



# TIPS ON WHERE TO LOCATE A BURGER JOINT IN NEW YORK CITY

**Capstone Project- The Battle of  
Neighborhoods**

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# INTRODUCTION

## WHY CHOOSING THE RIGHT LOCATION IS IMPORTANT

- The success of a new restaurant is largely determined by the **appropriateness of the restaurant location** among other factors e.g. price and quality of food and service
- Restaurants located off the beaten path must work a lot harder towards attracting customers than restaurants placed near busy locations
- Different locations will draw different type of customers at different times of the day (workers in a business district, families in a residential area, tourists near sights, etc.) and thus the **type of restaurant should “fit” the customer base in different areas**
- Knowledge of neighboring restaurants is crucial
  - ... since areas with successful businesses usually attract other successful businesses.
- However, finding in the neighborhood
  - ... half a dozen restaurants with the same concept means facing *a lot of* competitors
  - ... highly rated restaurants with the same concept means facing *strong* competitors





## THE BUSINESS CASE

**What are the most interesting sightseeing attractions to target when setting up the branches of a new burger joint franchise in *New York / Manhattan*?**

**What would be the best/worst location near each attraction?**

# THE BUSINESS CASE

## BUSINESS REQUIREMENTS

- For different reasons tourists were identified as main customer group by stakeholders
- Areas within a radius of 400 meters around 17 popular sights (Empire State Building, World Trade Center, etc.) in New York are identified as containing potential interesting locations for the branches of the new burger joint by stakeholders



## DATA SOURCES & PREPARATION

- Location and user-generated content data provided by Foursquare Labs Inc. was used in order to analyze existing restaurants in each sight area.
- For each sight area, at most 50 restaurants were searched for with the Foursquare API that matched the query “burger”.
- Items were filtered for restaurants categorized under the primary category name burger joints.
- Only the top 6 sight areas according to the number of existing burger joints were kept other sight areas were dropped.
- For burger joints located near these sights, the average user-generated restaurant rating was extracted with premium Foursquare API calls.
- Latitude/longitude degrees were mapped to UTM coordinates in a 2D Cartesian coordinate system

# METHODOLOGY

## I EXPLORATORY DATA ANALYSIS

Competitors in each sight area can be analyzed according to different aspects to pre-evaluate the overall attractiveness of the different sight areas and recommend a specific strategy for a new burger joint depending on the sight area:

- Number of existing burger joints in sight area
- Average rating of existing burger joints in sight area
- Price categories of existing burger joints in sight area
- Average distance of existing burger joints to the sight in sight area

# METHODOLOGY

## II INSIGHTS FROM OPERATIONS RESEARCH TECHNIQUES

*Within* each sight area the best location for a new branch:

- is the furthest away from all existing burger joints.
- is further away from higher rated burger joints than lower rated ones.

whereas *within* each sight area the worst location for a new branch:

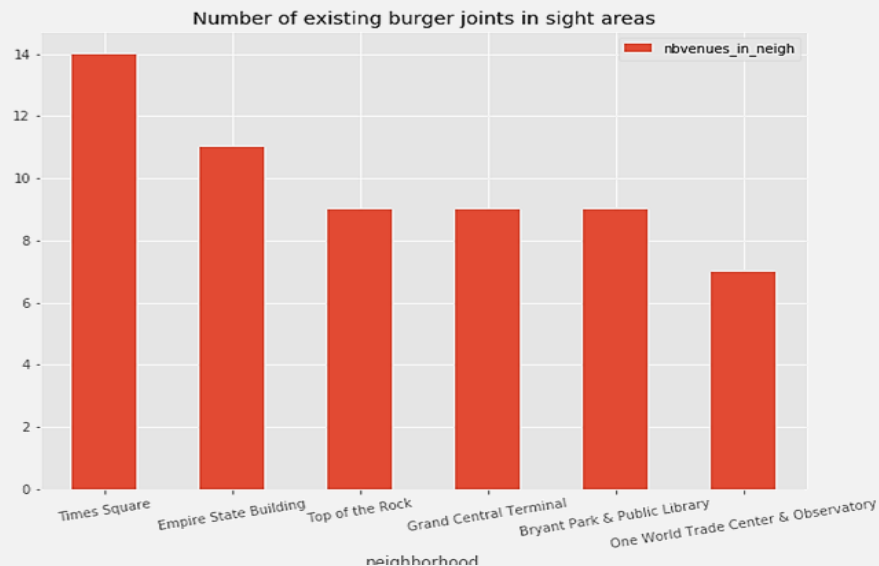
- is the closest one to all existing burger joints.
- is closer to higher rated burger joints than lower rated ones.

