

The background features abstract, overlapping green geometric shapes, primarily triangles and polygons, in various shades of green, creating a modern and dynamic visual effect.

HELPING PEOPLE FIND THE BEST NEIGHBOURHOOD TO LIVE IN

April 2021

Agenda

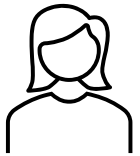
- ▶ 1. Introduction
- ▶ 2. Data
- ▶ 3. Methodology
- ▶ 4. Results
- ▶ 5. Discussion and recommendations
- ▶ 6. Conclusion and next steps

Introduction

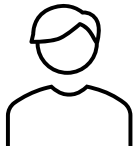
► People are constantly moving

- Some people may want to live in a neighbourhood similar to where they live today.
- They may not know the new city they are moving to
- We will help them find **which neighbourhoods are the best match for them**

► Two scenarios



- Scenario 1: **Jane** currently lives in central London, and has received a job offer in Boston. She doesn't know the city, and wants to know which neighbourhoods are best for her.




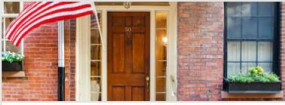




- Scenario 2: **John** lives in New York, and wants to live one year abroad to improve his Spanish. He decided to go to Madrid. However, to reduce the culture shock, he wants to live in a neighbourhood similar to the one he currently lives

Data








► Data Sources

► Boston

 <p><i>Allston</i></p> <p>One of Boston's most diverse and active neighborhoods.</p>	 <p><i>Back Bay</i></p> <p>A picture-perfect neighborhood in the City of Boston.</p>	 <p><i>Bay Village</i></p> <p>Considered Boston's "secret-garden," Bay Village is a brick rowhouse oasis.</p>
 <p><i>Beacon Hill</i></p> <p>Boston's historic Beacon Hill neighborhood is a place frozen in time.</p>	 <p><i>Brighton</i></p> <p>The dynamic and peaceful neighborhood is a great place for young families and professionals.</p>	 <p><i>Charlestown</i></p> <p>Explore the neighborhood's Irish roots and Naval History, and walk along the Freedom Trail.</p>

<https://www.boston.gov/neighborhoods>

► Madrid

District name (number) ↕	District location ↕	Number ↕	Name ↕	Image ↕
Centro (1)		11	Palacio	
		12	Embajadores	
		13	Cortes	
		14	Justicia	
		15	Universidad	
		16	Sol	

https://en.wikipedia.org/wiki/List_of_neighborhoods_of_Madrid

Data

► Libraries

► Geopy

- used to get latitude and longitude from addresses

► Foursquare

- used to fetch nearby venues based on latitude and longitude

► Folium

- used to generate maps

► Pandas

- used to work with dataframes

► Numpy

- used for simple numeric processing

► Requests

- used to get html data from websites

► BeautifulSoup

- used to process html data

Methodology

▶ 1. HTML Processing

- ▶ Use HTML processing (requests and BeautifulSoup) to get the list of neighbourhoods of each destination city into dataframes

▶ 2. Latitude and longitude

- ▶ Use APIs to get the latitude and longitude of each neighbourhood

▶ 3. Nearby venues (destinations)

- ▶ For each location, get a list of nearby venues and their types (e.g. restaurants, bars, nightclubs, etc) using the Foursquare API, and consolidate by neighbourhood

▶ 4. Nearby venues (current homes)

- ▶ Repeat the process for each of our clients' current addresses

▶ 5. Compare neighbourhoods

- ▶ Use some measure of similarity to identify the best neighbourhoods for our clients(e.g. Euclidean distance)

▶ 6. Plot results

- ▶ Analyse the results and plot on a map using the Folium library

Results

► 4.1. HTML Processing

► Boston

Neighborhood	
0	Allston
1	Back Bay
2	Bay Village
3	Beacon Hill
4	Brighton
5	Charlestown
6	Chinatown
7	Dorchester
8	Downtown
9	East Boston
10	Fenway-Kenmore
11	Hyde Park
12	Jamaica Plain
13	Mattapan
14	Mid-Dorchester
15	Mission Hill
16	North End
17	Roslindale
18	Roxbury
19	South Boston
20	South End
21	West End
22	West Roxbury
23	Wharf District

