Sending Sushi

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15 March 2020

Problem Description: Supplying Sushi to New York

Sushi:
- Increasingly popular choice of food
- strong demand in New York

Customer challenge:
- Ensuring constant supply of fresh sushi to New York restaurants.

Business problem:
- Explore the potential business opportunity of supplying all sushi restaurants in New York with fresh fish on a daily basis.

Scope of this project:
- Estimating the logistics requirements and costs within New York.

Methodology

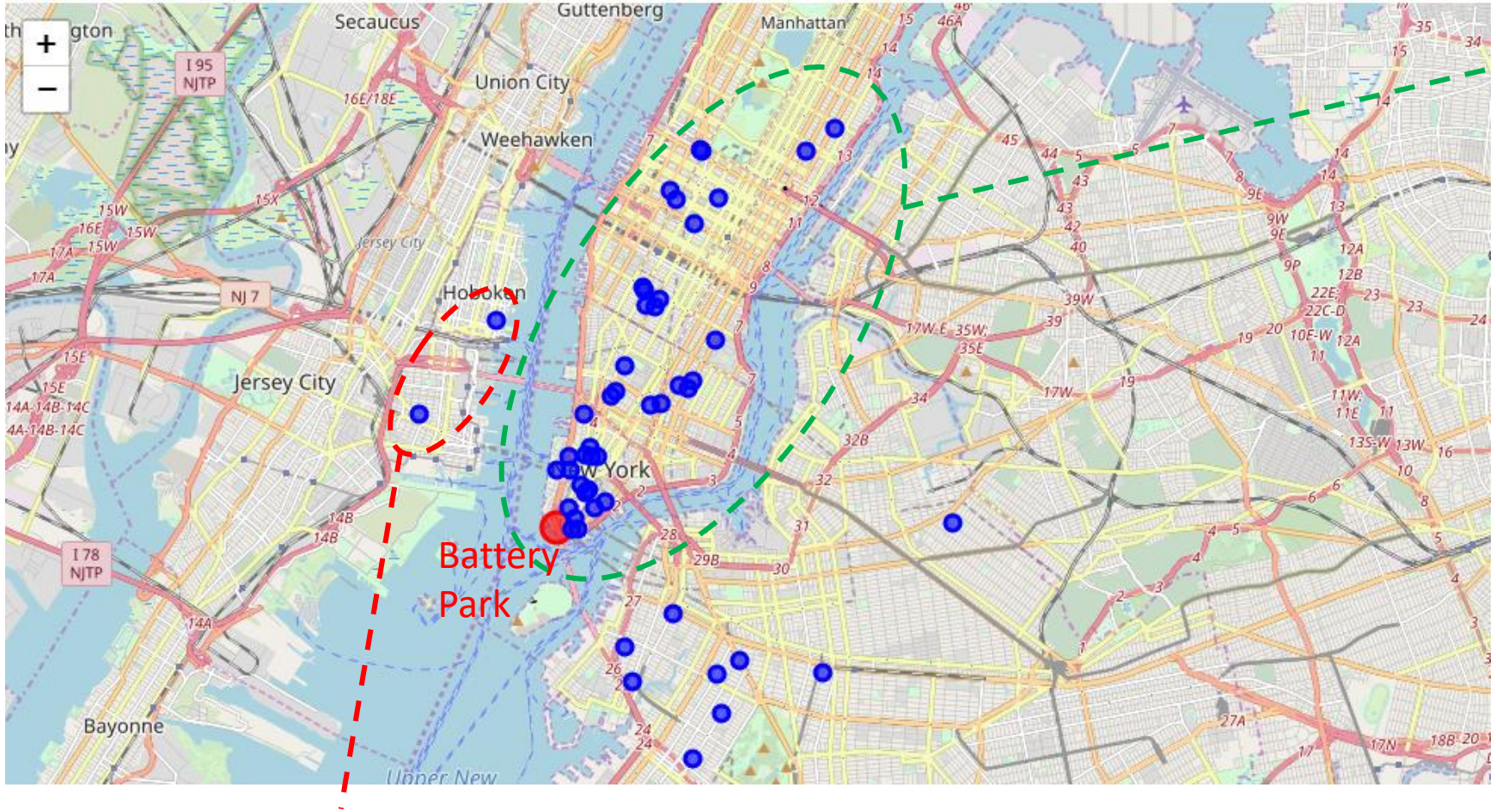
A basic costing model will be developed, given a set of target restaurants

- Target sushi restaurants will be all of those within a 50km radius of Battery Park in New York, with an initial cap on 50 restaurants.
- A basic “nearest neighbour” algorithm will be used for estimating travel distances. This algorithm works by always visiting the nearest location, and progressively working through the list of unvisited location.

