

Access to Retail and Home-goods in Detroit, MI

A project using skills gained in the IBM Data Science Professional Certificate program on Coursera.

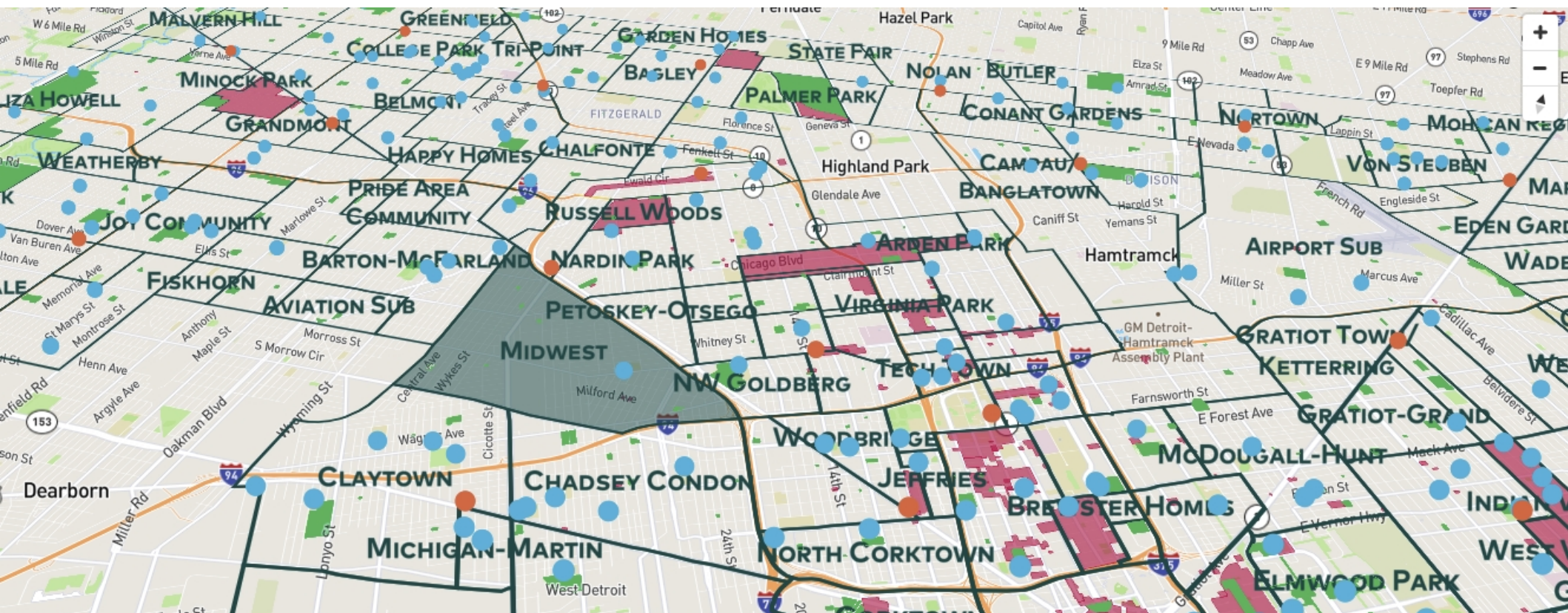


An initial assessment for non-profits.

Map location based access to hardware, homegoods, and bigbox retail shops to identify where there may be a need for non-profits to provide these supplies.