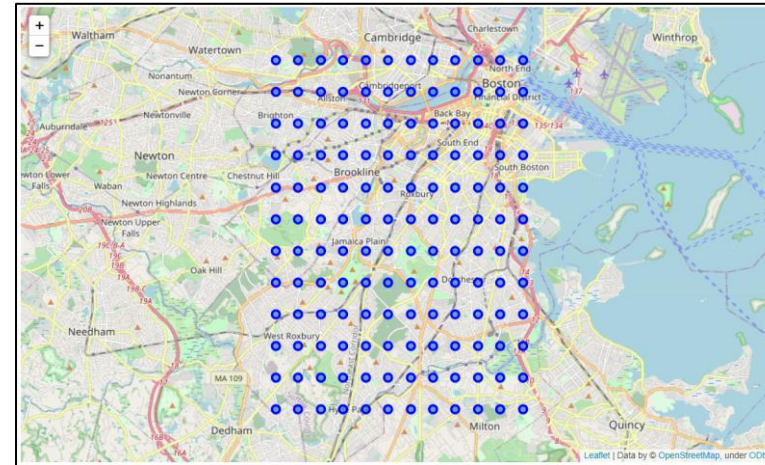
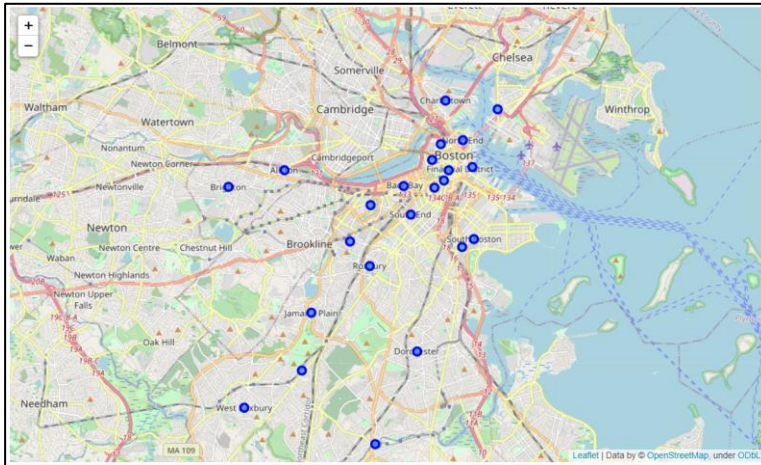
► Madrid

	District	Neighborhood
0	Centro	Palacio
1	Centro	Embajadores
2	Centro	Cortes
3	Centro	Justicia
4	Centro	Universidad
...
126	Barajas	Alameda de Osuna
127	Barajas	Aeropuerto
128	Barajas	Calle Canal de Suez
129	Barajas	Timón
130	Barajas	Corralejos

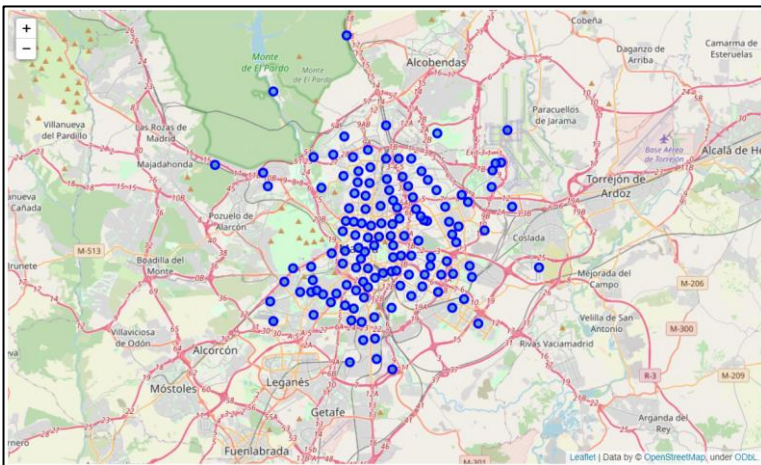
Results

► 4.2. Latitudes and Longitudes

► Boston



► Madrid



Results

► 4.3. Nearby venues (destinations)

