Monocentric City

By: Anthony McCollom, James Fletcher, Gabe Reyes

What is a Monocentric City?

The Alonso-Muth-Mills monocentric city model is a relatively young economic model that attempts to explain how people choose to live near a city.

In short, whatever maximizes utility!

Definitions

- Utility; it is a way of measuring how much someone values something, so if someone buys a $1 candy bar, they at least value it at $1.
- Commute Cost; The direct distance between where the person resides and where they work, a unit of distance is equal to the cost. So a 10 unit commute has a commute cost of $10.
- Central Business District; the place in which each person works and commutes to.
- Rent; The cost of living at a certain location.

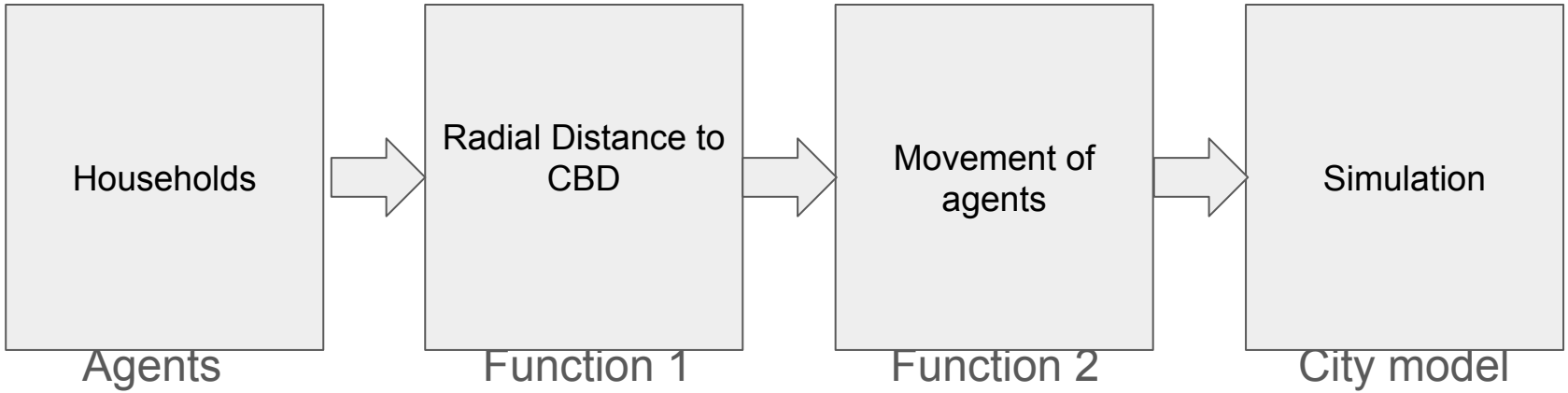
Utility in our model

Utility is going to be fixed at 100 for each person, so people will maximize their utility with their two bundles of goods, rent costs and commuting costs. People would be able to consume any amount of the two goods as long as they total 100. So an agent would never live 60 units away from the model and pay $20 in rent, they would get more utility in living closer and paying more in rent.

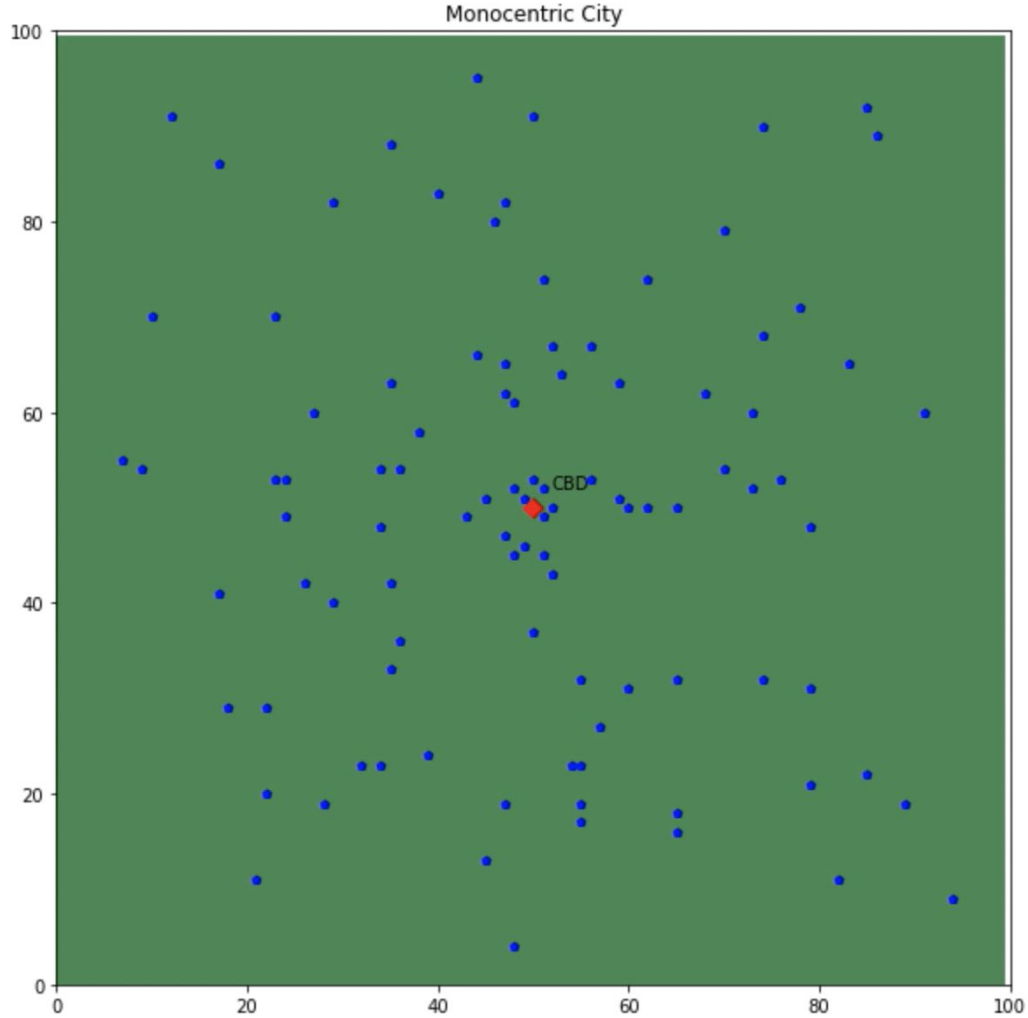
Assumptions.

- Radial commuting
- Identical agents
- Rent = total utility - commute cost
- Commute cost = total utility - rent
- No overlap of residences