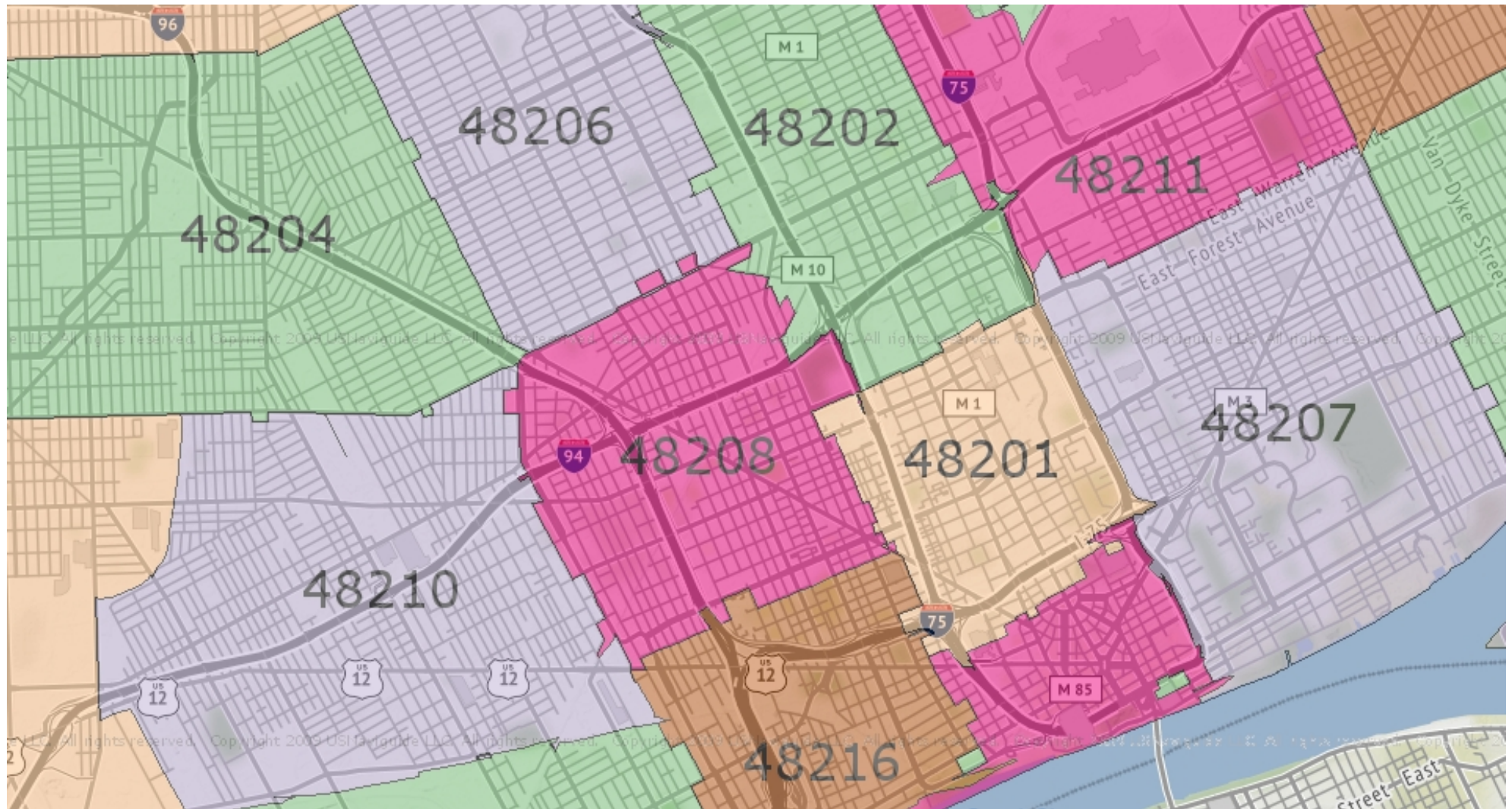


City of Detroit Neighborhood Map



Geocoding Data Sources

zipmap.net



Geocoding Data Sources

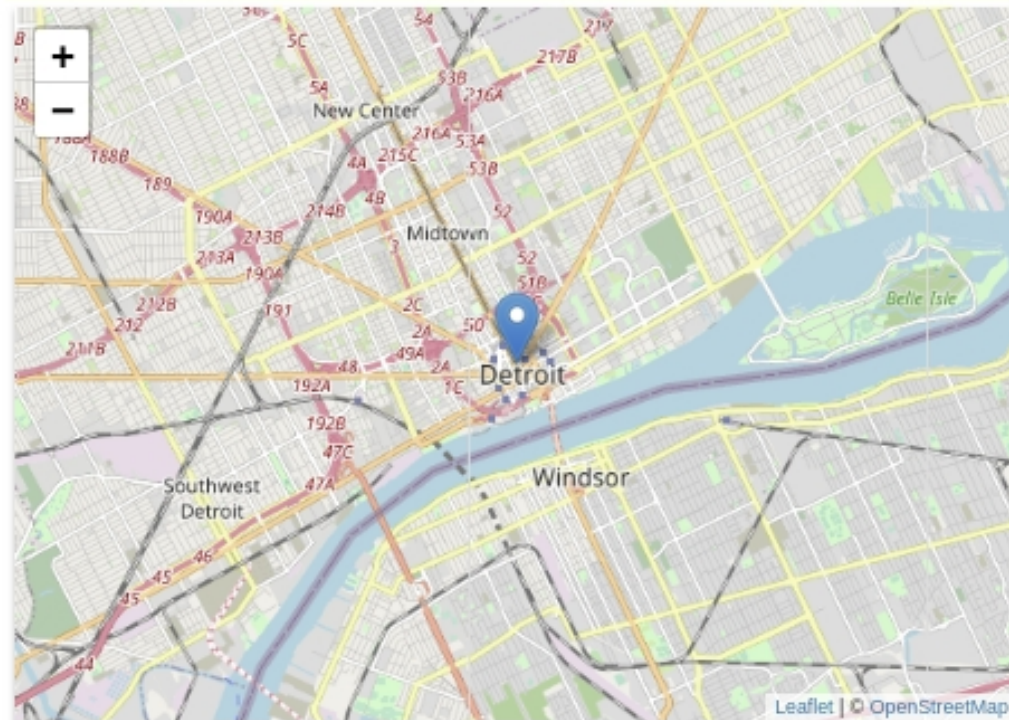
latlong.net

Place Name

Add the country code for better results. Ex: London, UK

Latitude Longitude

For better accuracy please type Name Address City State Zipcode.