► Madrid example

	NeighborhoodName	Top 1	Top 2	Top 3	Top 4	Top 5	Top 6	Top 7	Top 8	Top 9	Top 10
0	Abrantes	Metro Station	Plaza	Ice Cream Shop	Athletics & Sports	Burger Joint	Nightclub	Tapas Restaurant	Fast Food Restaurant	Park	Gym / Fitness Center
1	Acacias	Bar	Tapas Restaurant	Spanish Restaurant	Coffee Shop	Pizza Place	Art Gallery	Plaza	Indie Theater	Vegetarian / Vegan Restaurant	Market
2	Adelfas	Spanish Restaurant	Grocery Store	Bar	Bakery	Fast Food Restaurant	Gym	Burger Joint	Pizza Place	Supermarket	Hotel
3	Aeropuerto	Airport Lounge	Spanish Restaurant	Coffee Shop	Duty-free Shop	Sporting Goods Shop	Fast Food Restaurant	Breakfast Spot	Airport Service	Diner	French Restaurant
4	Alameda de Osuna	Restaurant	Hotel	Park	Spanish Restaurant	Hotel Bar	Café	Gym	Tapas Restaurant	Bistro	Coffee Shop

Neighborhood	Neighborhood Latitude
Abrantes	16
Acacias	100
Adelfas	94
Aeropuerto	15
Alameda de Osuna	36
...	...
Ventas	19
Villaverde Alto	7
Vinateros	23
Vista Alegre	30
Zofio	16

Results

► 4.4. Nearby venues (current homes)

► Jane and John

	NeighborhoodName	American Restaurant	Argentinian Restaurant	Art Gallery	Art Museum	Arts & Crafts Store	Asian Restaurant	Bagel Shop	Bakery	Bar	...	Taiwanese Restaurant	Thai Restaurant	Theater	Thrift / Vintage Store
0	Jane's neighborhood	1	2	1	3	0	1	0	1	2	...	0	0	3	0
1	John's neighborhood	0	1	0	0	1	0	1	4	9	...	1	2	0	1

	NeighborhoodName	Top 1	Top 2	Top 3	Top 4	Top 5	Top 6	Top 7	Top 8	Top 9	Top 10
0	Jane's neighborhood	Coffee Shop	Hotel	Pub	Gym / Fitness Center	Café	Theater	Italian Restaurant	Art Museum	Portuguese Restaurant	Argentinian Restaurant
1	John's neighborhood	Bar	Pizza Place	Coffee Shop	Italian Restaurant	Bakery	Japanese Restaurant	Latin American Restaurant	Wine Shop	Restaurant	Food Truck

- We can see that Jane lives next to coffee shops, hotels, pubs and gyms. John lives next to bars, pizza places, coffee shops and Italian restaurants.

Results

► 4.5. Compare neighbourhoods

► Jane and John

	Neighborhood	Distance
0	10, Wooddale Avenue, Mattapan, Boston, Suffolk...	19.000000
1	1000, Harvard Street, Boston, Suffolk County, ...	19.339080
2	104, Reedsdale Road, Milton Center, Milton, No...	19.235384
3	1084, Boylston Street, Back Bay, Boston, Suffo...	15.842980
4	11, Norway Road, Milton Upper Mills, Milton, N...	18.920888
...
139	The Jewish Advocate, School Street, Downtown C...	14.456832
140	United States Postal Service Lot A, A Street, ...	15.297059
141	Untitled Landscape, Boston HarborWalk, Waterfr...	16.673332
142	Walter C. Wood Sailing Pavilion, 134, Memorial...	16.000000
143	Williams Street, Jamaica Plain, Boston, Suffol...	16.852300

	Neighborhood	Distance
0	Abrantes	15.905974
1	Acacias	12.529964
2	Adelfas	17.262677
3	Aeropuerto	16.462078
4	Alameda de Osuna	16.062378
...
126	Ventas	15.459625
127	Villaverde Alto	16.401219
128	Vinateros	14.899664
129	Vista Alegre	14.933185
130	Zofio	17.146428