Assumptions:

- Average travel speed of 20km/h
- 30 min delivery time
- Vehicles fixed cost of $50,000
- Driver cost of $40,000 / annum
- Vehicle variable costs (fuel, tires, maintenance, etc.) of $0.3 / km
- 8 hour working day

List of Locations to Visit: 50 within 5km of Battery Park



High concentration along Manhattan

2 outliers away from Manhattan may be more expensive to service

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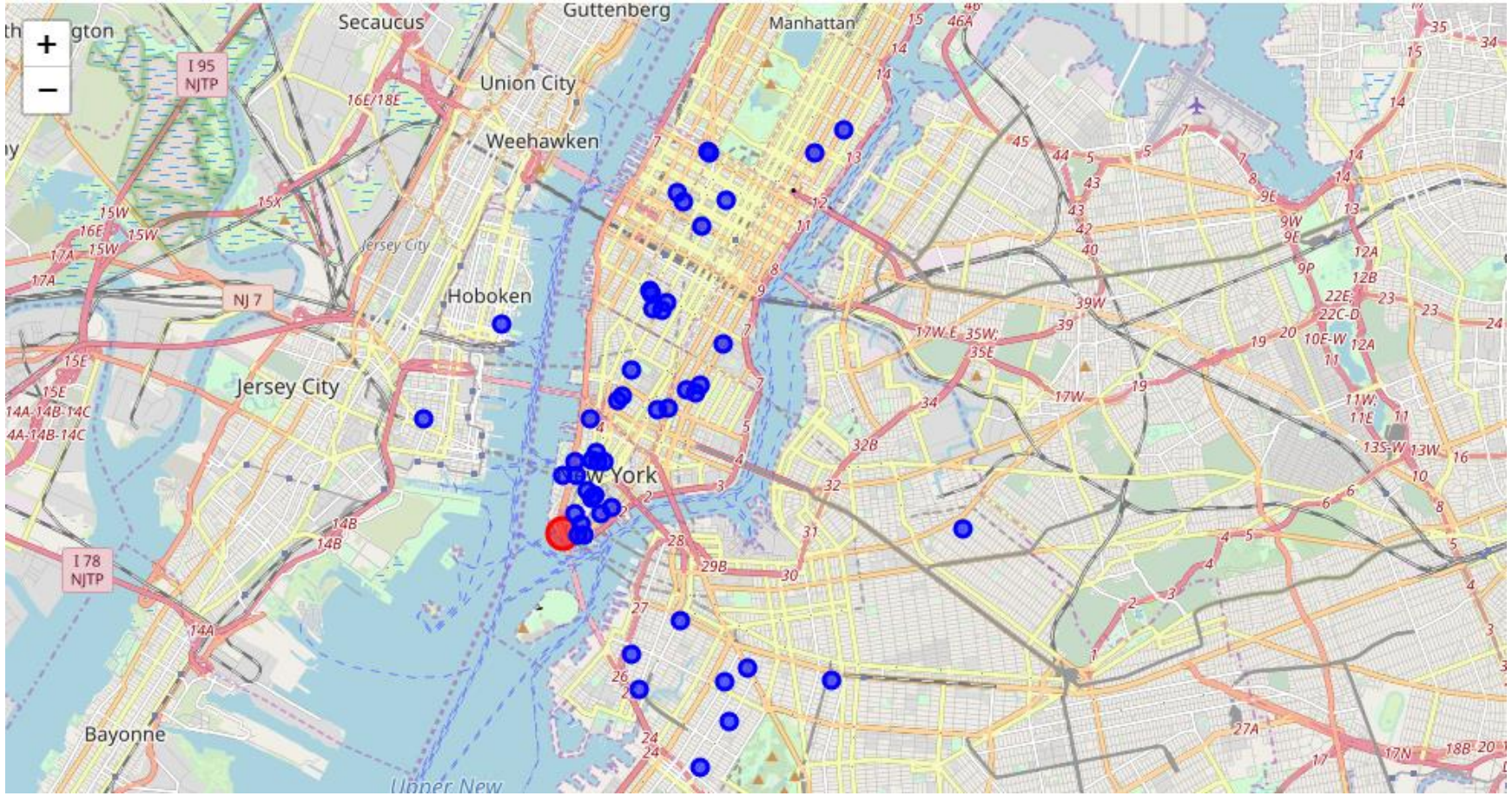