Final Geocoded Output

	zipcode	neighborhood	latitude	longitude
0	48201	Brewster-Douglas	42.347507	-83.048334
1	48201	Brush Park	42.343733	-83.052593
2	48201	Jeffries	42.345604	-83.070811
3	48201	Midtown	42.351567	-83.061879
4	48201	Medical Center	42.354643	-83.057265

Creating the list of venues.

Retrieve venue data from Foursquare API using
venues/explore?categoryId=

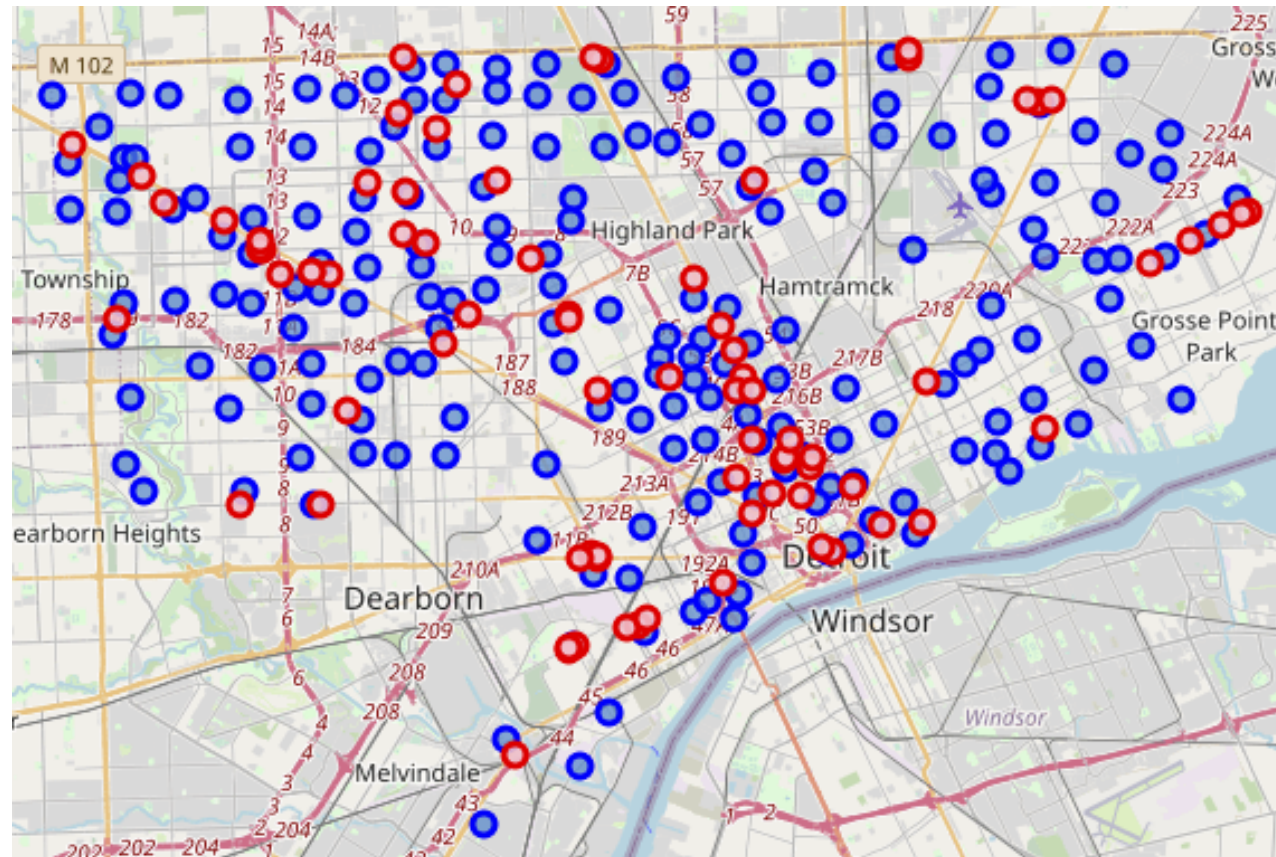
[https://api.foursquare.com/v2/venues/explore?
&client_id=&client_secret=&categoryId=&v=&ll=
&radius=&limit=](https://api.foursquare.com/v2/venues/explore?&client_id=&client_secret=&categoryId=&v=&ll=&radius=&limit=)

Dataframe Structure

	Neighborhood	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
0	Brush Park	42.343733	-83.052593	PharMor Pharmacy	42.345122	-83.057125	Pharmacy
1	Jeffries	42.345604	-83.070811	Family Dollar	42.341389	-83.072208	Discount Store
2	Jeffries	42.345604	-83.070811	Third Ave Hardware	42.345640	-83.066366	Hardware Store
3	Midtown	42.351567	-83.061879	Hugh	42.351198	-83.063894	Furniture / Home Store
4	Midtown	42.351567	-83.061879	Nest	42.351439	-83.065846	Furniture / Home Store