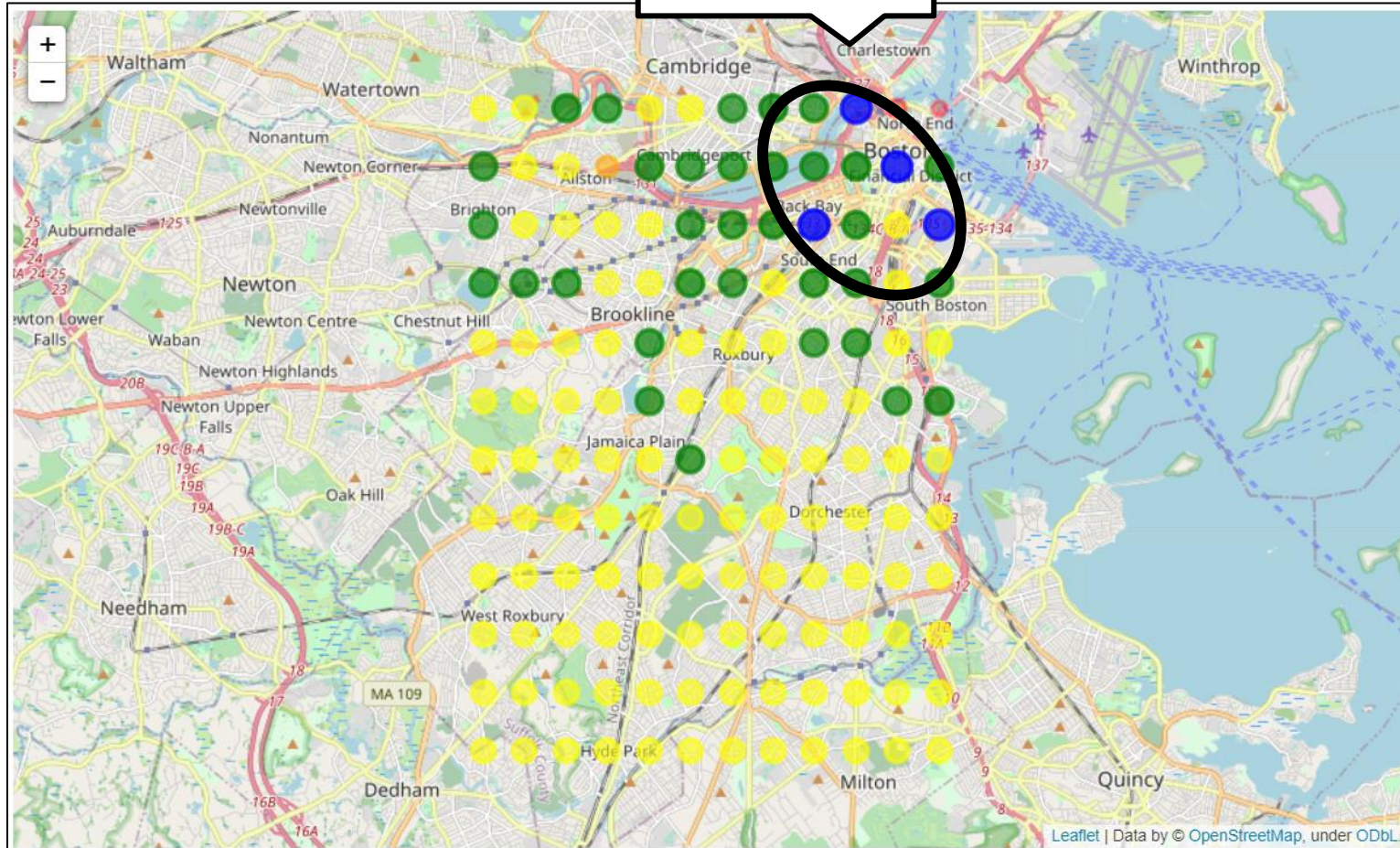
Score is the most relevant metric

	Neighborhood	Distance	Score
0	Abrantes	15.905974	0.753229
1	Acacias	12.529964	1.000000
2	Adelfas	17.262677	0.654060
3	Aeropuerto	16.462078	0.712580
4	Alameda de Osuna	16.062378	0.741796

