Latitude	Longitude	Population
0	12601	Poughkeepsie	Western	41.7004	-73.923912	43398
1	12602	Poughkeepsie	City of Poughkeepsie	41.7004	-73.921000	30398
2	12603	Poughkeepsie	Arlington	41.6959	-73.896800	42810
3	12604	Poughkeepsie	Vassar	41.6862	-73.897300	584

FINDING THE BEST LOCATION FOR A NEW GYM IN POUGHKEEPSIE

Map of the 4 Poughkeepsie Neighborhoods

1. Western Poughkeepsie (furthest left)

2. City of Poughkeepsie (2nd from left)

3. Arlington (upper center)

4. Vassar (bottom center)
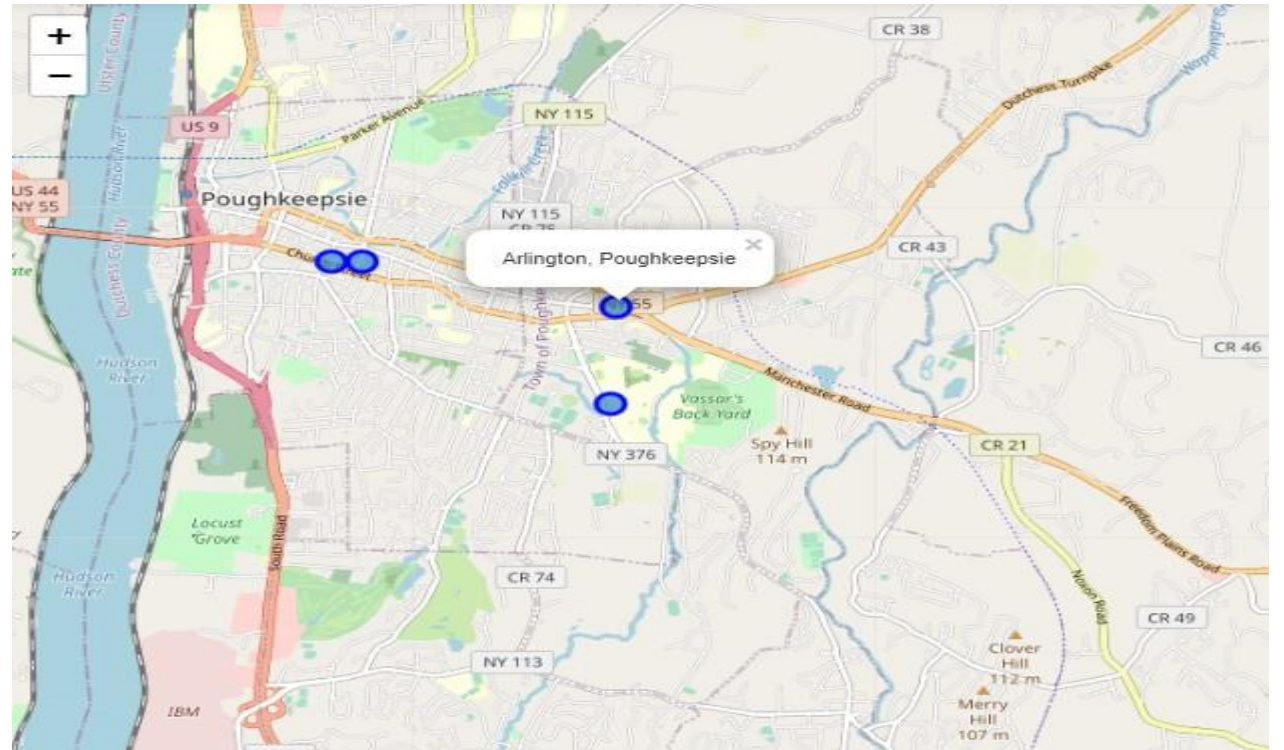
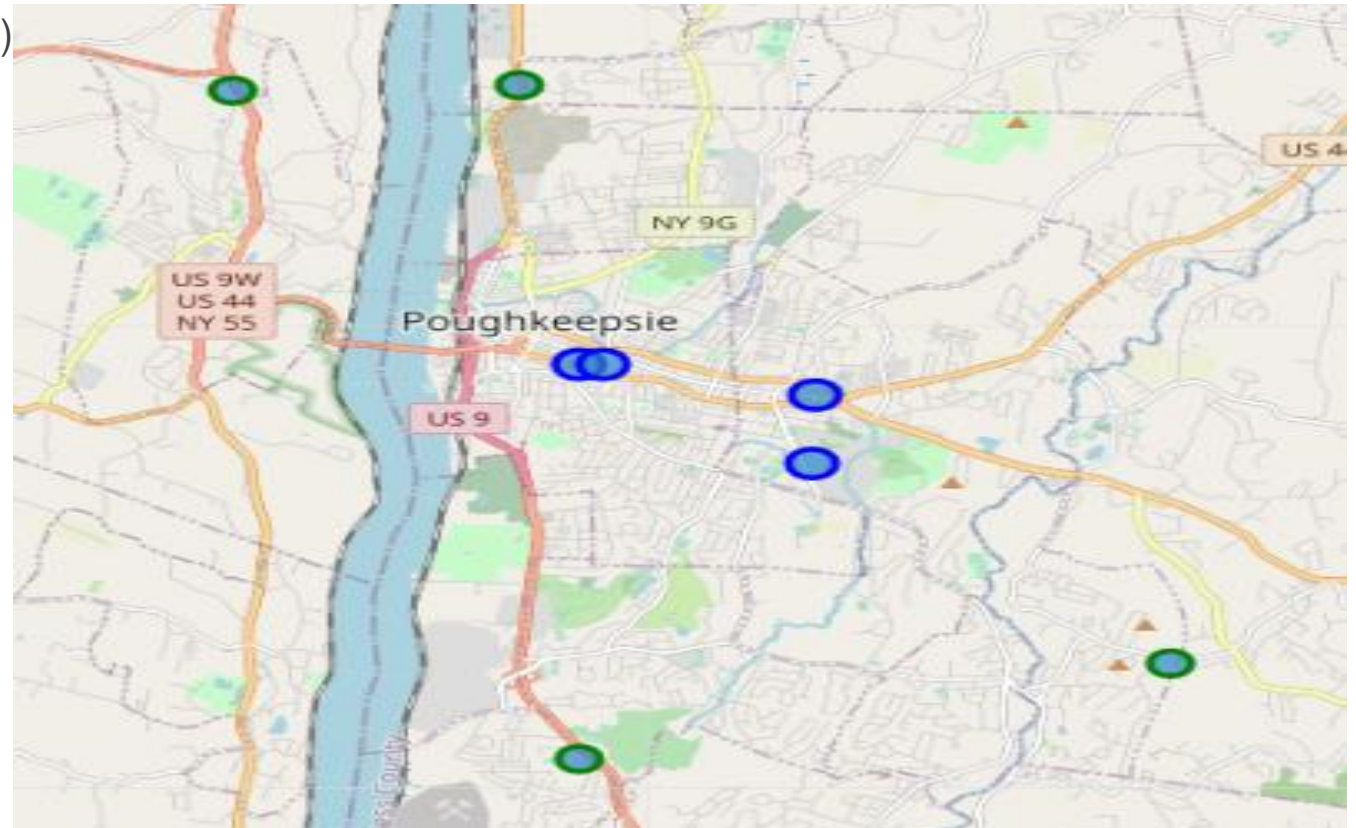# FINDING THE BEST LOCATION FOR A NEW GYM IN POUGHKEEPSIE

