

Coursera Capstone Project

Opening and Italian Restaurant in Sheffield

Introduction

- An Italian Chef has moved to Sheffield and is wanting to open a restaurant
- I will try to find an optimal location for a Italian restaurant in Sheffield
- Since there are lots of restaurants in Sheffield I will try to detect **locations that are not already crowded with restaurants**
- My client is particularly interested in **areas with no Italian restaurants in vicinity**
- She would also prefer locations **as close to city centre as possible**
- I will generate a list of few most promising neighbourhoods based on these criteria

Data – Part 1

To analyse the problem I will use:

- number of existing restaurants in the neighbourhood (any type of restaurant)
- number of and distance to Italian restaurants in the neighbourhood
- distance of neighbourhood from city centre
- I will use regularly spaced grid of locations, centred around city center, to define the neighbourhoods

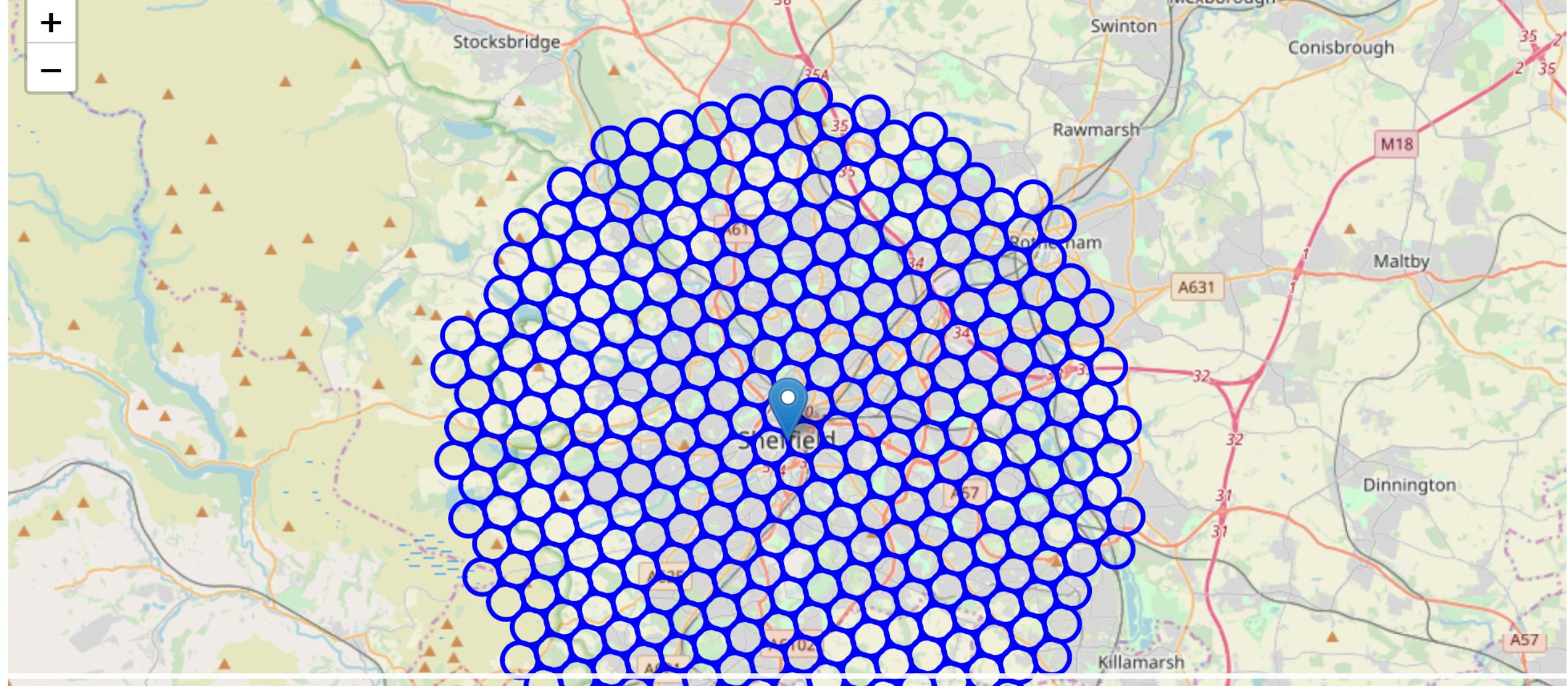
Data – Part 2

Data sources:

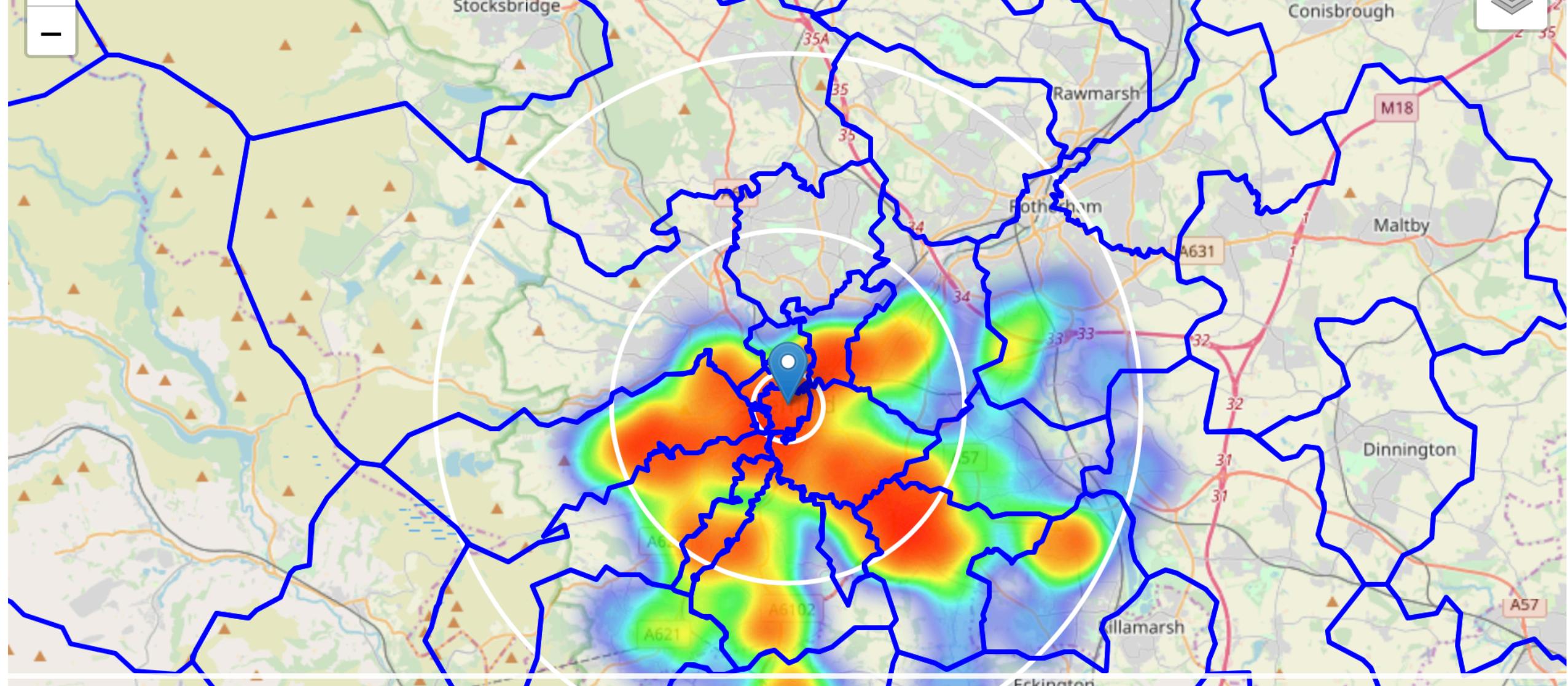
- centres of candidate areas will be generated algorithmically and approximate addresses of centres of those areas will be obtained using **Google Maps API reverse geocoding**
- number of restaurants and their type and location in every neighbourhood will be obtained using **Foursquare API**
- coordinate of Sheffield centres will be obtained using **Google Maps API geocoding** of well known Sheffield location (Peace Gardens)