Results

► 4.6. Plot results

► Jane

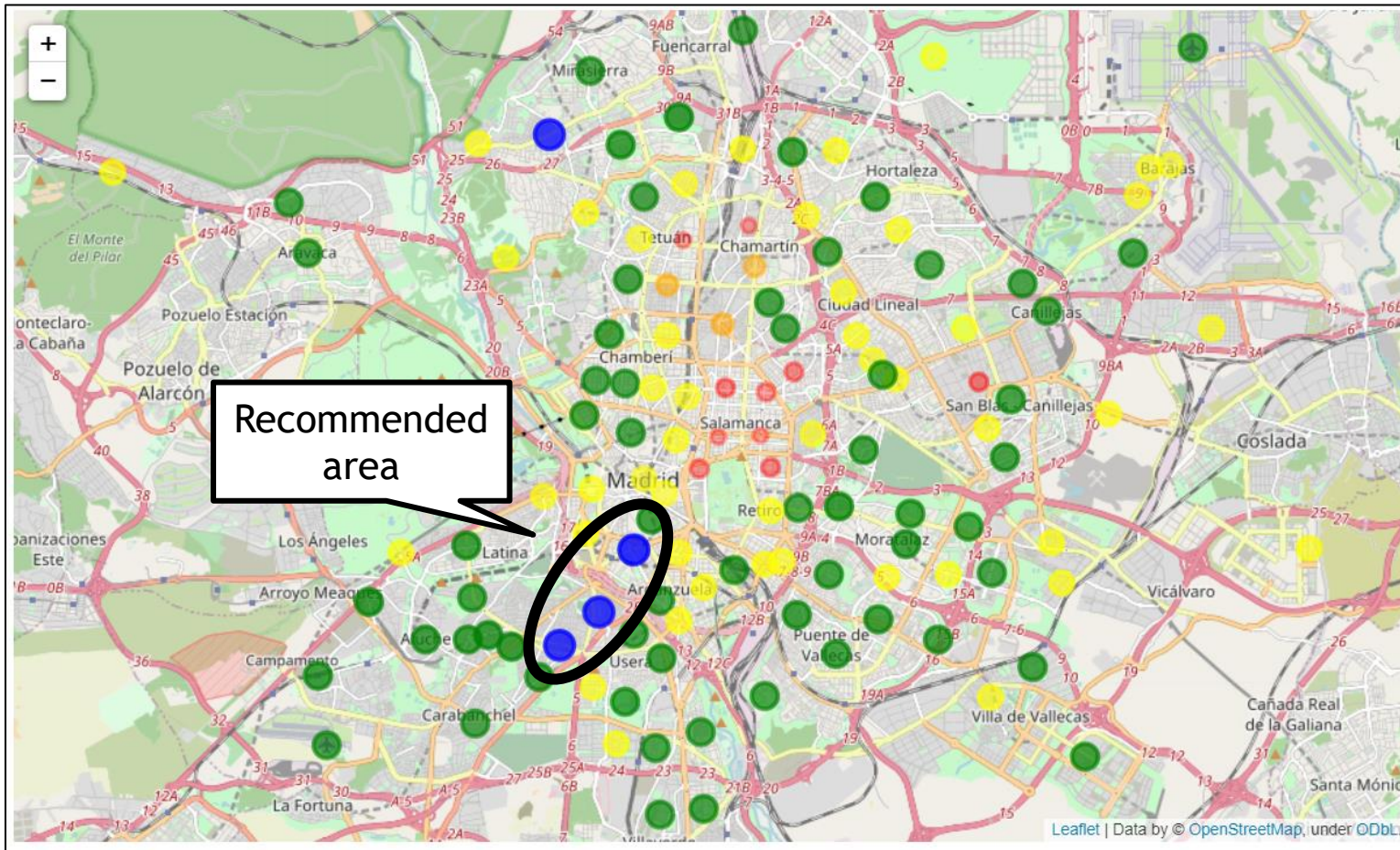


- Score above 0.90
- Score above 0.70
- Score above 0.50
- Score above 0.30
- Score below 0.30

Results

► 4.6. Plot results

► John



● Score above 0.90

● Score above 0.70

● Score above 0.50

● Score above 0.30

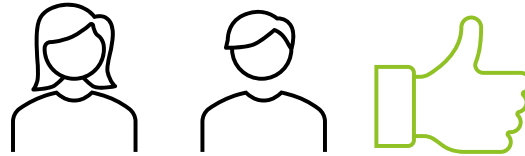
● Score below 0.30

Discussion

- ▶ We were successfully able to **find the best neighbourhoods** for Jane in Boston, and for John in Madrid.
- ▶ For Jane:
 - ▶ We recommend her to move somewhere close to city center, especially Downtown Crossing, Back Bay or Seaport District. However, there are many other places in Boston where she would find herself at home.
- ▶ For John:
 - ▶ We do not recommend the city center, especially not around Salamanca. He should move to neighbourhoods slightly towards the outskirts, such as Acacias, Opañel and Comillas.

Conclusion

- ▶ Jane and John are **very happy**



- ▶ **Next proposed steps**

- ▶ Zoom in on selected regions to find the best streets or blocks within neighbourhoods
- ▶ Experiment with different clients moving to Boston and Madrid
- ▶ Experiment with different cities
- ▶ Incorporate distance to workplace into analysis
- ▶ Incorporate criminality levels into analysis
- ▶ Incorporate cost of living into analysis
- ▶ Incorporate personal inputs from clients into analysis