Functions of the Model



Radial Commuting


Monocentric City
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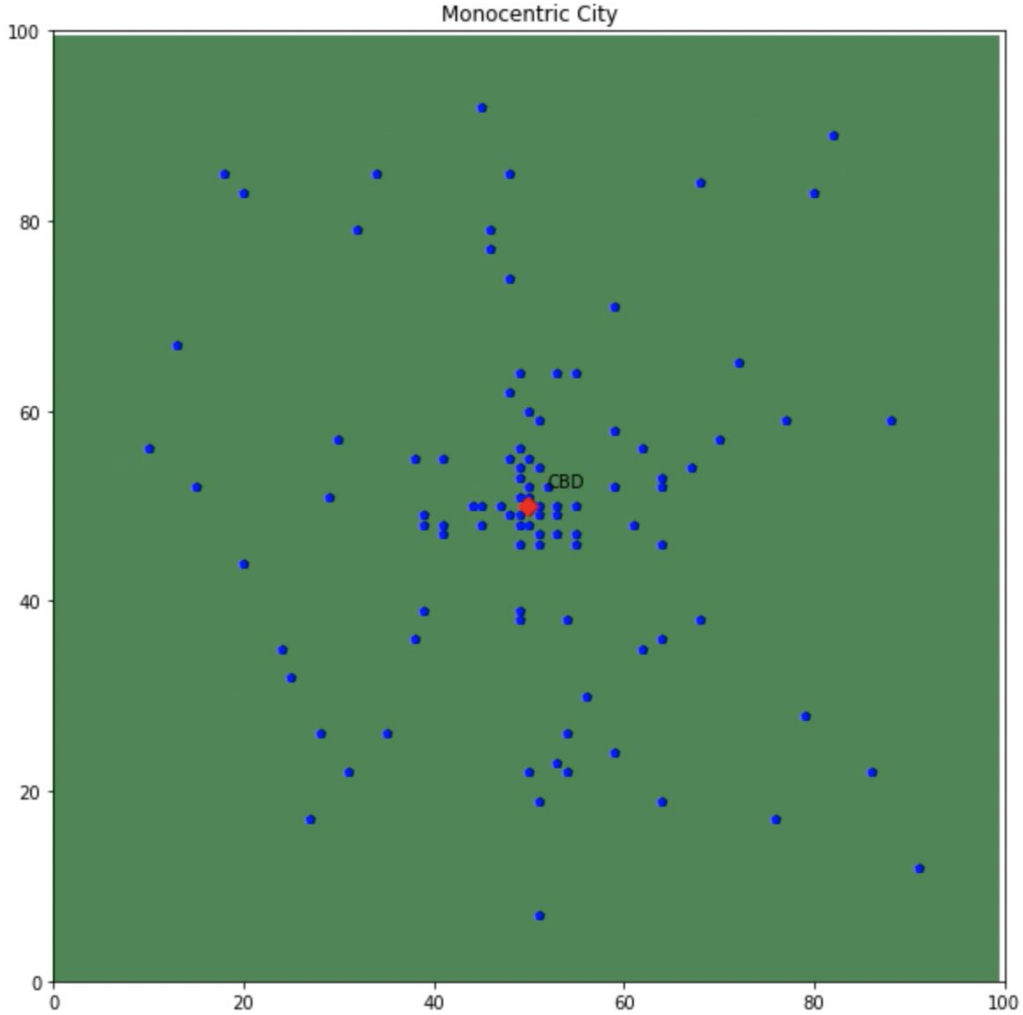
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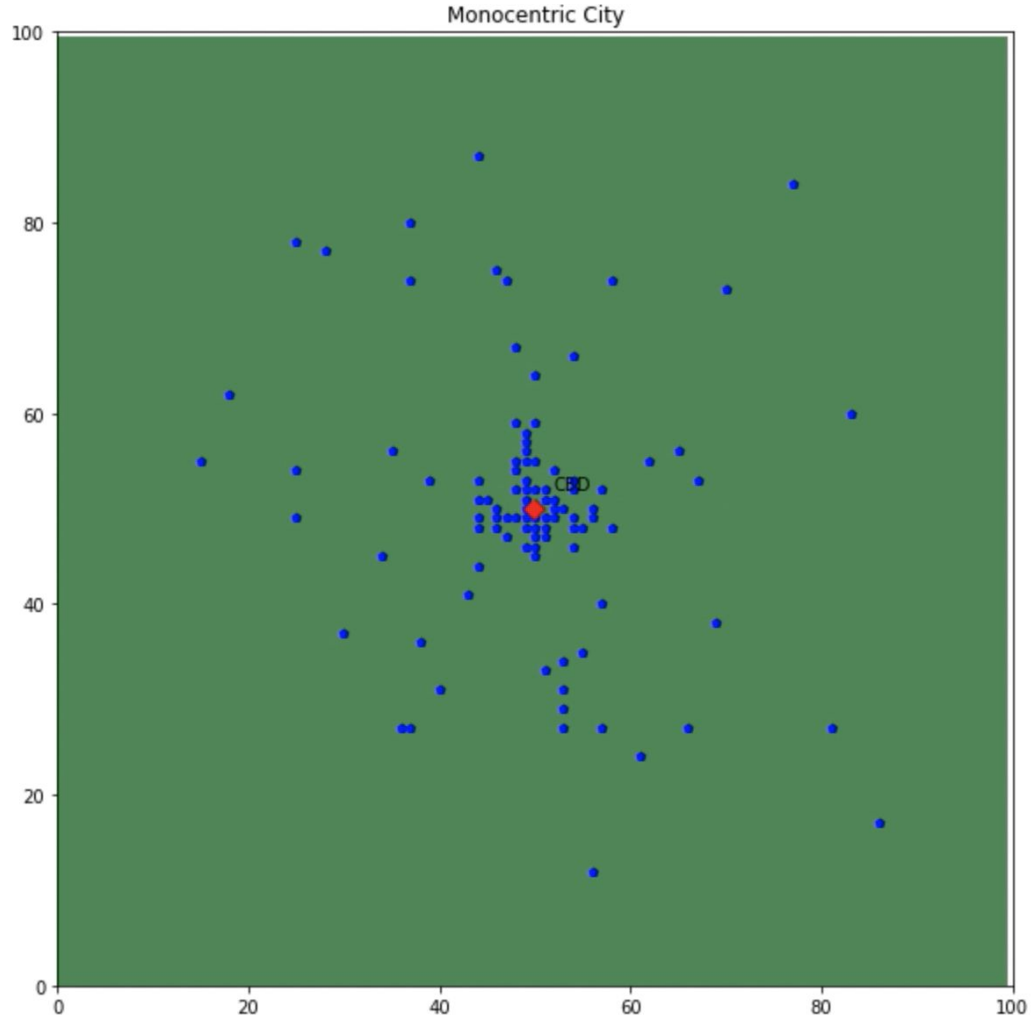