Methodology - 1

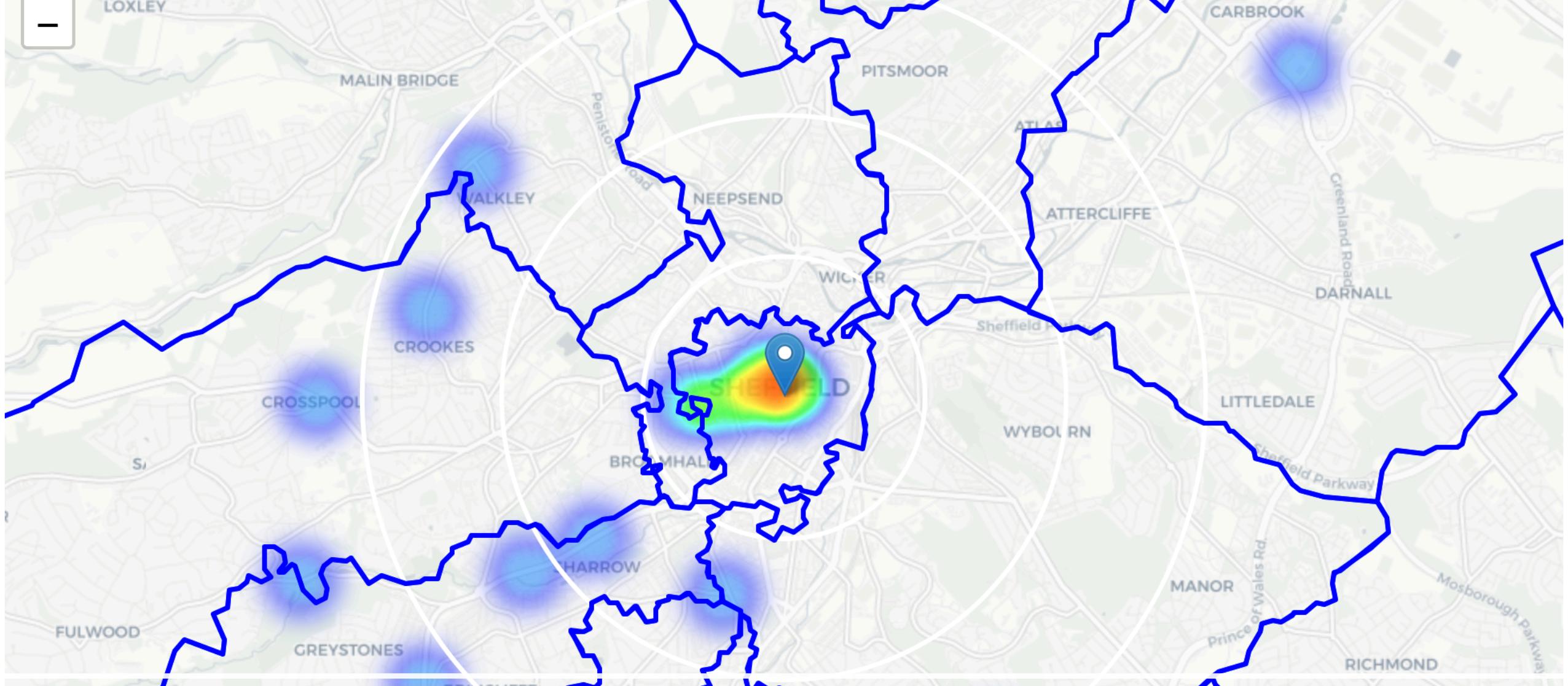
- The city was partitioned into a grid of uniform size
- The presence of restaurants in this grid was calculated
- The grid was mapped so that it could be seen geographically
- The presence was also calculated using a heat map
- Areas of known student populations were preferred
- Farmland was avoided
- A list of the most likely candidate areas was then compiled
- A reverse-lookup turned this into a list of addresses