Data Acquisition of existing gyms using FourSquare

	name	categories	address	lat	lng
57	Planet Fitness	Gym / Fitness Center	3675 Albany Post Rd	41.740156	-73.930774
61	Crunch - Poughkeepsie	Gym / Fitness Center	2 Neptune Road	41.644061	-73.924041
77	Gold's Gym	Gym	258 Titusville Rd	41.657765	-73.855858
96	Mike Arteaga's Health and Fitness	Gym / Fitness Center	3425 US Highway 9W	41.739190	-73.963842

FINDING THE BEST LOCATION FOR A NEW GYM IN POUGHKEEPSIE

Map of the existing gyms in Poughkeepsie (green marker) in relationship to the neighborhoods(blue marker)

1. Mike Arteaga's Health Fitness(furthest left)

2. Planet Fitness(2nd from left)

3. Crush Fitness (bottom

4. Gold's Gym (bottom right)

FINDING THE BEST LOCATION FOR A NEW GYM IN POUGHKEEPSIE

Candidate gym locations identified with red marker. Neighborhoods are blue marker, existing gyms are green.

1. Candidate – Arlington Adams (right most)

2. Candidate – Corlies (left most)

3. Candidate – Dutchess Turnpike (2nd right most)

4. Candidate – Vassar College (2nd left most)
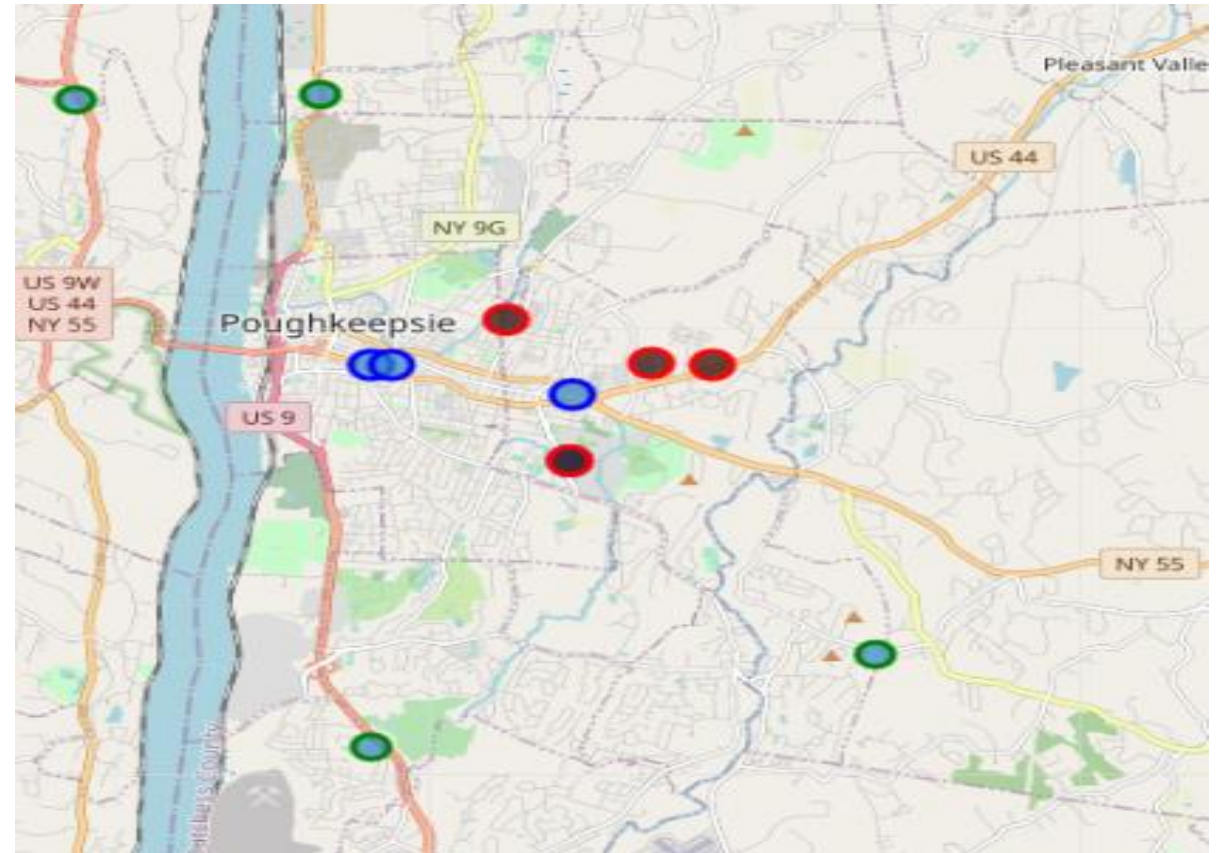
FINDING THE BEST LOCATION FOR A NEW GYM IN POUGHKEEPSIE