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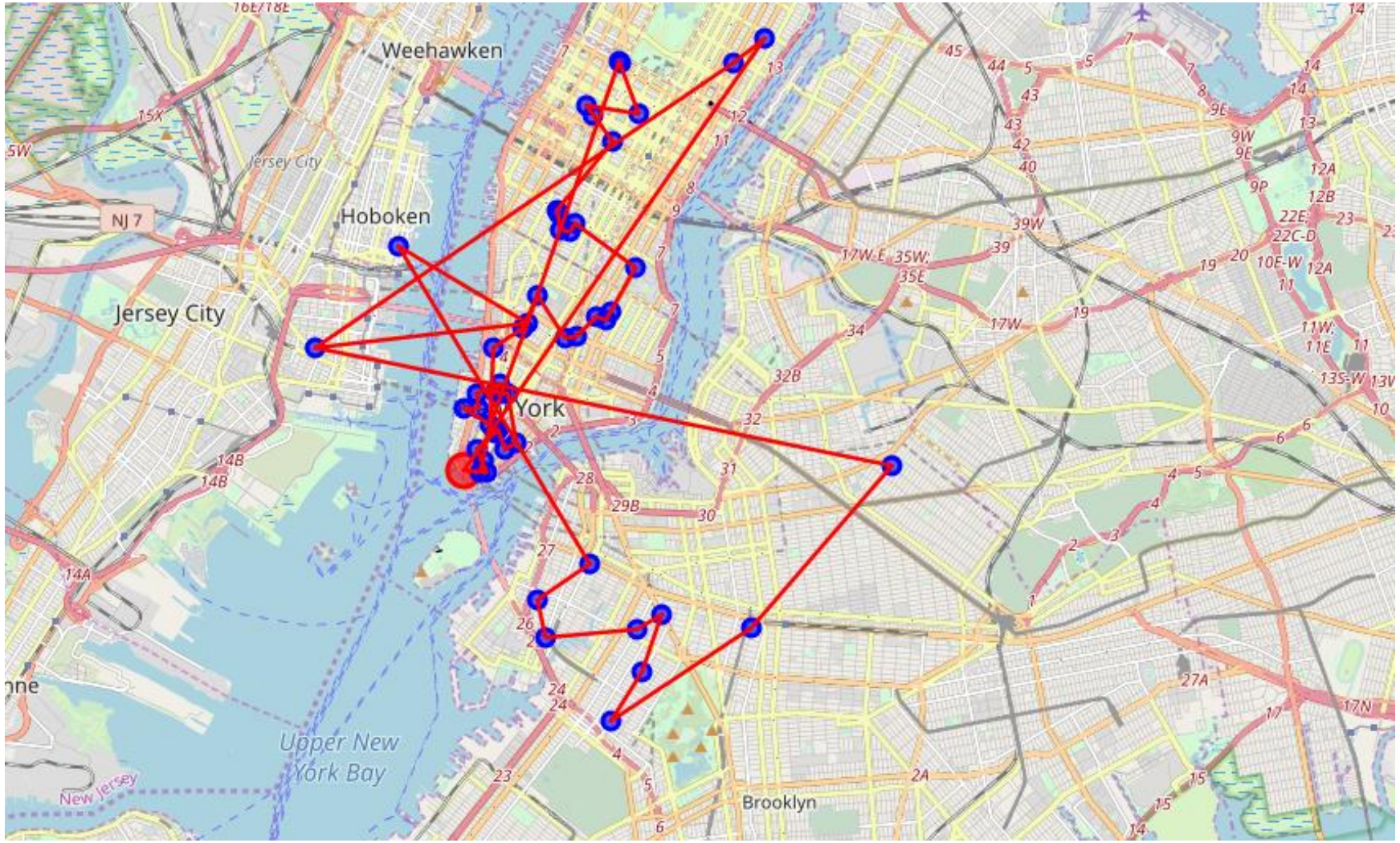
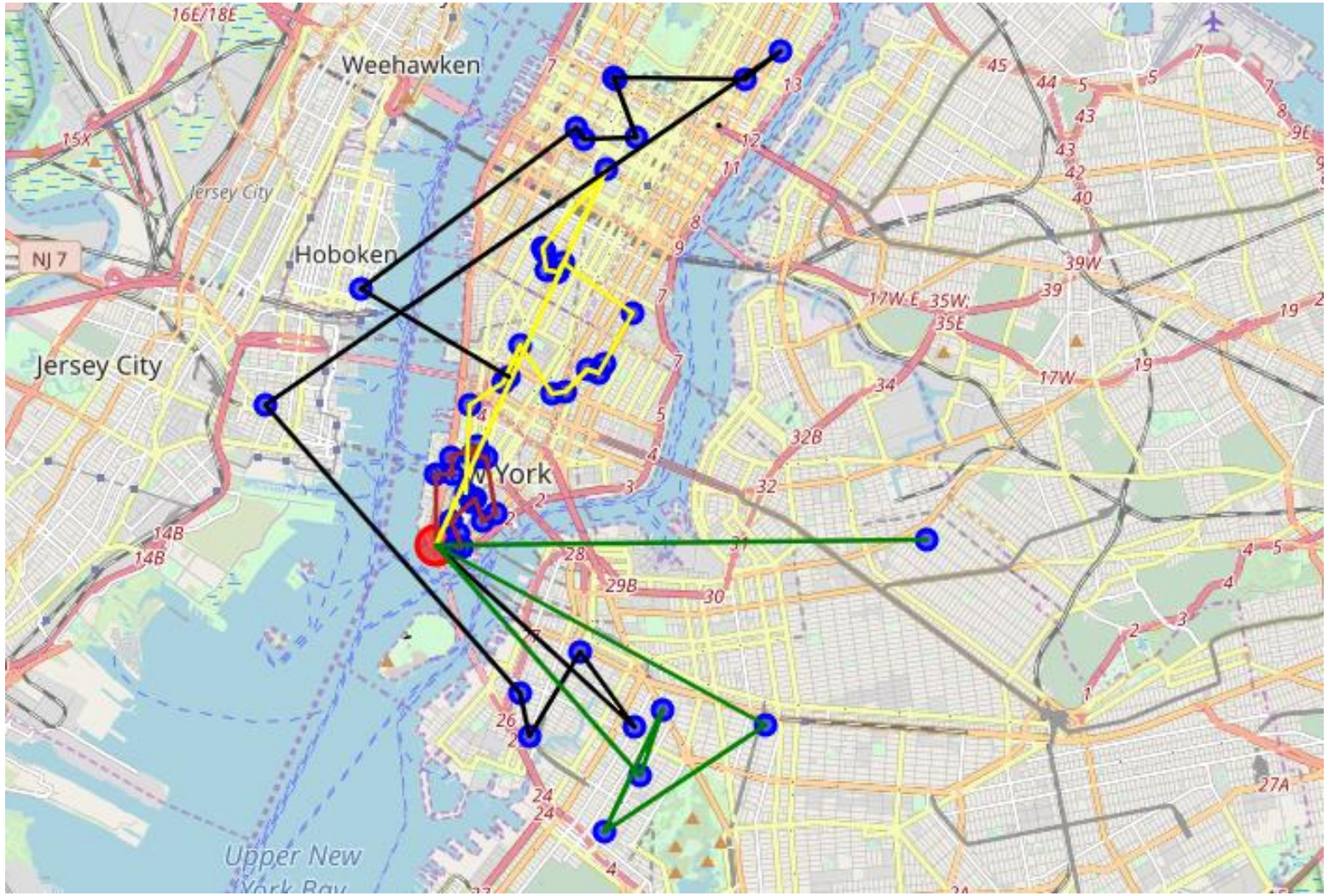
Requirements to service all restaurants every day by 1 vehicle