This corresponds to an optimization problem with inequality constraints

- Used Weiszfeld algorithm/ Primal dual Interior Point Newton method to solve



# RESULTS & DISCUSSION



## Number of Competitors

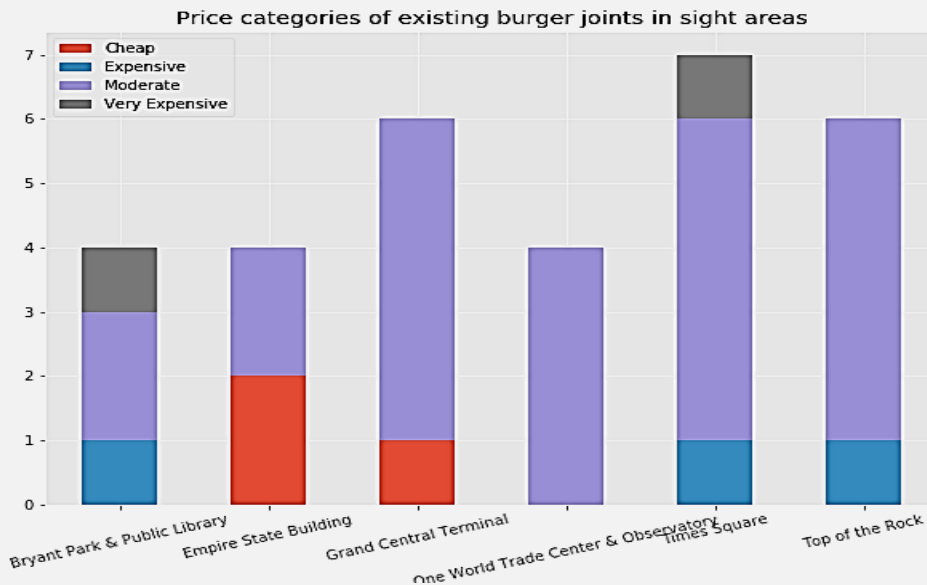
- Highest nb. of competitors near Times Square
- Lowest nb. of competitors near One World Trade Center & Observatory

Neighborhood	Avg. rating
Bryant Park & Public Library	7.53
Times Square	7.38
One World Trade Center & Observatory	7.30
Top of the Rock	7.20
Empire State Building	7.04
Grand Central Terminal	6.94

## Quality of Competitors

- Avg. rating of competitors highest near Bryant Park
- Avg. rating of competitors lowest near Grand Central Terminal

# RESULTS & DISCUSSION



Neighborhood	Avg. distance (meters)
Bryant Park & Public Library	336
One World Trade Center & Observatory	310
Empire State Building	254
Times Square	246
Top of the Rock	227
Grand Central Terminal	213

## Pricing of Competitors

- Cheap burger joints near Empire State Building and Grand Central Terminal
- Very expensive burger joints near Bryant Park & Public Library and Times Square

## Distance from Attraction of Competitors

- Closest around Grand Central Terminal
- Greater for areas defined by paired sights Bryant Park & Public Library and On World Trade Center & Observatory

# RESULTS & DISCUSSION

	# of Competitors	Avg. Rating	Avg. Venue Distance	Price Category	Total (yellow omitted)
Empire State Building	+	-	0	--	-2
Top of the Rock	0	0	-	+	0
Times Square	++	+	0	++	-1
Grand Central Terminal	0	--	--	-	-1
One World Trade Center & Observatory	-	0	+	0	2
Bryant Park & Public Library	0	++	++	+++	3

Based on the analyzed features priority of sight areas is as follows:

1. **Bryant Park & Public Library**
2. **One World Trade Center & Observatory**
3. **Top of the Rock**
4. **Times Square and Grand Central Terminal**
5. **Empire State Building**

# RESULTS & DISCUSSION

**Recommended Business strategies per sightseeing attraction are:**

Bryant Park & Public Library and Times Square

- lower priced branch located closer to the sight than competitors

Grand Central Terminal & Empire State Building

- high quality branch

One World Trade Center & Observatory:

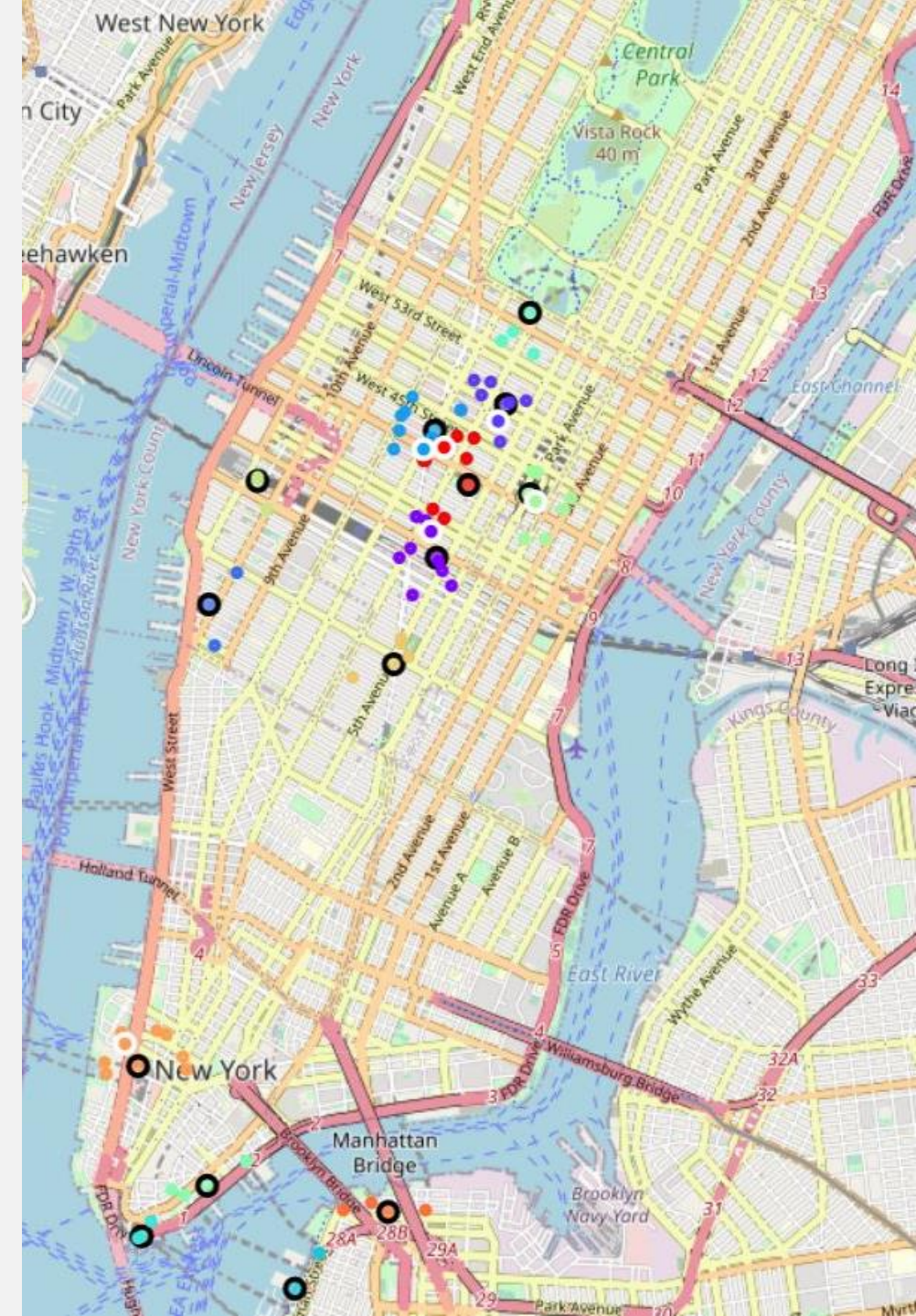
- none except for closer to the attraction



# RESULTS & DISCUSSION

**Worst Locations for the branches within each sight area (circles with white borders) are:**

neigh.id	neighborhood	Weiszfeld.address
3	Times Square	42nd Street–Times Square–Port Authority Bus Te...
0	Empire State Building	51, West 35th Street, Midtown South, Manhattan...
1	Top of the Rock	38, West 48th Street, Midtown, Manhattan, Manh...
8	Grand Central Terminal	Grand Hyatt New York, 109, Park Avenue, Murray...
14	Bryant Park & Public Library	Heartland Brewery, 127, West 43rd Street, Time...
11	One World Trade Center & Observatory	Goldman Sachs Tower, 200, West Street, Battery...