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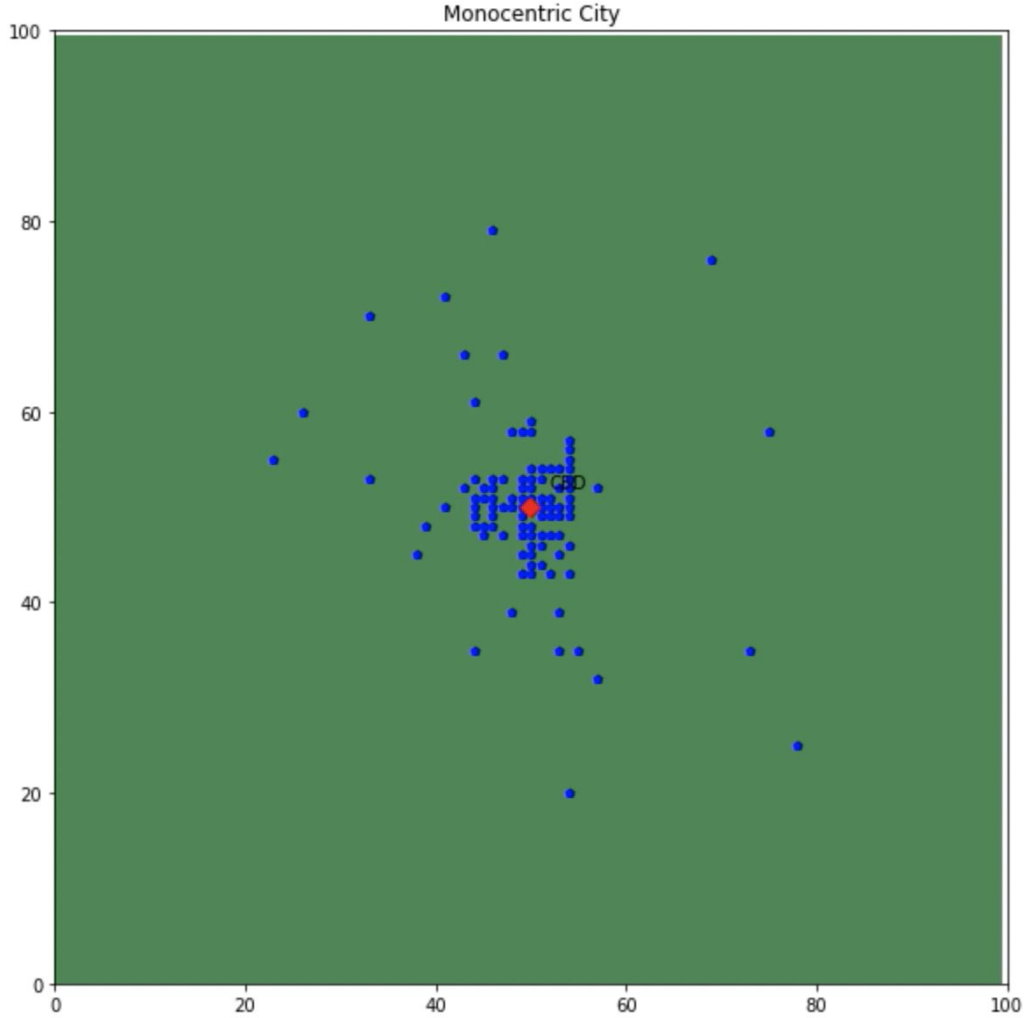
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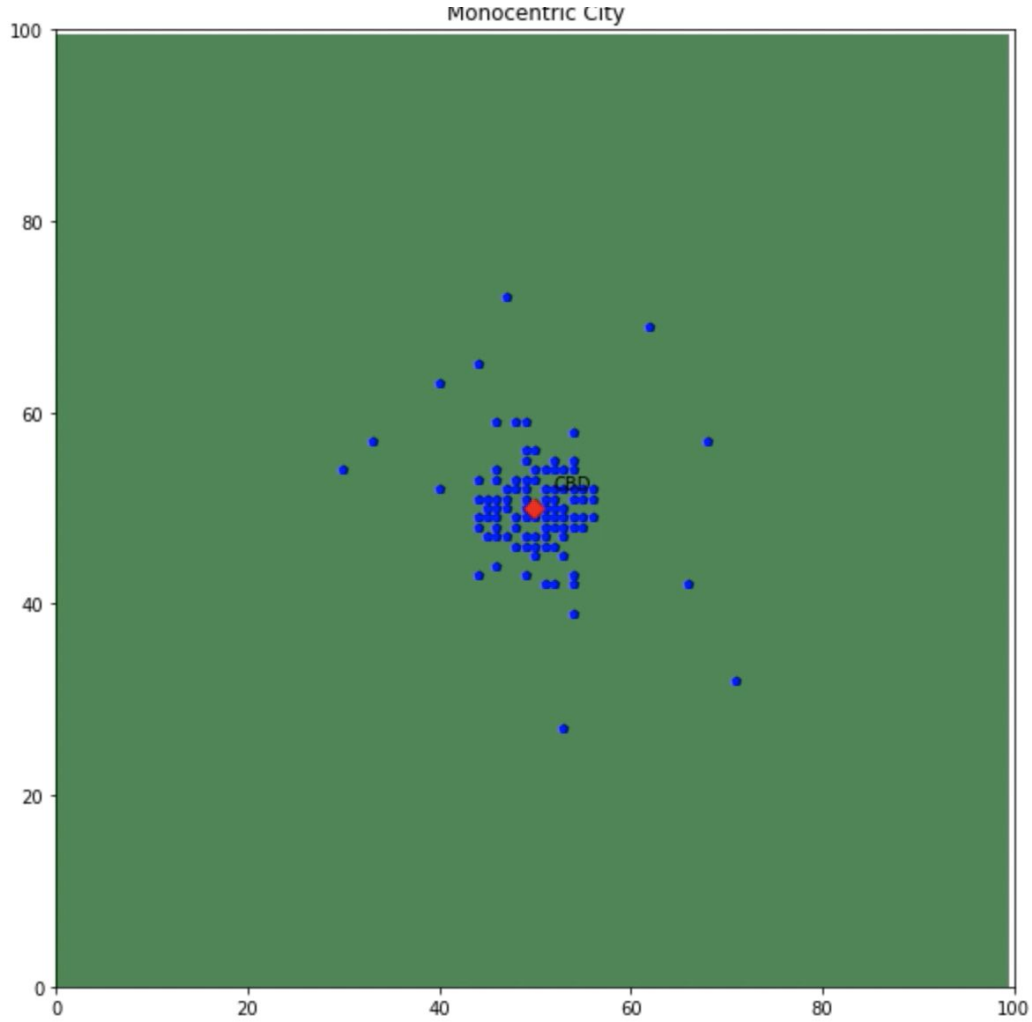
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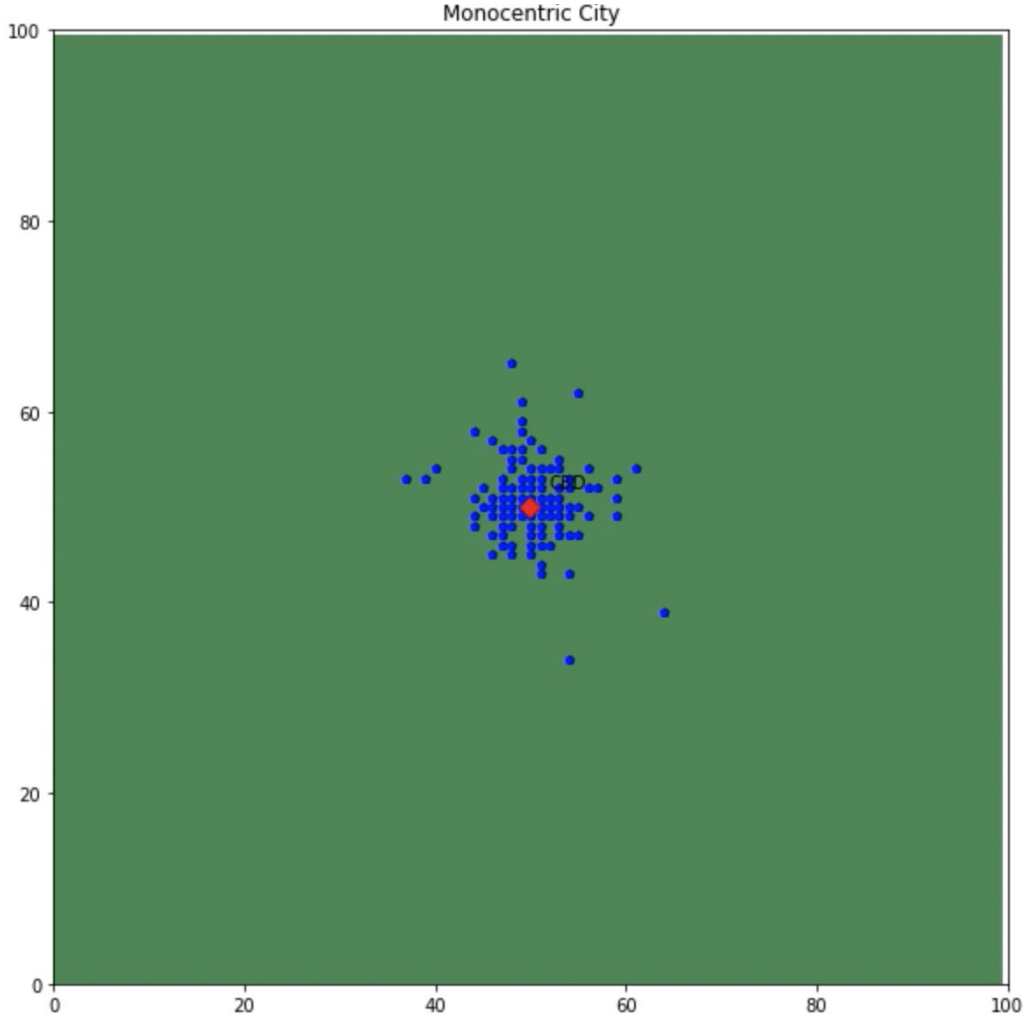