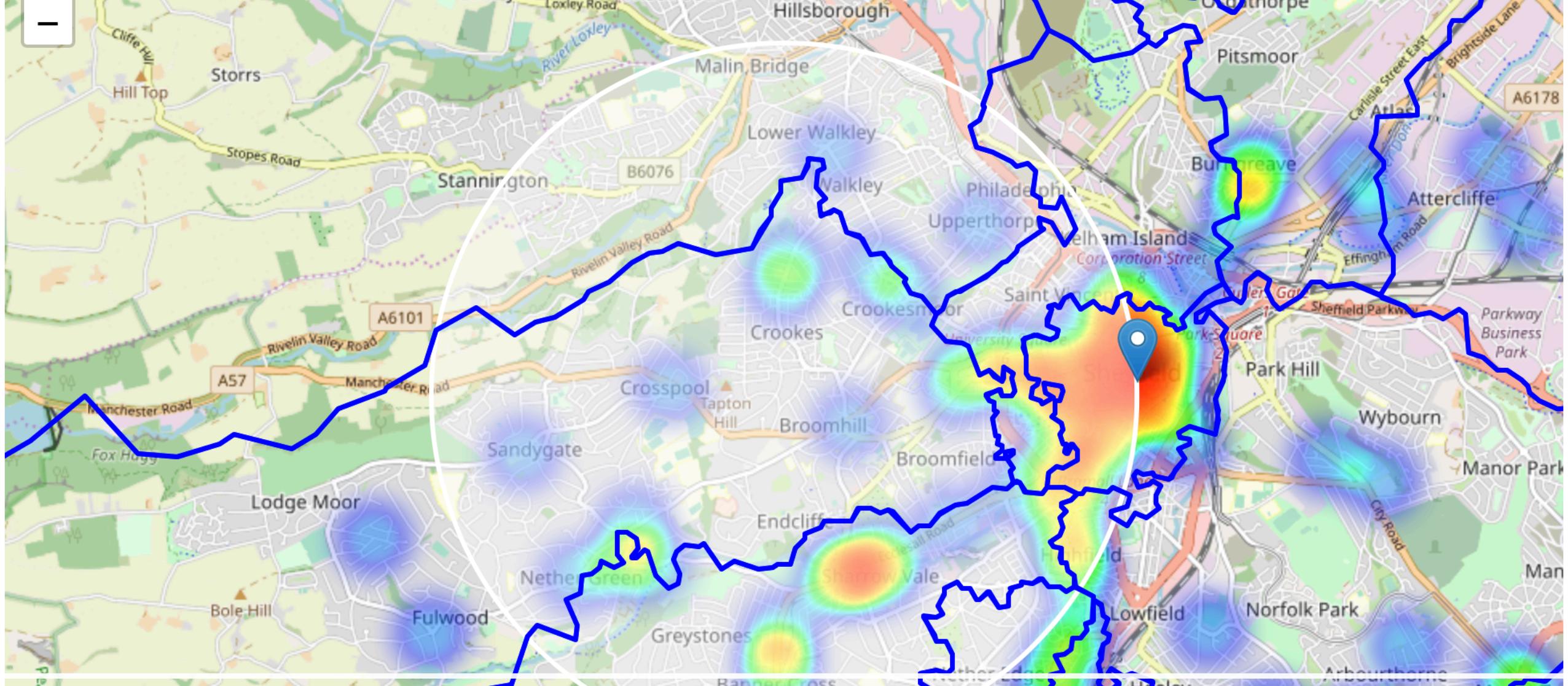
Methodology – Grid of regions



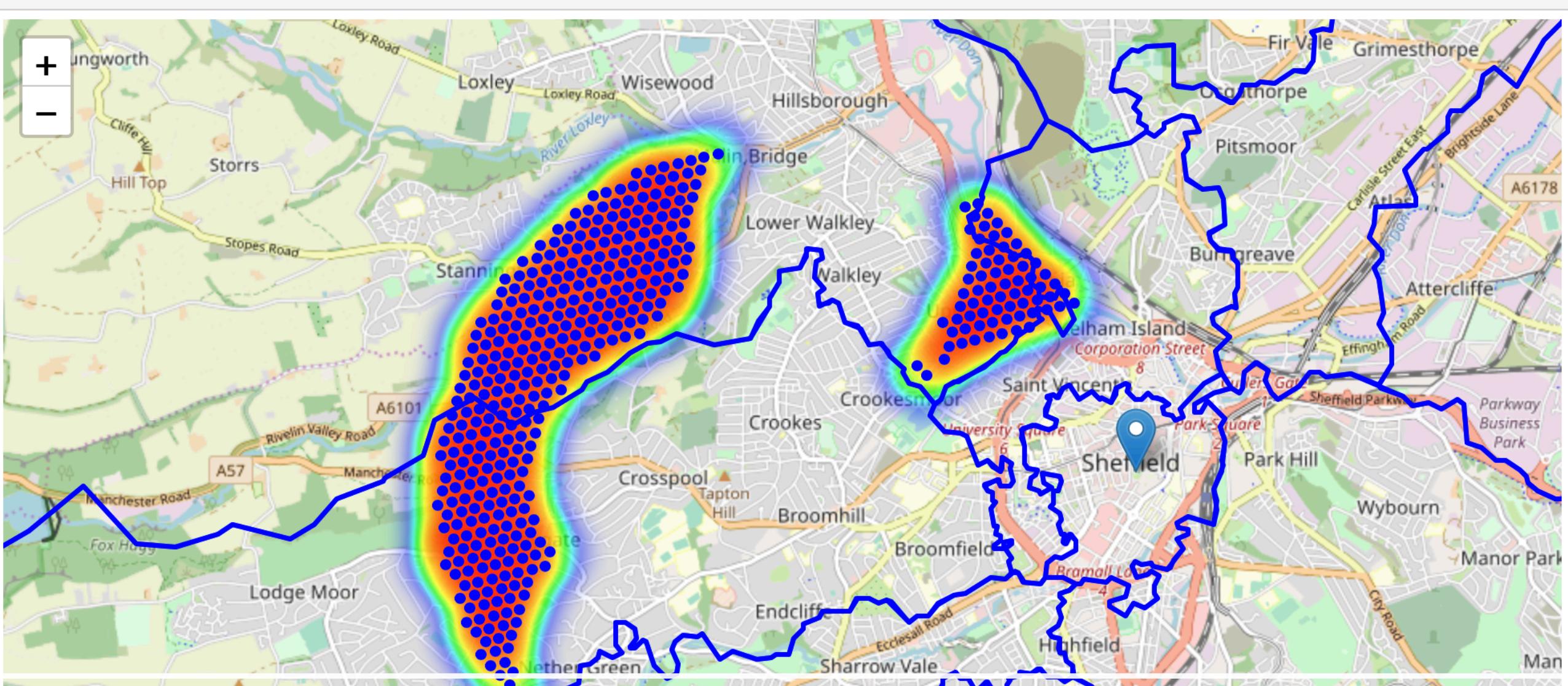
Methodology – Heatmap



Methodology – Heatmap (Italian Only)



Methodology – Heatmap (centered on High Student Area)