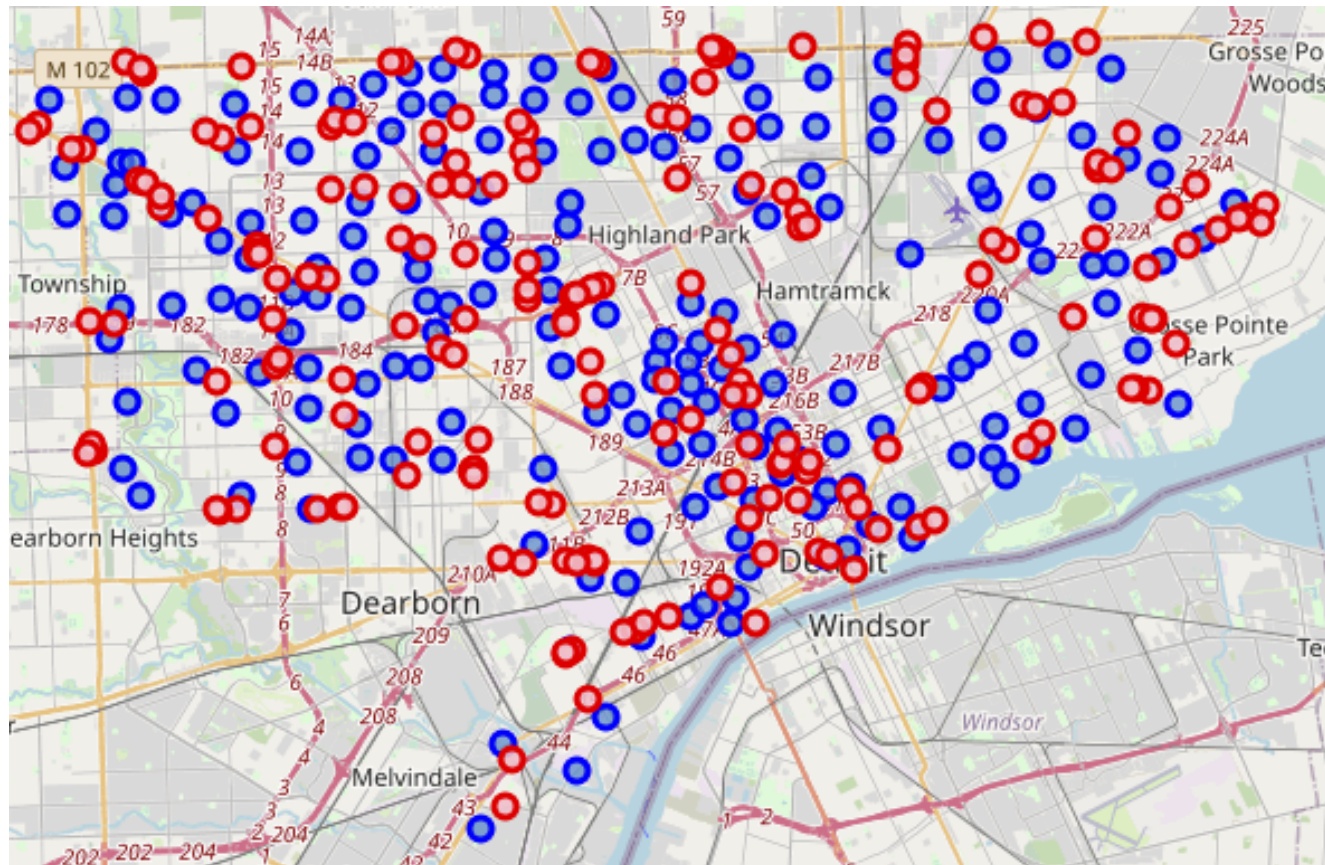
First map with search radius=500m

80 venues in red, 200 neighborhoods in blue



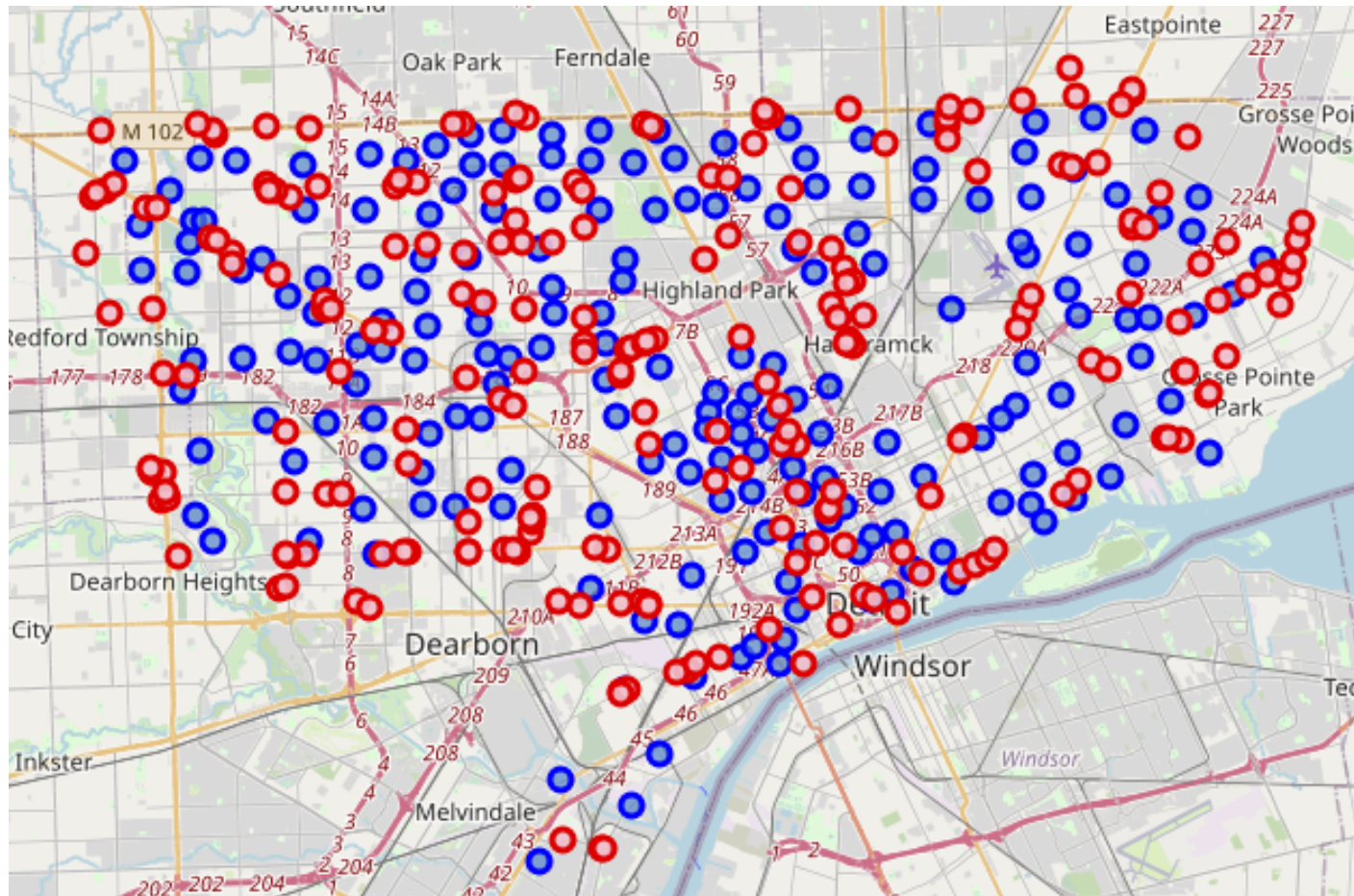
Second map, radius=1000m