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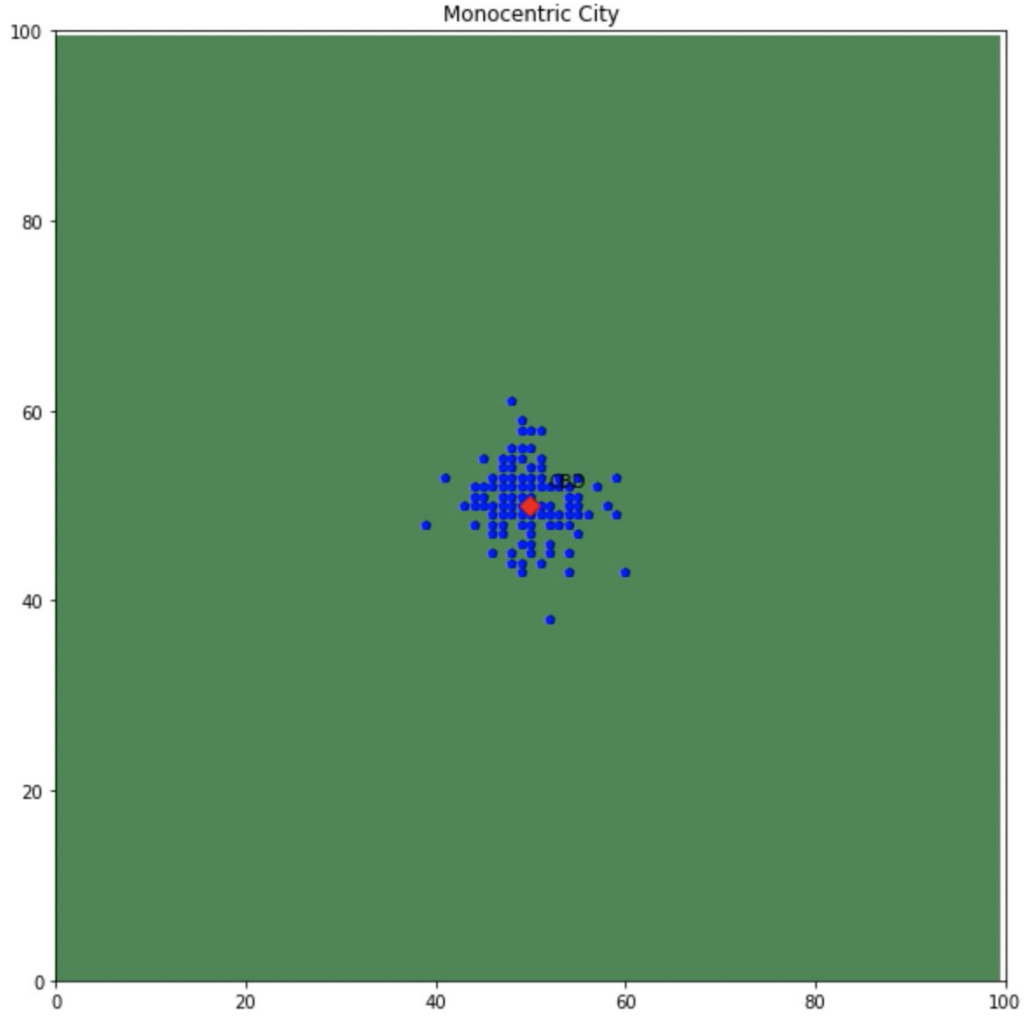
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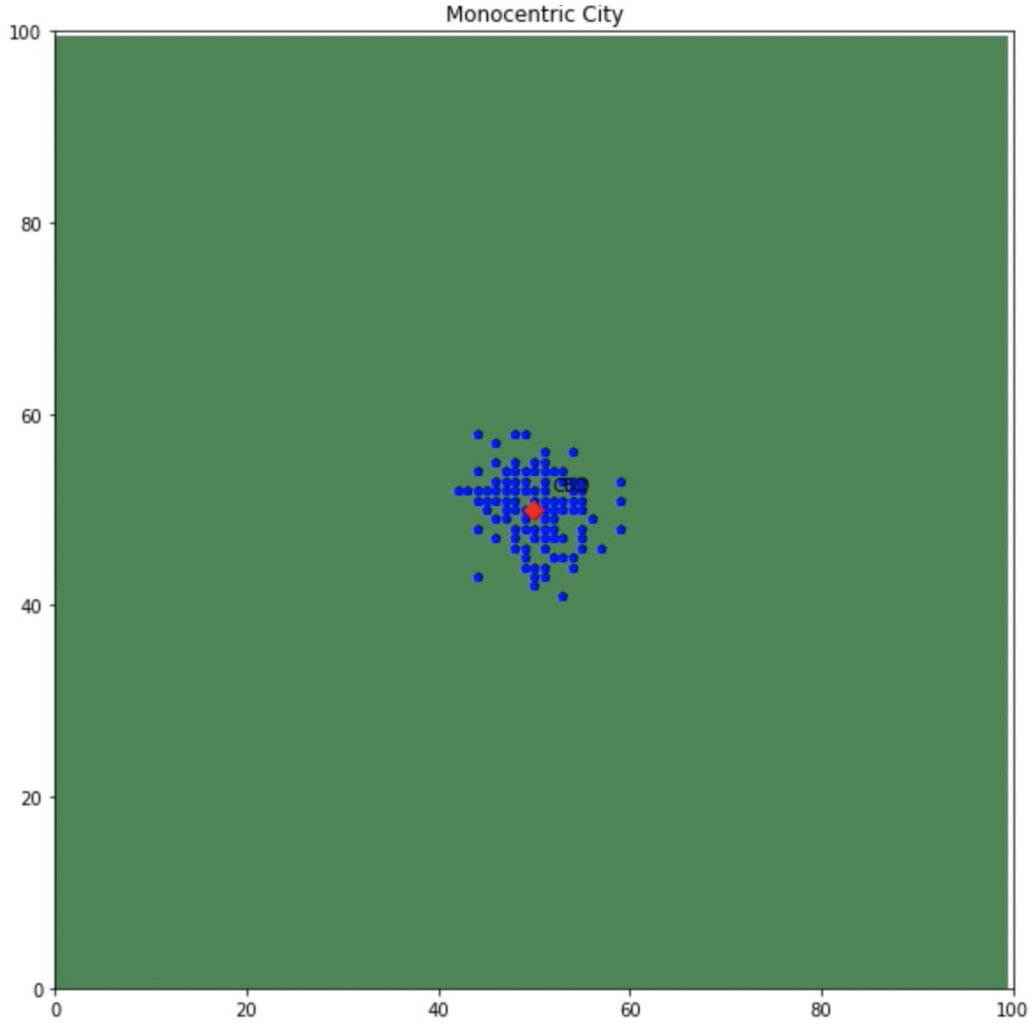
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Questions?