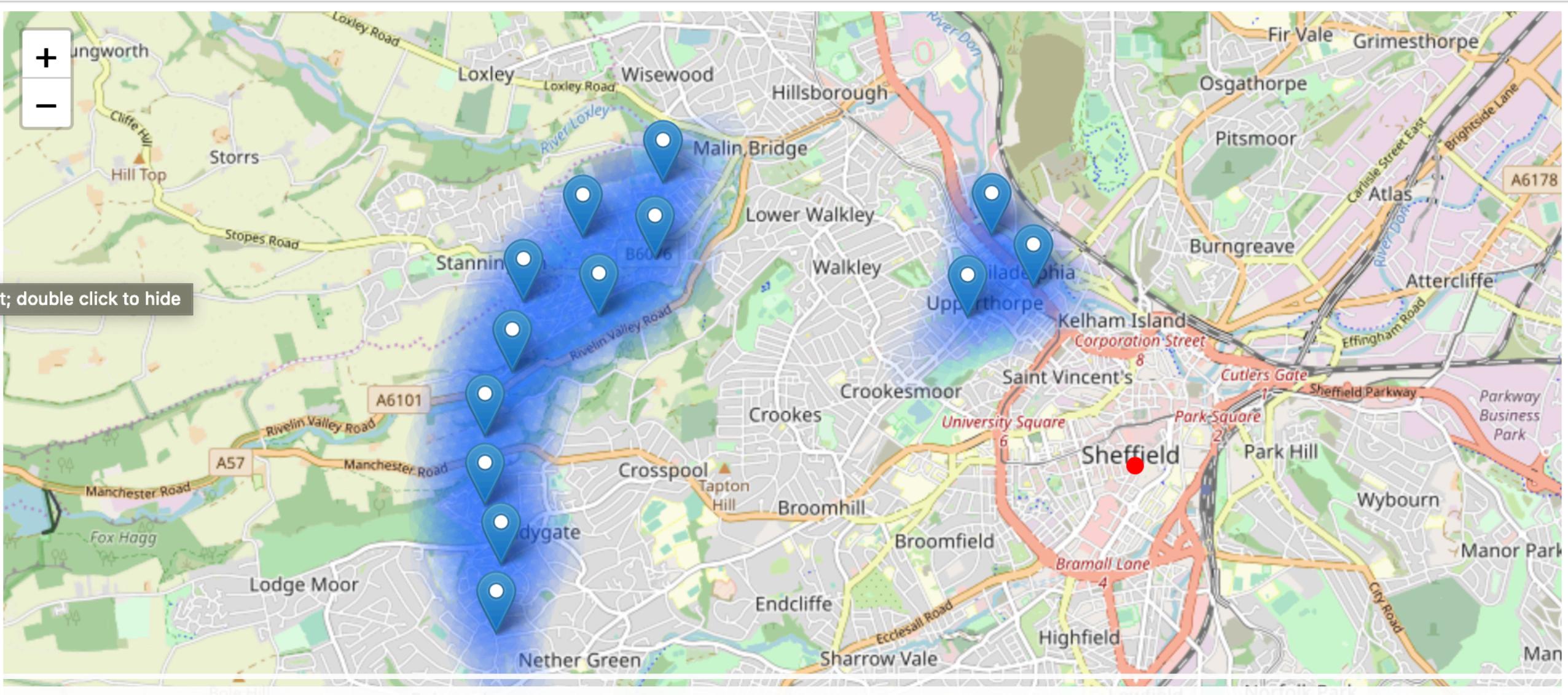


Methodology – Mapping Possible Locations

Results

15 top locations were identified

- 31 Woodfarm Dr, Sheffield S6 5LW, UK => 4.3km from Peace Gardens
- 2 Cross Bedford St, Sheffield S6 3AT, UK => 1.5km from Peace Gardens
- 23 Burnt Stones Cl, Sheffield S10 5TS, UK => 4.7km from Peace Gardens
- 2 Raven Rd, Nether Edge, Sheffield S7 1SB, UK => 2.6km from Peace Gardens
- Wood Lane, Sheffield S6 5AZ, UK => 4.0km from Peace Gardens
- 80 Hall Park Hill, Sheffield S6 5QU, UK => 4.6km from Peace Gardens
- 801 Manchester Rd, Sheffield S10 5SY, UK => 4.7km from Peace Gardens
- 34 Addy St, Sheffield S6 3FU, UK => 1.6km from Peace Gardens
- 66 Stumperlowe Cres Rd, Sheffield S10 3PR, UK => 4.8km from Peace Gardens
- Rivelin View, Roscoe Bank, Sheffield S6 5SB, UK => 4.6km from Peace Gardens
- 46 Rivelin Park Dr, Sheffield S6 5GG, UK => 3.8km from Peace Gardens
- 10 Balaclava Rd, Sheffield S6 3BG, UK => 1.9km from Peace Gardens
- 72 Carsick Hill Rd, Sheffield S10 3LX, UK => 4.6km from Peace Gardens
- 89 Roscoe Bank, Sheffield S6, UK => 4.0km from Peace Gardens



Locations for Possible Restaurants

Discussion

- Sheffield is not Berlin
 - Lower density of people and restaurants meant search parameters had to be adjusted
 - Sheffield restaurant use is more likely to be from students than tourists
- Without mapping population density some of the suggested locations would have been in national parkland
 - Choosing areas based on student locations helped reduce this error
- There is always a chance that the reason there is no Italian restaurant in a given area is because the local behaviour is to head for the city centre

Conclusion

- Suitable locations were identified
- Further research should be done to see if these locations merit a restaurant
 - Surveying local inhabitants would be wise
- The tools need to be adjusted when changing city
 - What works well for one city will not work as well for another