195 venues in red, 200 neighborhoods in blue

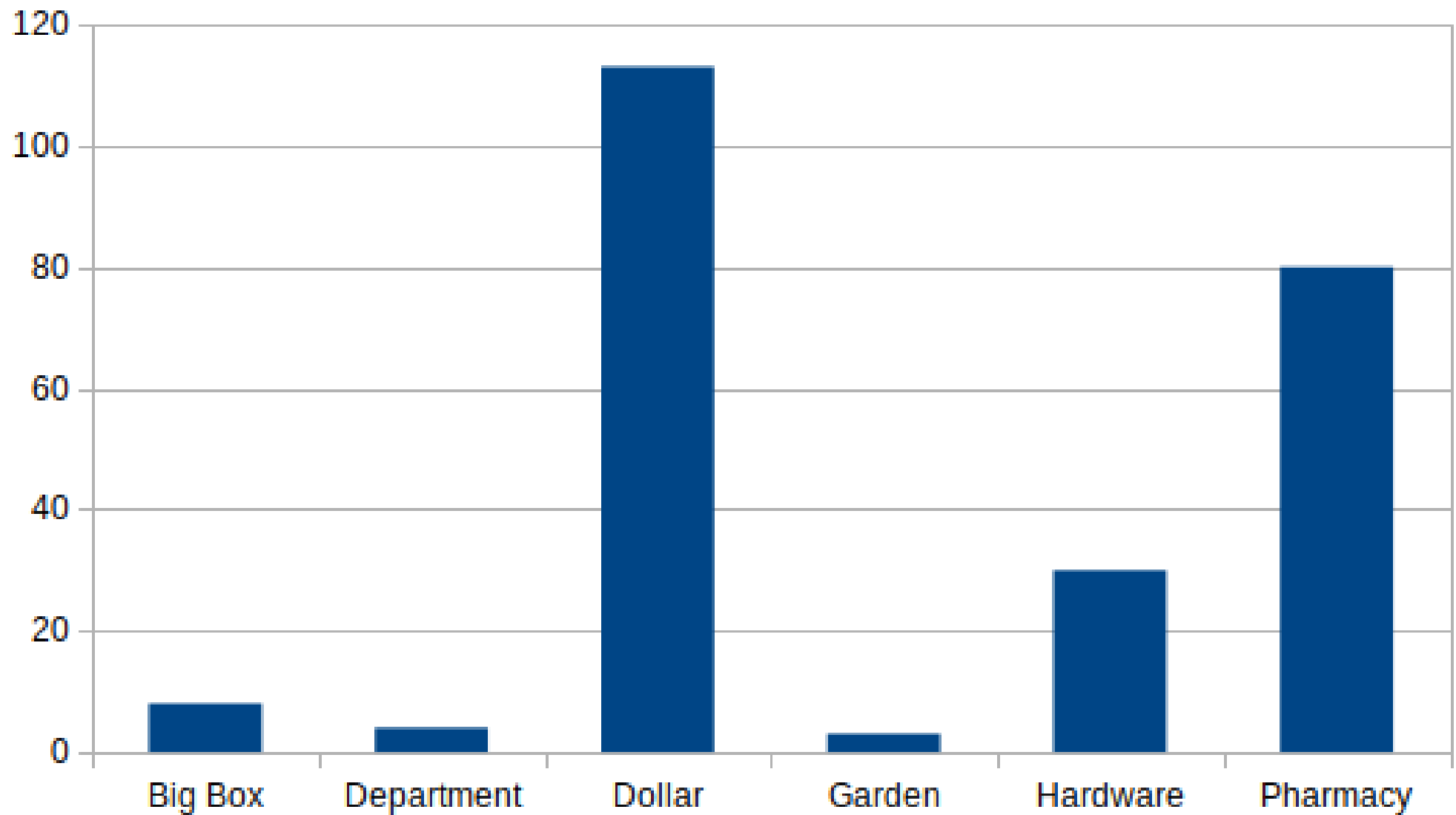


Third map, radius=1500m

238 venues in red, 200 neighborhoods in blue



Venues by category.