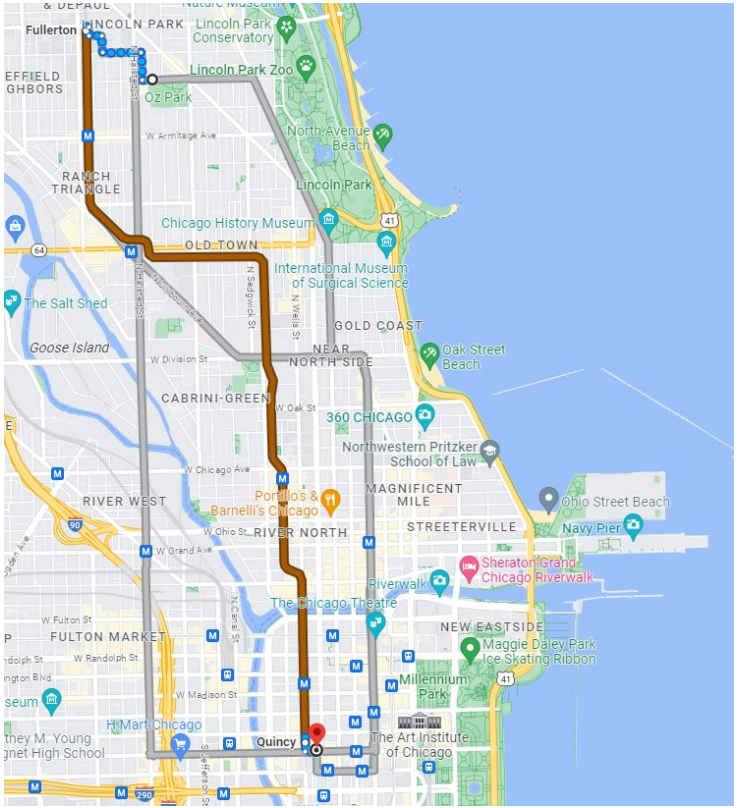
Just Kidding

Train Model

Instead of radial commuting the direct route, there is now a train short train that brings people to the CBD.

However the train distance is 25% shorter than the direct route and people now can decide to live closer to the train or the CBD and will pick whichever one has a shorter distance.

Real Life Example



8:05 PM - 8:24 PM
(19 min)

