ADVANCED DATA SCIENCE CAPSTONE

Tong Yu Bao

INTRODUCTION

- Unemployment rates are growing exponentially and multiple small businesses have seen the end of its days.

- In Spain, tourism and the small service industry represent a big portion of its national GDP.

- To survive these uncertain and difficult times, it is necessary to find a way to stay afloat by creating a safe business.

- Restaurants are a perfect fit given the situation we are in.

DATA

- Data related to the venues will be extracted from the Foursquare API.

- Data about income levels in different neighborhoods in Madrid will be taken from the official statistics website of the Madrid city council.

- Information about the neighborhood and its coordinates will be taken from Wikipedia.
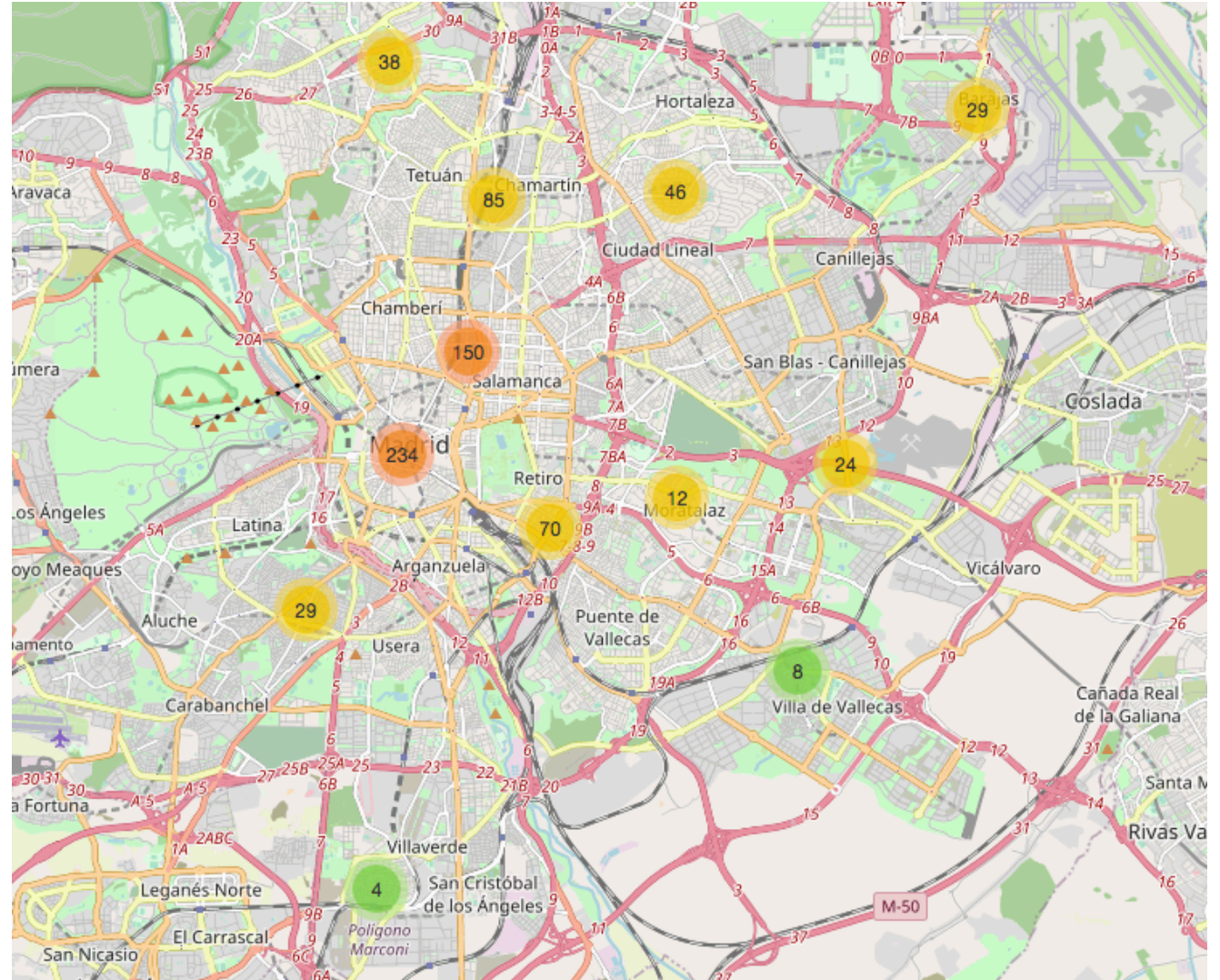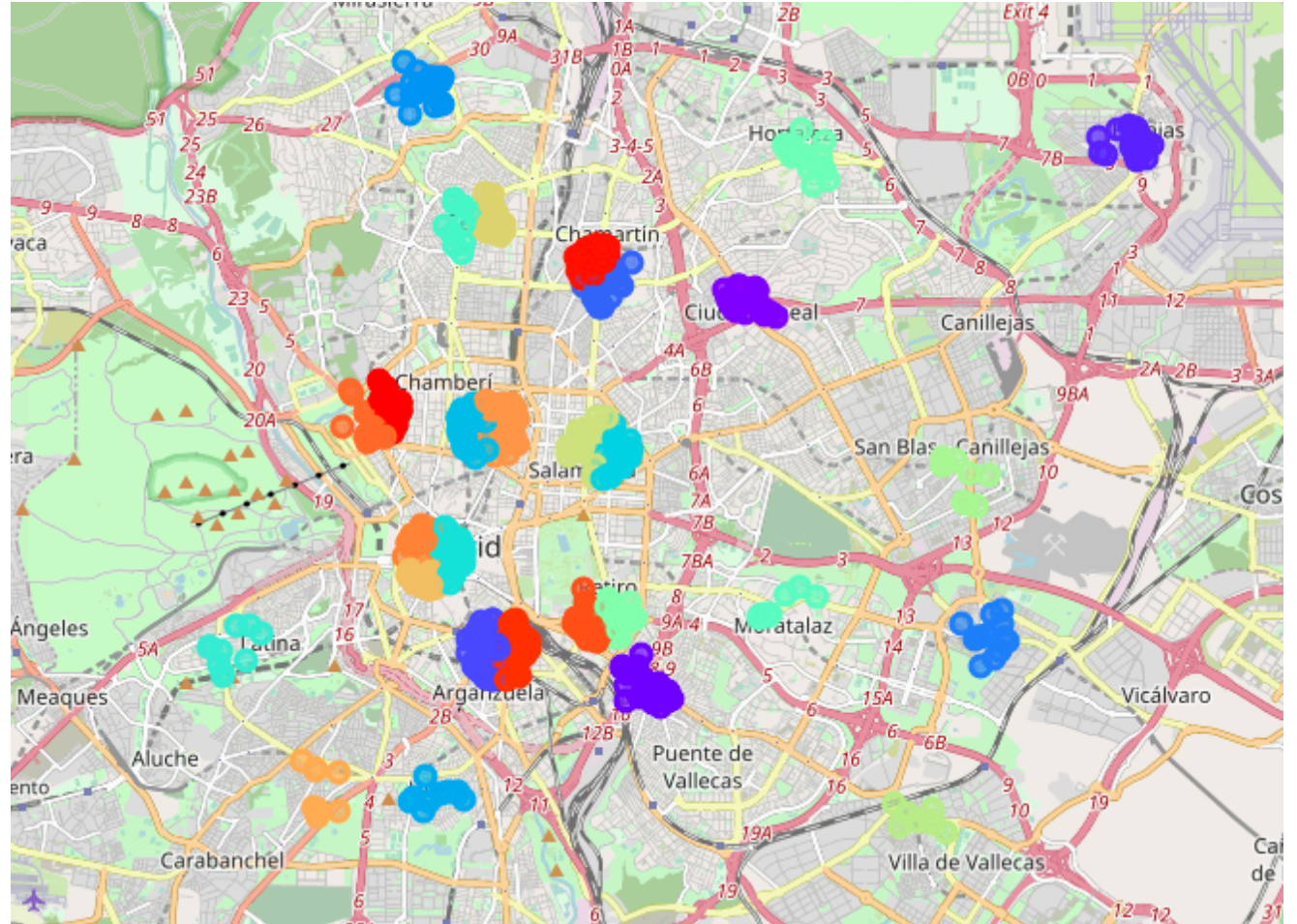
RESULTS