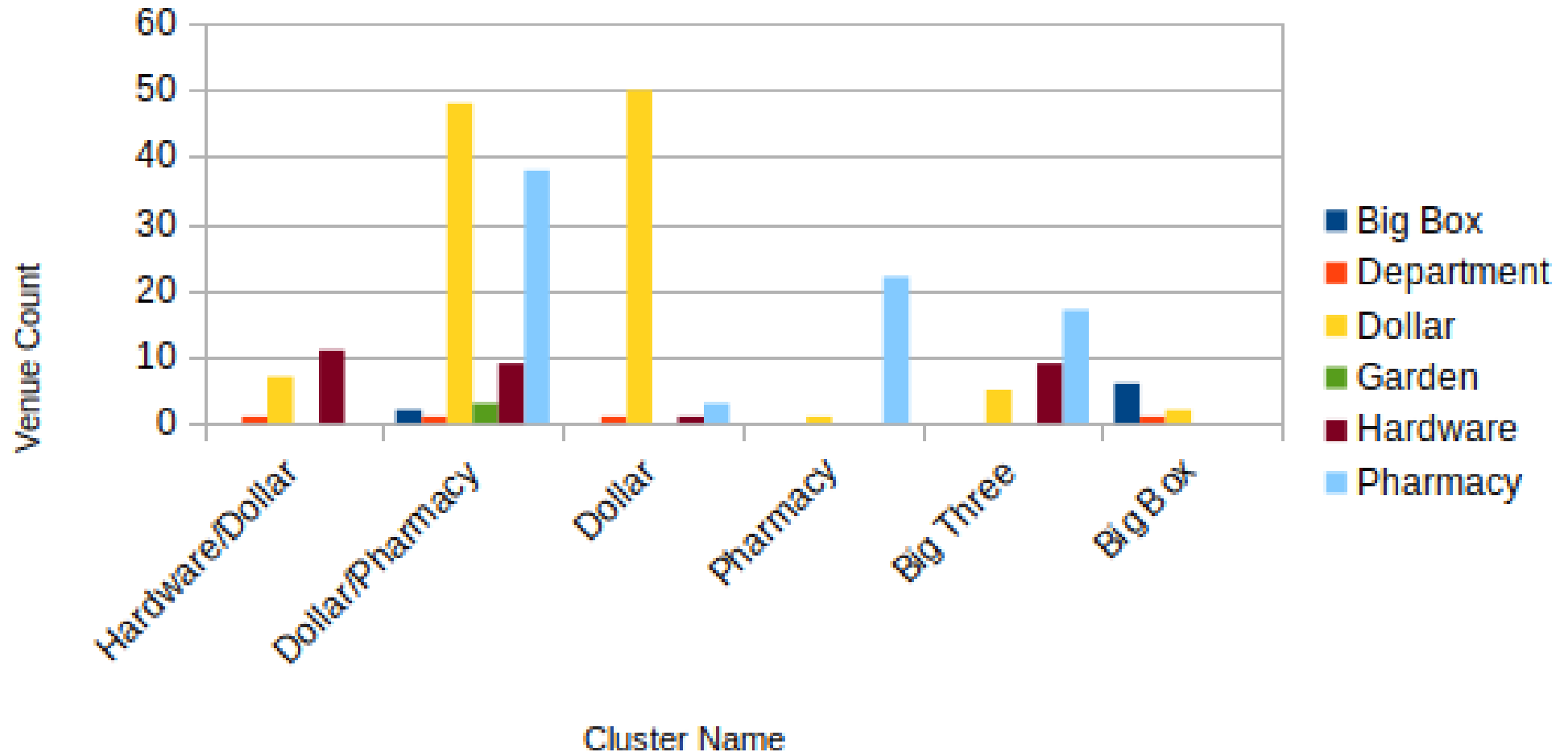


Neighborhood Clusters

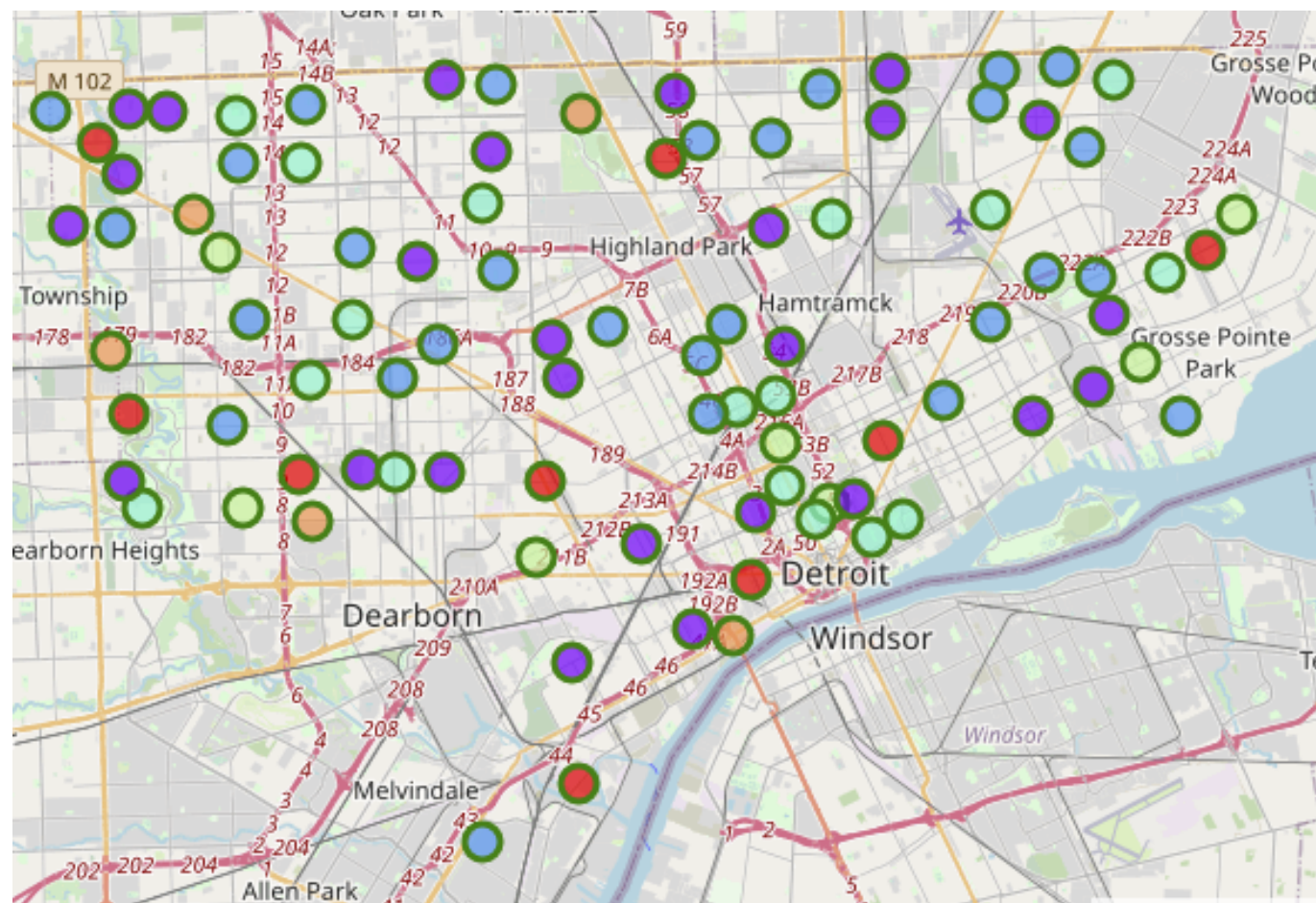
Best result with $k=6$

- Cluster 1: Hardware and Dollar
- Cluster 2: Dollar and Pharmacies
- Cluster 3: Dollar Stores Galore!
- Cluster 4: Pharmacies Are All We See
- Cluster 5: The Big Three
- Cluster 6: Big Box

Cluster Venues



Map of the Clusters



Map legend:

Red=Hardware and Dollar Stores
Purple=Dollar Store and Pharmacy
Blue=Dollar Stores Galore!
Turquoise=Pharmacies Are All We See.
Light Green=The Big Three
Orange=Big Box

Cluster 1: Hardware and Dollar

	venue
venue category	
Department Store	1
Discount Store	7
Hardware Store	11

9 neighborhoods
4.5%

18 of 19 are
hardware or
dollar
95%

Cluster 2: Dollar and Pharmacies

	venue
venue category	
Big Box Store	2
Department Store	1
Discount Store	48
Garden Center	3
Hardware Store	9
Pharmacy	38

26 neighborhoods

13%

86 of 101 are dollar
or pharmacy.