Brown Line
8:13 PM from Sedgwick
11 min every 15 min

8:05 PM **1846 N Sedgwick St**
Chicago, IL 60614

Walk
About 8 min, 0.4 mi

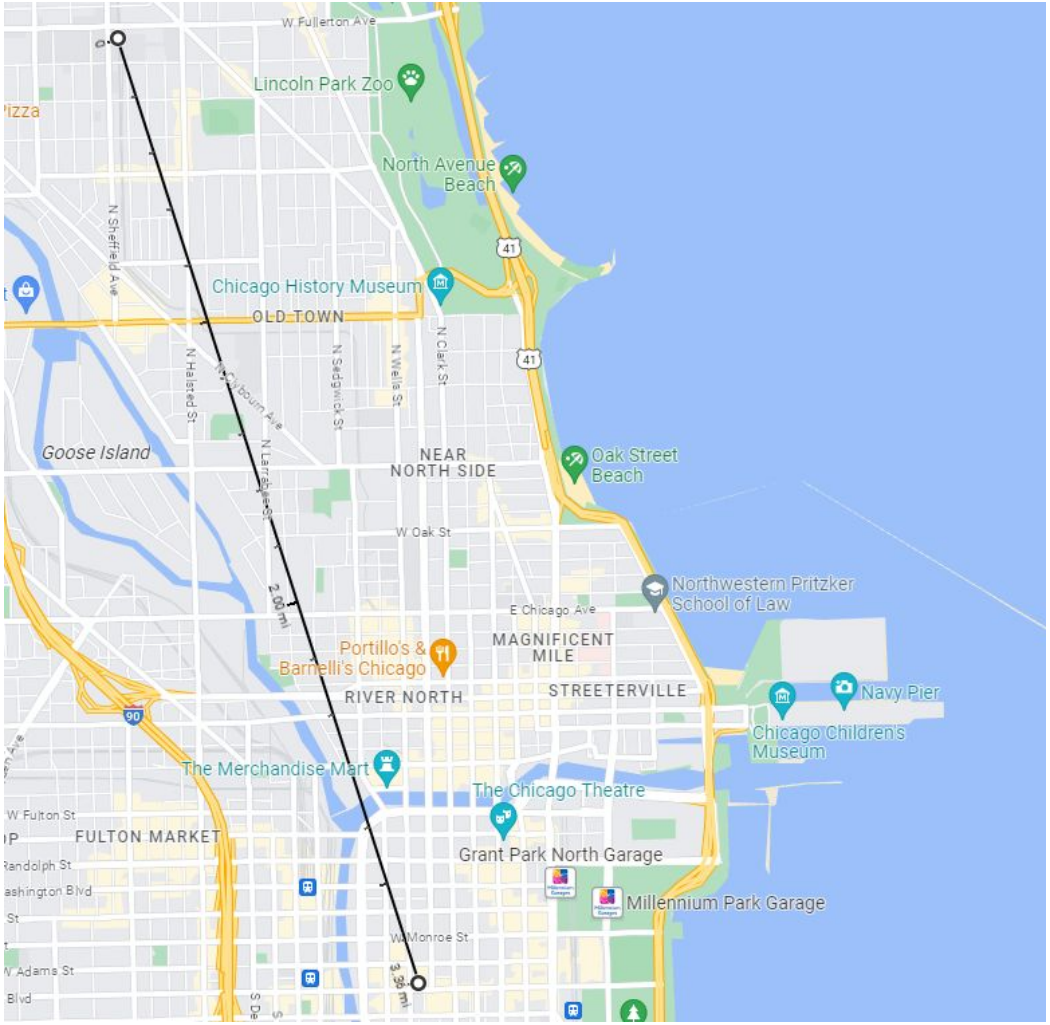
8:13 PM **Sedgwick**

Brown Line Loop
8 min (4 stops)

8:21 PM **Quincy**

Walk
About 3 min, 0.1 mi

8:24 PM **Federal Reserve Bank of Chicago**
230 S La Salle St, Chicago, IL 60604


W Fullerton Ave
Lincoln Park Zoo
North Avenue Beach
41
N Sheffield Ave
Chicago History Museum
OLD TOWN
N Halsted St
N Sedgwick St
N Wells St
N Clark St
Goose Island
NEAR NORTH SIDE
Oak Street Beach
W Oak St
Northwestern Pritzker School of Law
E Chicago Ave
2.00 mi
MAGNIFICENT MILE
Portillo's & Barnelli's Chicago
RIVER NORTH
STREETERVILLE
Navy Pier
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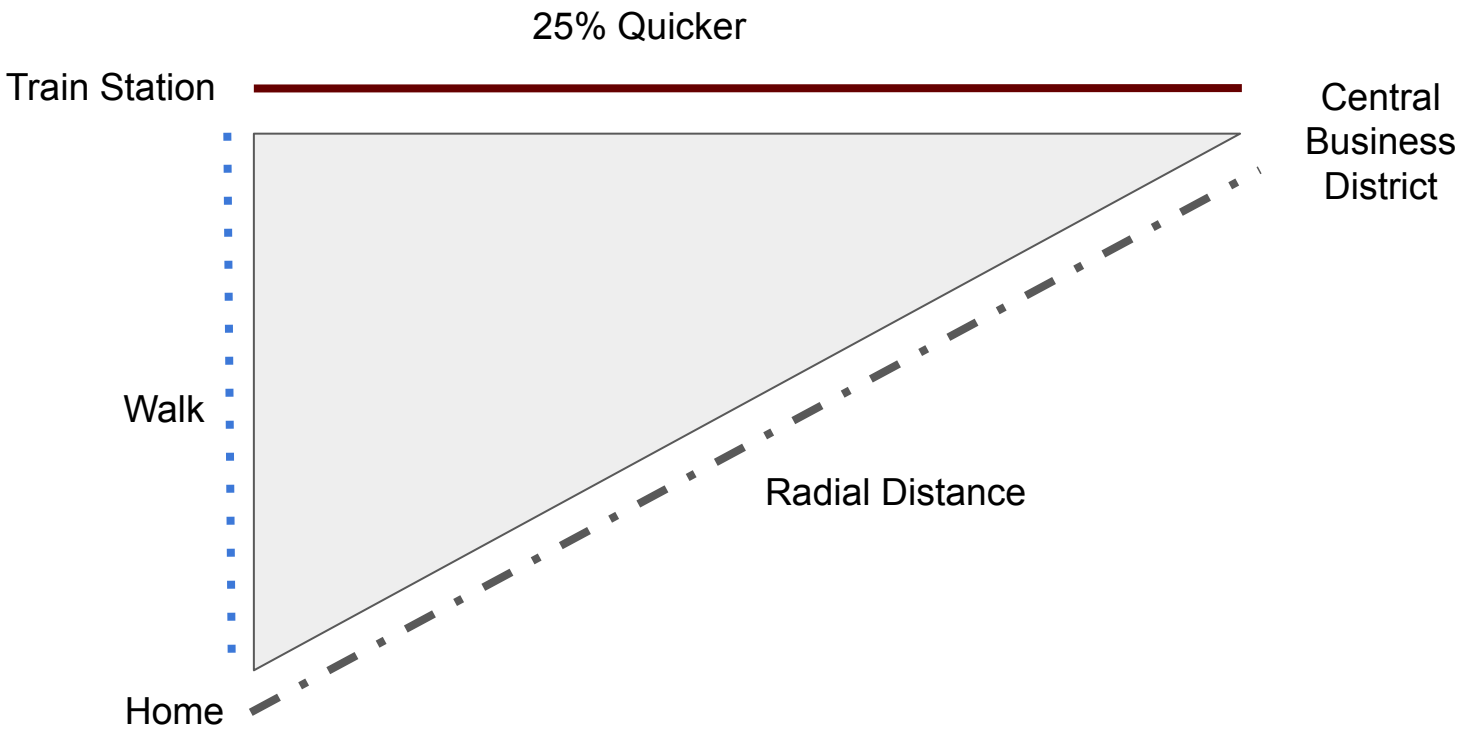
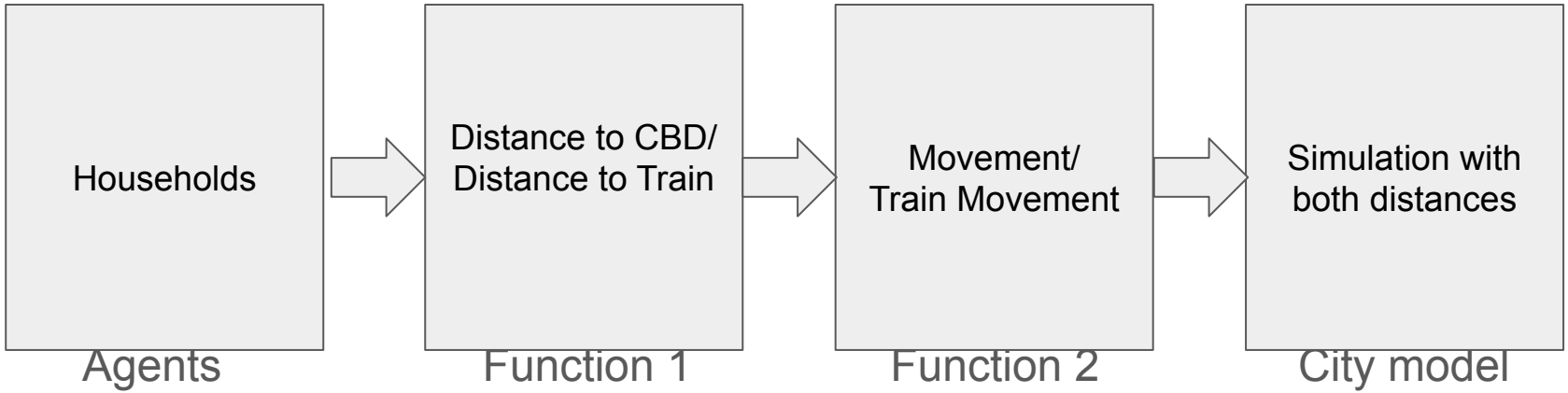
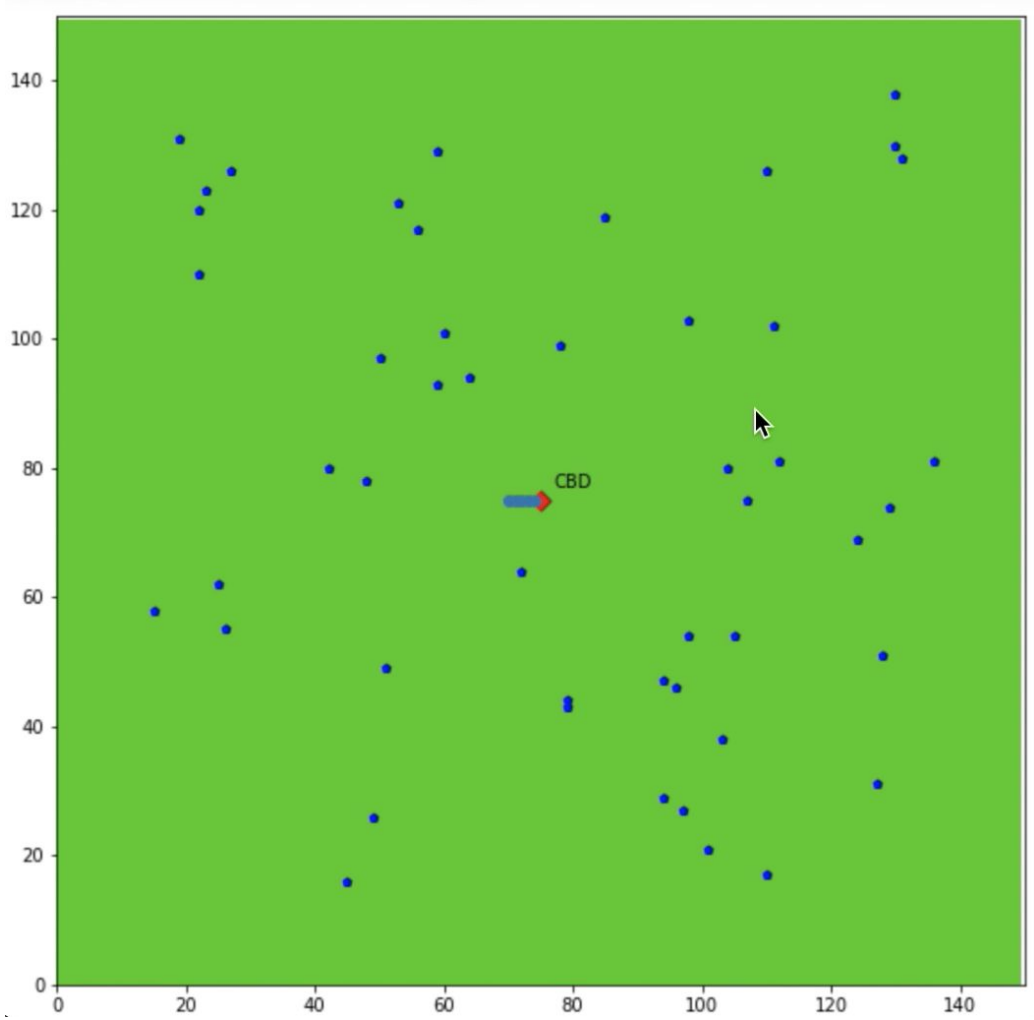
Chicago Children's Museum
The Merchandise Mart
The Chicago Theatre
W Fulton St
FULTON MARKET
Grant Park North Garage
Millennium Park Garage
W Monroe St
3.39 mi