Ensure candidate best gym locations are within 7 miles of City of Poughkeepsie limits. Chart shows all ideal gyms within 1.8 to 3.7 miles of City of Poughkeepsie center.

```
   Zipcode        Town                        address        lat         lng
0   12603   Poughkeepsie    Candidate - Arlington Adams   41.700432  -73.877971
1   12603   Poughkeepsie              Candidate - Corlies   41.707070  -73.905860
2   12603   Poughkeepsie   Candidate - Dutchess Turnpike   41.700496  -73.886252
3   12604   Poughkeepsie       Candidate - Vassar Collage   41.686200  -73.897300
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City of Poughkeepsie to Candidate - Arlington Adams is 3.7276407505828595 miles.
City of Poughkeepsie to Candidate - Corlies is 1.834563995642151 miles.
City of Poughkeepsie to Candidate - Dutchess Turnpike is 3.1692193848375916 miles.
City of Poughkeepsie to Candidate - Vassar College is 2.533557448277119 miles.
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FINDING THE BEST LOCATION FOR A NEW GYM IN POUGHKEEPSIE

Candidate best Gym Locations – ensures candidate location atleast 1 mile from existing gyms

```
   Zipcode        Town                       address       lat        lng
0    12603  Poughkeepsie    Candidate - Arlington Adams  41.700432 -73.877971
1    12603  Poughkeepsie              Candidate - Corlies  41.707070 -73.905860
2    12603  Poughkeepsie  Candidate - Dutchess Turnpike  41.700496 -73.886252
3    12604  Poughkeepsie       Candidate - Vassar Collage  41.686200 -73.897300

Candidate - Arlington Adams to Planet Fitness is 2.97365233085538 miles.
Candidate - Arlington Adams to Crunch Fitness is 3.3620918471657704 miles.
Candidate - Arlington Adams to Mike Arteaga's Health Fitness Center is 5.980569635590196 miles.
Candidate - Arlington Adams to Gold's Gym is 1.7339742927765385 miles.

Candidate - Corlies to Planet Fitness is 1.054063616292027 miles.
Candidate - Corlies to Crunch Fitness is 1.7419125531929378 miles.
Candidate - Corlies to Mike Arteaga's Health Fitness Center is 4.053835687694942 miles.
Candidate - Corlies Adams to Gold's Gym is 3.5826955760587396 miles.

Candidate - Dutchess Turnpike to Planet Fitness is 2.401368828183791 miles.
Candidate - Dutchess Turnpike to Crunch Fitness is 2.8265083128374933 miles.
Candidate - Dutchess Turnpike to Mike Arteaga's Health Fitness Center is 5.412977677371845 miles.
Candidate - Dutchess Turnpike to Gold's Gym is 2.2549876947793632 miles.

Candidate - Vassar Collage to Planet Fitness is 1.6602918295223006 miles.
Candidate - Vassar Collage to Crunch Fitness is 2.016569419741505 miles.
Candidate - Vassar Collage to Mike Arteaga's Health Fitness Center is 4.7089849746828305 miles.
Candidate - Vassar Collage to Gold's Gym is 2.9155064388755667 miles.
```

FINDING THE BEST LOCATION FOR A NEW GYM IN POUGHKEEPSIE

Conclusion – Best location for a new gym in Poughkeepsie, NY

- Purpose of this project was to identify Poughkeepsie areas close to center with low number of gym / fitness centers in order to aid stakeholders in narrowing down the search for optimal location for a new gym / fitness center. Any of the 4 candidate gym locations are ideal locations.

- The optimal location for a gym would be the "Dutchess Turnpike" location. This location has multiple state managed roads that provide quick and convenient access. There is also alot of huge empty store areas in this location with existing parking lots.

- The second best location for a gym would be "Arlington Adams". This location is furthest east (most right) and on the fringe of Poughkeepsie. The next town over has no gym's in the vacinity. This location is also good as it has one major state managed road. The area also has alot of new business and housing development occurring. Costs may be higher for this area as there is no existing empty buildings. So a building would need to be built.

- The third best location would be "Vassar College". While a great area, it is already a traffic congested area which would frustrate potential customer.

- The last best location would be "Corlies". While a good area, it is more in the city area in a more low-income neighborhood.

- Final decission on the optimal gym / fitness location will be made by stakeholders based on specific characteristics of neighborhoods and locations in every recommended location, taking into consideration additional factors like attractiveness of each location (proximity to park or water), levels of noise / proximity to major roads, real estate availability, prices, social and economic dynamics of every neighborhood etc.