85%

Cluster 3: Dollar Stores Galore!

	venue
venue category	
Department Store	1
Discount Store	50
Hardware Store	1
Pharmacy	3

28 neighborhoods
14%

50 of 55 are dollar
stores.
91%

Cluster 4: Pharmacies Are All We See

	venue
venue category	
Discount Store	1
Pharmacy	22

17 neighborhoods
8.5%

22 of 23 are
pharmacy.
96%

Cluster 5: The Big Three

	venue
venue category	
Discount Store	5
Hardware Store	9
Pharmacy	17

7 neighborhoods

3.5%

31 venues

Cluster 6: Big Box

	venue
venue category	
Big Box Store	6
Department Store	1
Discount Store	2

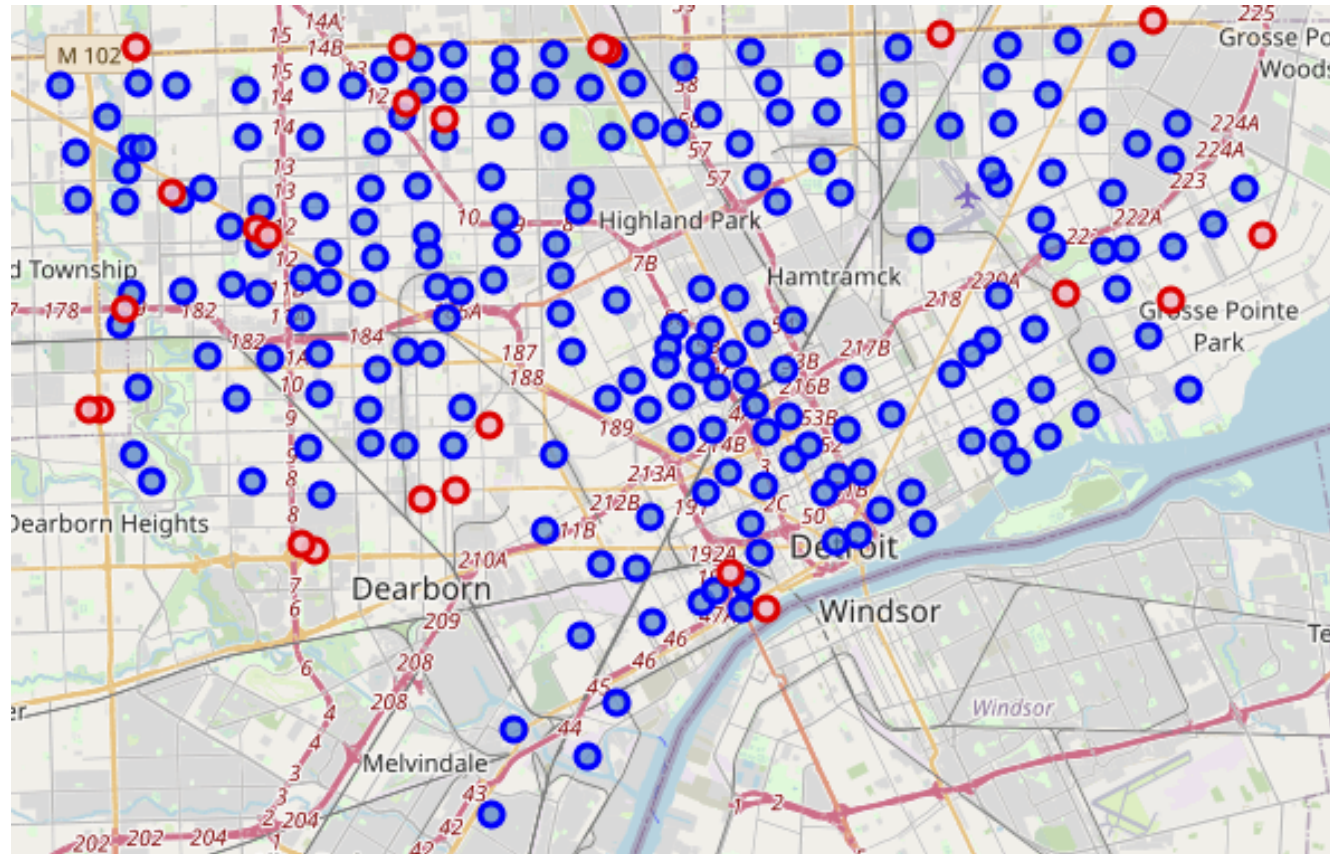
5 neighborhoods
2.5%

6 of 9 are big
box.

67%

Summary:

Extreme lack of access.



Access excluding dollar stores, hardware, and pharmacies is restricted to neighborhoods bordering the suburbs.