25% Quicker
Train Station
Central
Business
District
Walk
Radial Distance
Home

Functions of the Model

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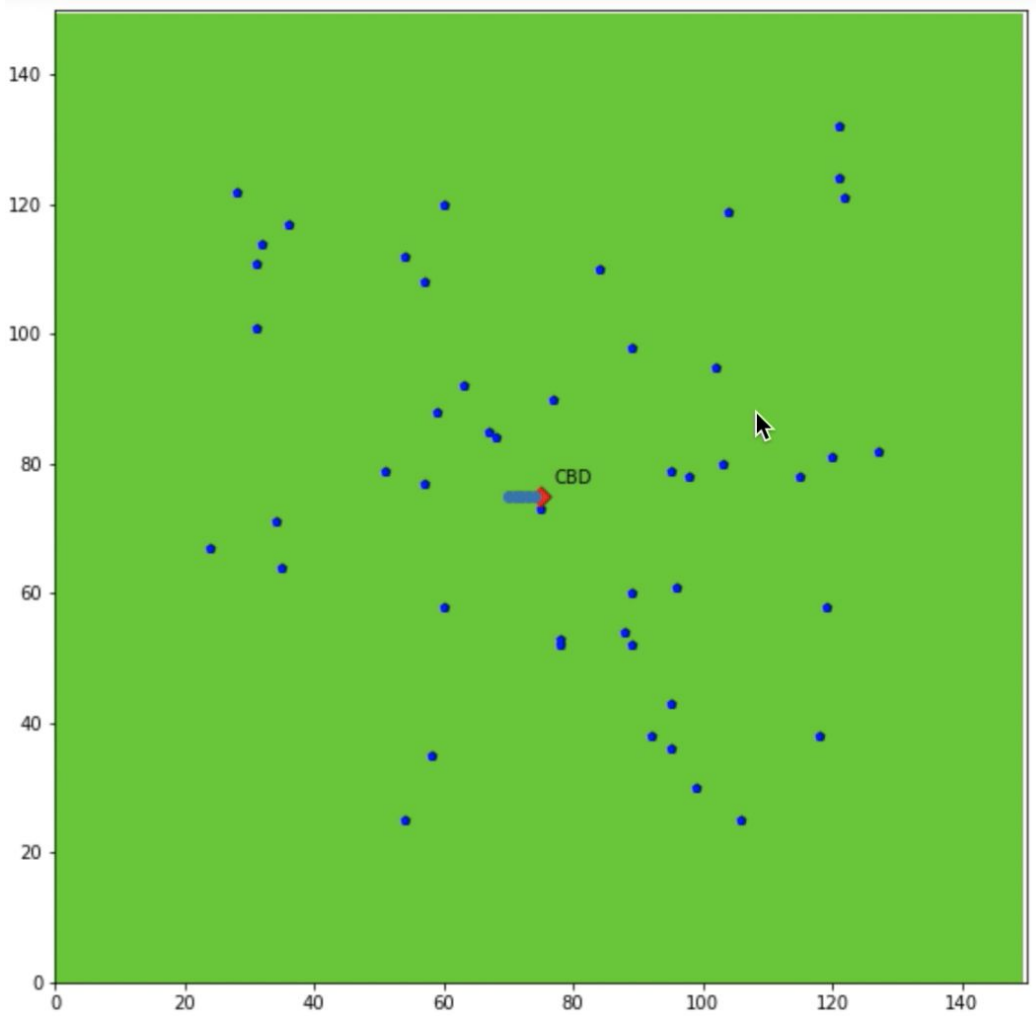
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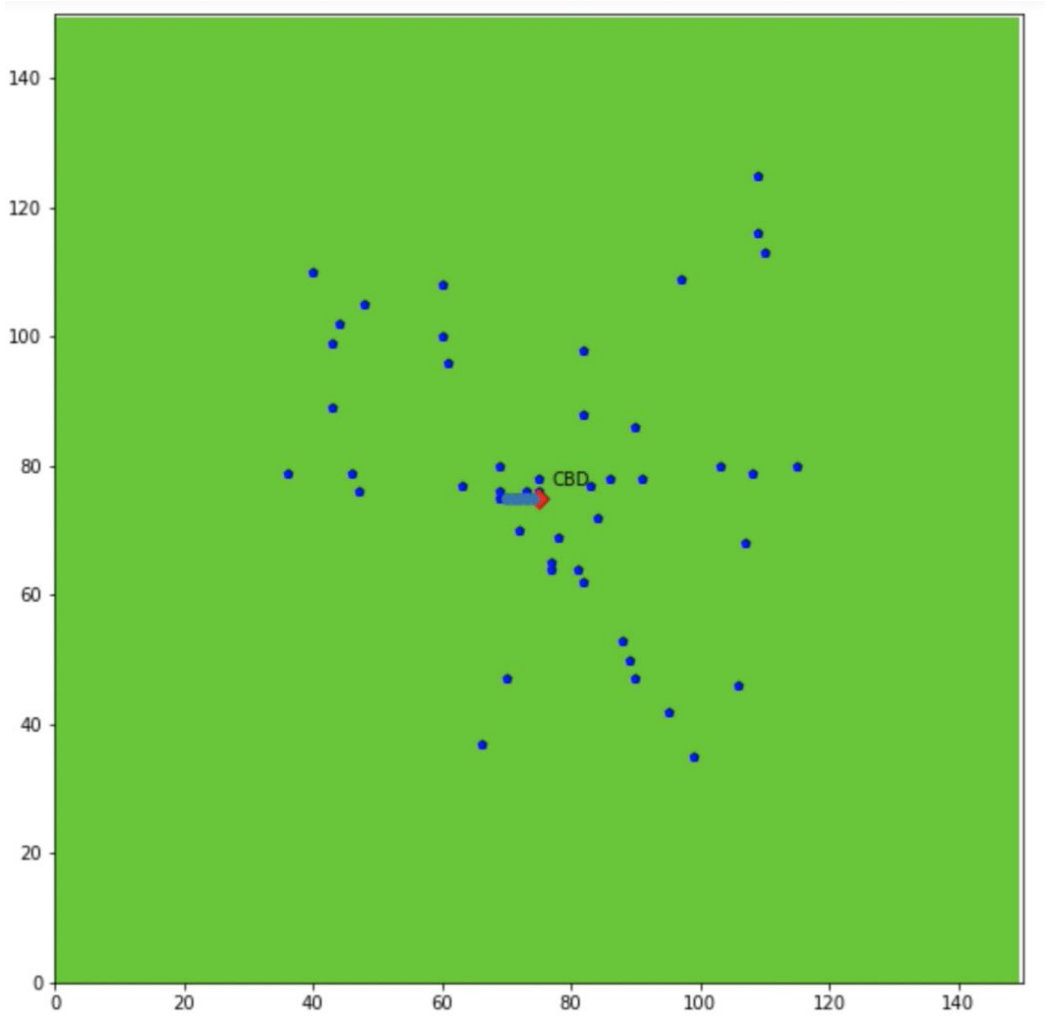
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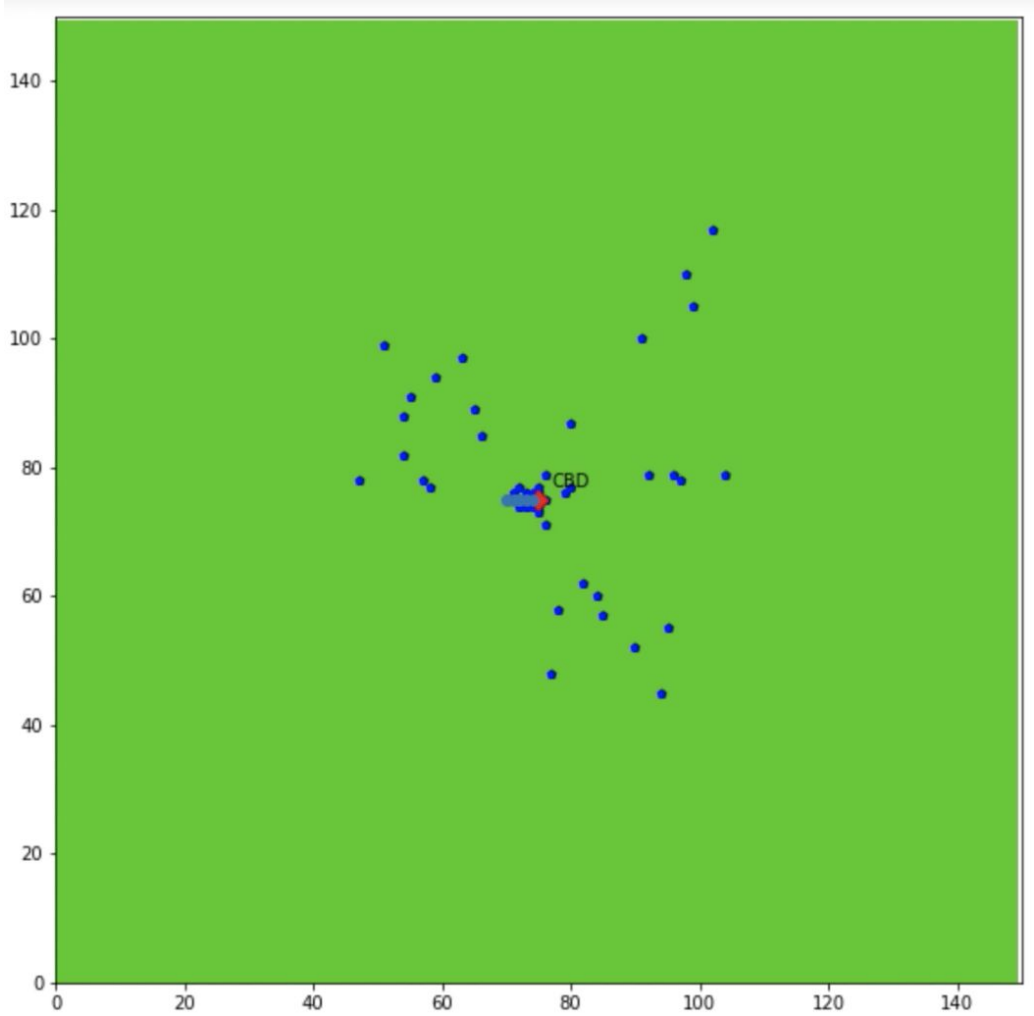
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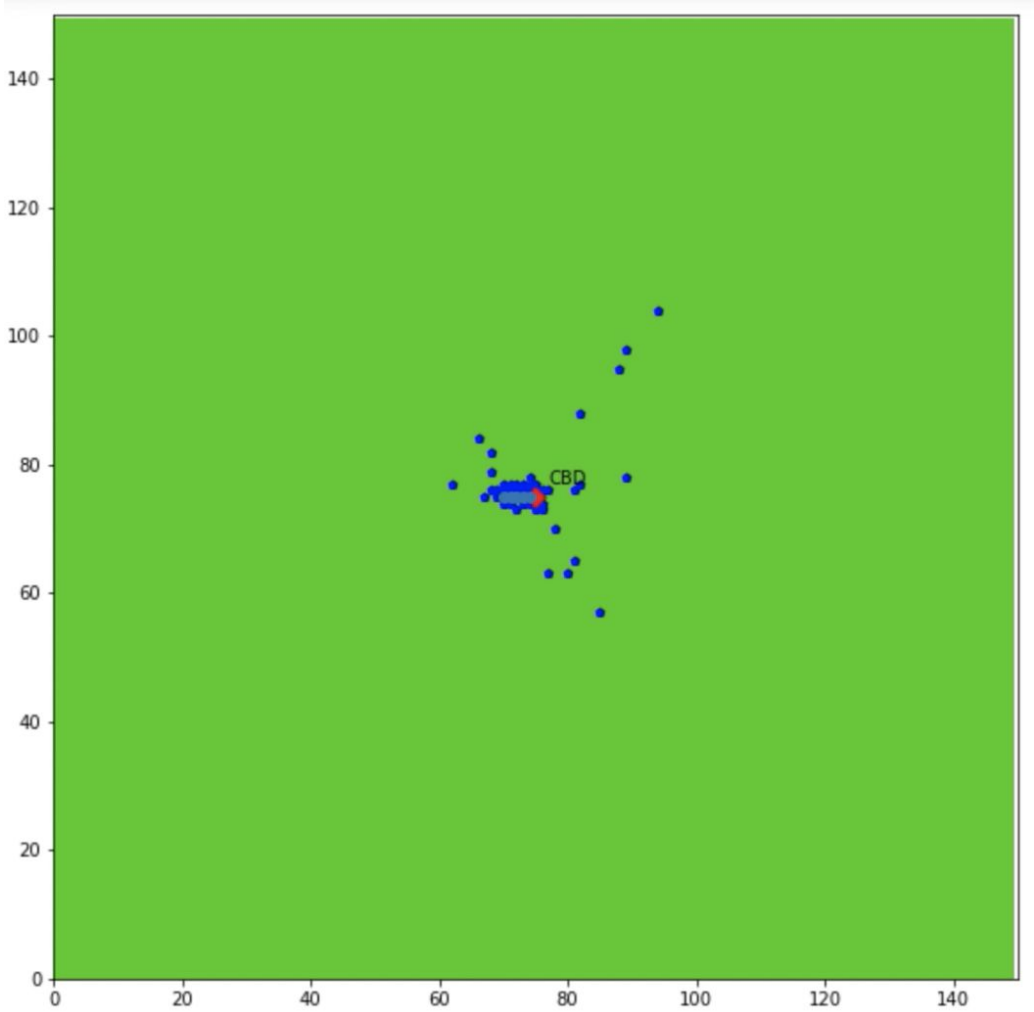
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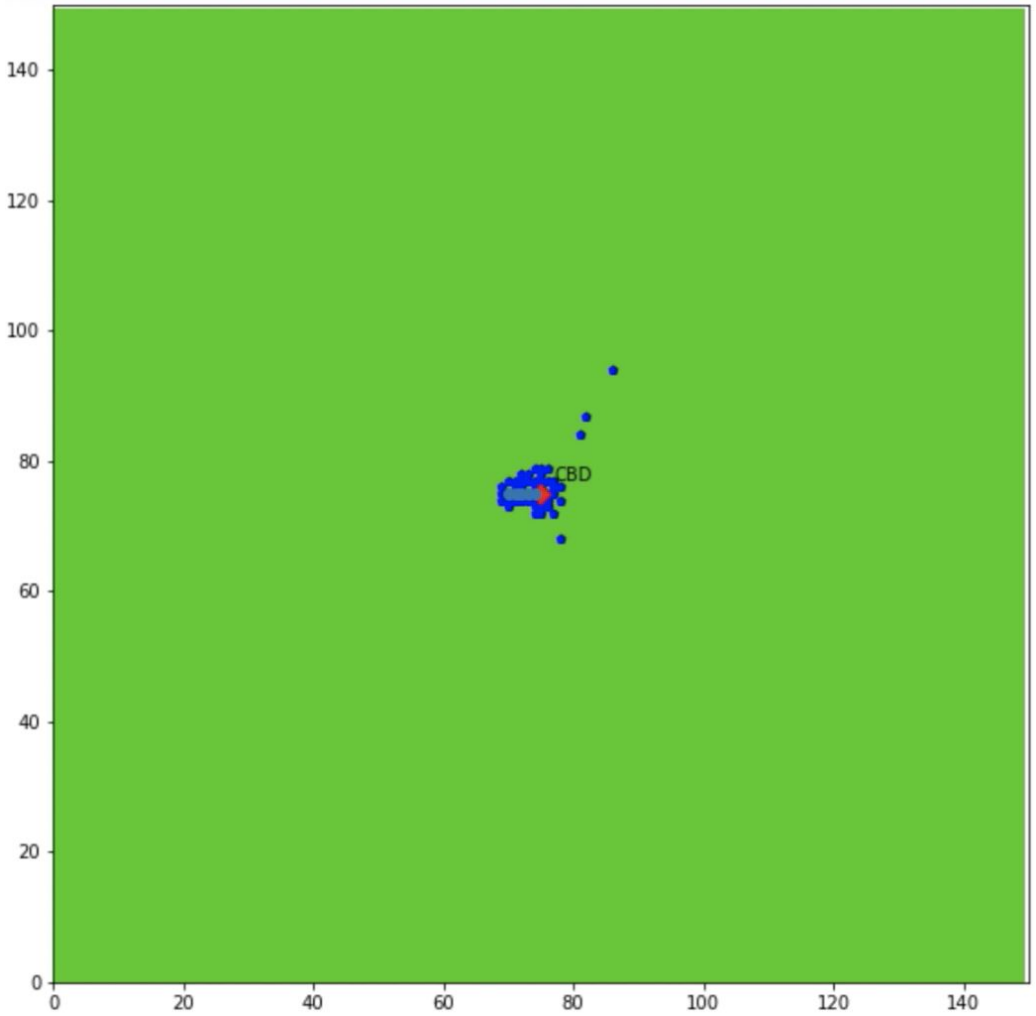
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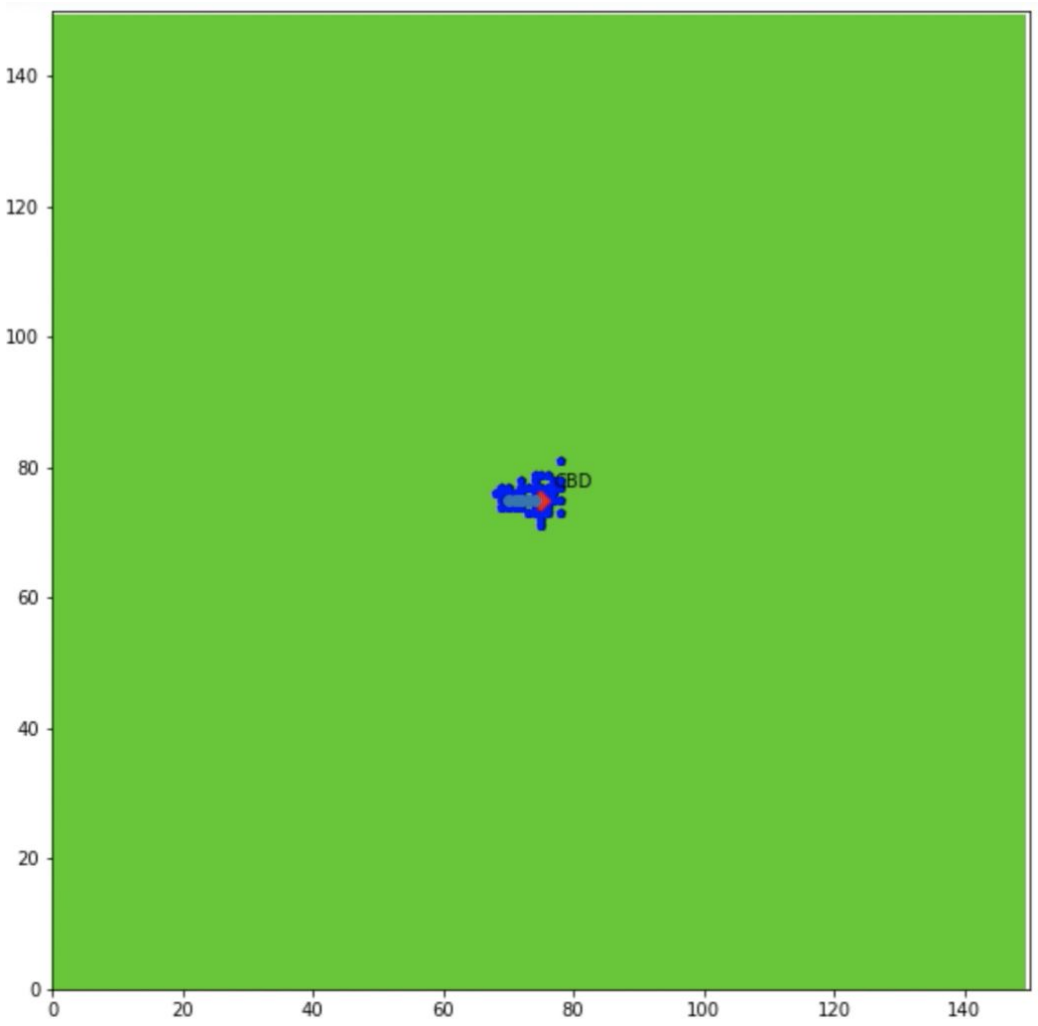
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Results

- If people can radially commute, it forms a circle around the city
- If people can take a train too, it sort of turns into a rectangle around the city
- The radical commute part is accurate to the original monocentric city model

Conclusion

This could be a very simple form of support of transit oriented development. People like to shorten their commutes by living close to a city, that can also mean they’d like to live to a train station that also shortens their commute.

Someone should tell NYC that…

Buildings within 1 km of NYC Subway Stop		
Borough	**Avg # Floors**	**% of Bldgs. <=3 floors**
Brooklyn	2.5	89.2
Bronx	2.4	88.3
Manhattan	6.2	24.0
Queens	2.3	94.8
Staten island	1.8	99.6
NYC	**2.7**	**85.9**