- Theoretically, 30 hours would be needed for 1 vehicle
  - 27 hours delivery time at restaurants
  - 3 hours travel time
- If delivery time could be reduced to 15 min, 1 vehicle could visit all stores in 17 hours.
- Assuming store operating hours are not a problem, this could be accomplished by 2 driver shifts every day on 1 vehicle

Assuming an 8 hour day, 4 vehicles would be required



- The fourth vehicle would be only used for 3.4 hours.
- Therefore, if store visits could be slightly quicker, or working hours slightly longer, this could be reduced to 3 vehicles

Total cost requirements

- Up-front fixed costs:
  - Vehicles: $50,000 x 4 = $200,000 ($150,000 if 3 vehicles possible)
  - Assume simple capitalization over 5 years, giving $40,000 per annum

- Annual fixed costs
  - Drivers: $40,000 x 5 = $200,000 (1 extra driver for leave, risk mitigation, etc.)

- Annual variable costs:
  - $0.3 / km x 66km x 365 days = $7,200

- Total cost / annum
  - $247,200
  - 80% of the cost driven by driver salaries

Conclusions and Next Steps

Conclusion

- Annual cost of $247,200, which is predominantly as a result of driver salaries
- This would need to be compared to revenue and other business factors before making a final decision on whether to go ahead

Areas of Improvement

- More optimal routing solutions would reduce distance and travel time. However, time at delivery point is contributing to the bulk of the cost, so would not invest a large amount of time

Next Steps

- Investigate use of returnable storage boxes that can be dropped off in short time, with the old one picked up
- Perhaps in the future:
  - Drones
  - Driverless cars
- Customer analysis, e.g.
  - Volume analysis – can then only service large enough customers