- Income Madrid

	Year	Period	Place	Mean income	Available income	Neighborhood
230	2018	Año	28001-Salamanca- Goya (Madrid)	95.492	71.599	Salamanca
252	2018	Año	28023-Aravaca (Madrid)	95.427	69.536	Moncloa-Aravaca
235	2018	Año	28006-Castellana (Madrid)	91.283	68.569	Chamartin
265	2018	Año	28036-Nueva España (Madrid)	86.202	64.138	Chamartin
239	2018	Año	28010-Almagro (Madrid)	72.484	54.920	Chamberi
275	2018	Año	28046-Castilla -Chamartín (Madrid)	72.809	54.526	Chamartin
245	2018	Año	28016-Hispanoamerica-Costillares (Madrid)	68.463	51.338	Chamartin

RESULTS – VENUES IN MADRID

RESULTS - CLUSTERING

MOST COMMON VENUES PER CLUSTER

	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
Cluster 1	Spanish Restaurant	Supermarket	Argentinian Restaurant	Gastropub	Restaurant	Burger Joint	Bakery	Music Venue	Ice Cream Shop	Pizza Place
Cluster 28	Restaurant	Spanish Restaurant	Grocery Store	Bakery	Sandwich Place	Hotel	Electronics Store	Snack Place	Tattoo Parlor	Gym
Cluster 19	Train Station	Food	Metro Station	Plaza	Grocery Store	Soccer Field	Spanish Restaurant	Park	None	None
Cluster 6	Pizza Place	Spanish Restaurant	Asian Restaurant	Restaurant	Camera Store	Grocery Store	Beer Bar	Breakfast Spot	Sandwich Place	Fast Food Restaurant
Cluster 13	Bakery	Art Studio	Brazilian Restaurant	Supermarket	Music Venue	Clothing Store	Spanish Restaurant	Sandwich Place	Restaurant	None
Cluster 25	Plaza	Ice Cream Shop	Opera House	Gym / Fitness Center	Japanese Restaurant	Beer Bar	Dumpling Restaurant	Ramen Restaurant	Bistro	Chocolate Shop
Cluster 8	Seafood Restaurant	Theater	Plaza	Chinese Restaurant	Bubble Tea Shop	Noodle House	Spanish Restaurant	Fast Food Restaurant	Asian Restaurant	None

CONCLUSION

- Clusters 13 and 25 are located in Salamanca, one of the highest-earning neighborhoods in Madrid.

- There is a variety of venues in this section and not dominated by restaurants

- This area is perfect to start a new business due to its high income and relative lack of restaurants.

- The perfect restaurant for the area of Salamanca would be a seafood restaurant due to the high income of this neighborhood and the lack of options available.