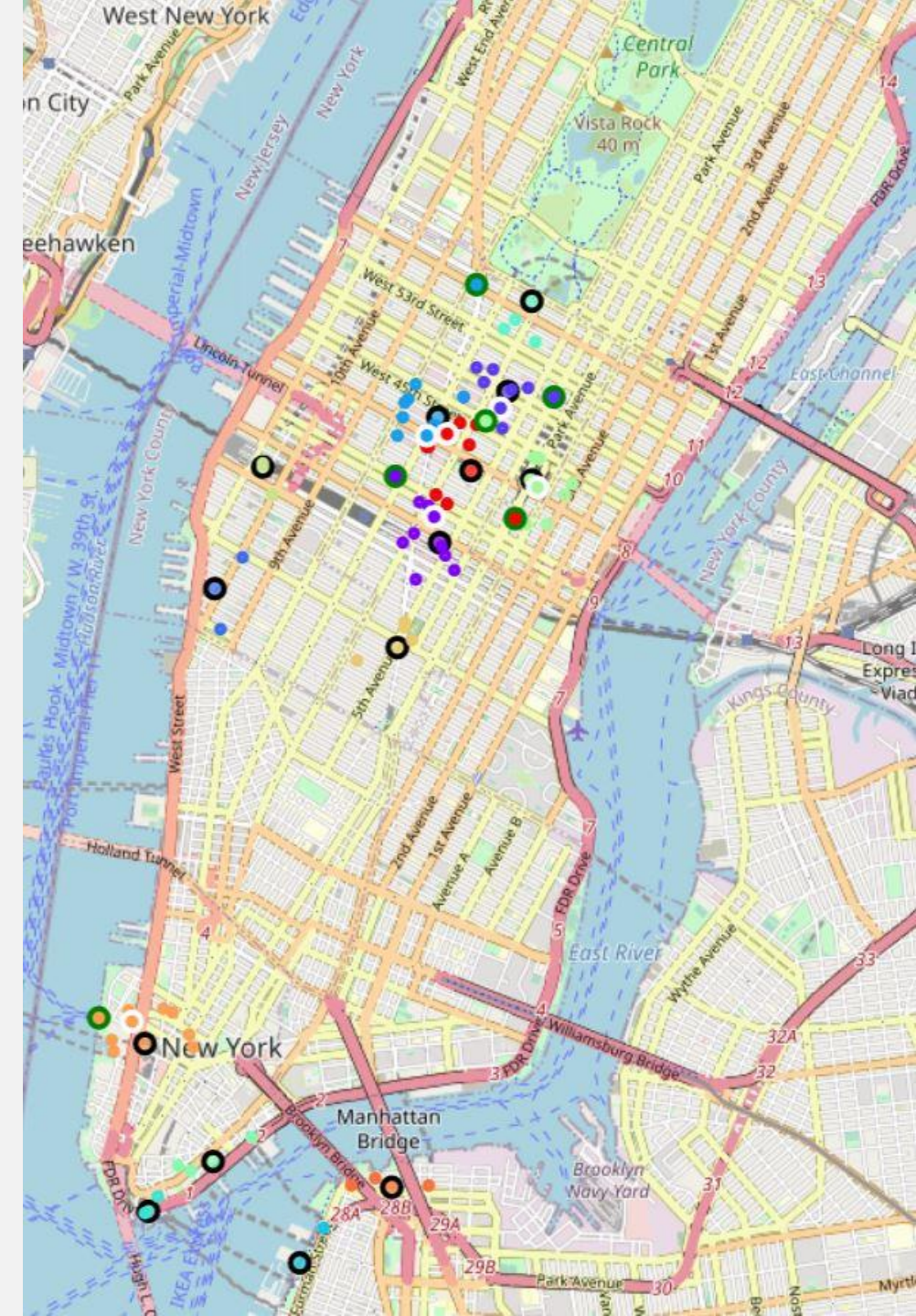




# RESULTS & DISCUSSION

**Best Locations for the branches (circles with green borders) within each sight are:**

neigh.id	neighborhood	Newton.address
3	Times Square	3, Columbus Circle, Manhattan, Manhattan Commu...
0	Empire State Building	200, West 37th Street, Garment District, Manha...
1	Top of the Rock	Look Building, 488, Madison Avenue, Midtown Ea...
8	Grand Central Terminal	59, West 46th Street, Midtown, Manhattan, Manh...
14	Bryant Park & Public Library	100, East 39th Street, Murray Hill, Manhattan,...
11	One World Trade Center & Observatory	Brookfield Place / Battery Park City Ferry Ter...





## CONCLUSION

- We rated the overall attractiveness of sight areas and provided suitable business strategies given the business requirement that branches of the new burger joint franchise should be located near to popular attractions in *New York/Manhattan*.
- We advised against and recommended a specific location near each sight based on the fact that it would be the closest or, respectively, furthest away from all competitors.

