

Diversity in food culture in select European cities

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The problem

- Cities are diverse and offer residents and visitors opportunities to sample world cuisines
- But does one need to travel far to find a different cuisine from any neighbourhood?
- How much fusion of different traditions can one observe?
- Can one quantify the degree to which a city's culinary culture is mono-, multi-, inter- or transcultural?
- A use case in a data-science approach to cultural studies

The cities

I chose four European cities I visited many times: London, Paris, Stockholm and Vilnius.

Metropolitan area (number of boroughs)	Total population (million)	Population density (per sq km)	Residents identifying with non-dominant ethnicity
London (33)	8.8	4,761	40 %
Stockholm (26)	2.2	4,800	27 %
Paris (12)	7.2	8,598	24 %
Vilnius (2)	0.6	1,392	37 %

The data - locations

2417

9435

1261

3897

Obtain geoJSONs for the metropolitan areas and cover them in a lattice of hexagons, each inscribed into a circle with radius of 500 m.

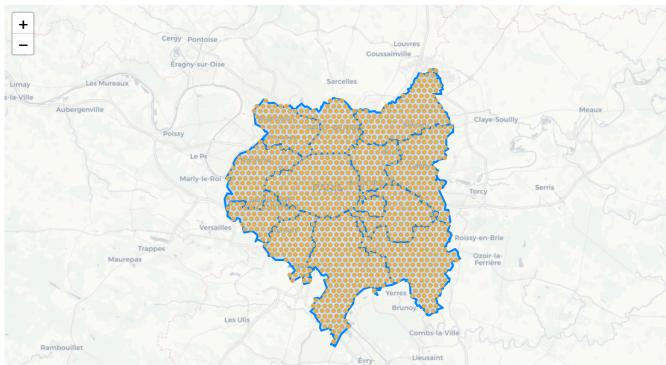
London
2417 hexagons



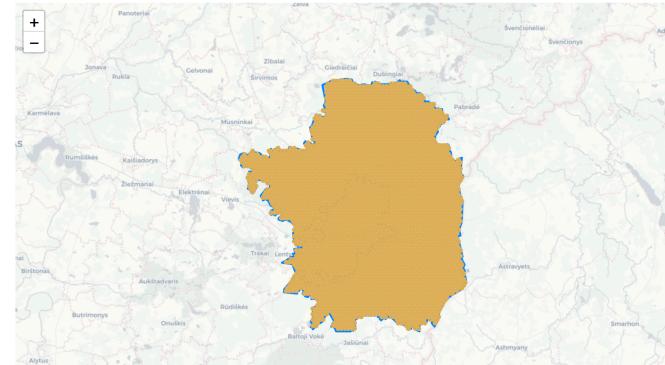
Stockholm
9435 hexagons



Paris
1261 hexagons



Vilnius
3897 hexagons



The data – venue categories

Remapping of the Foursquare API categories to a smaller set of “Cultural” categories, e.g.

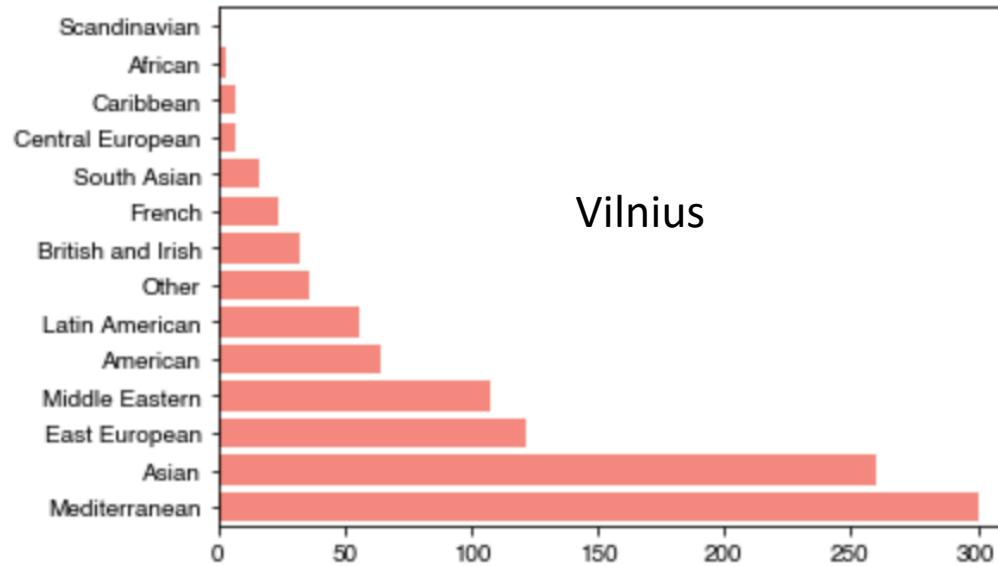
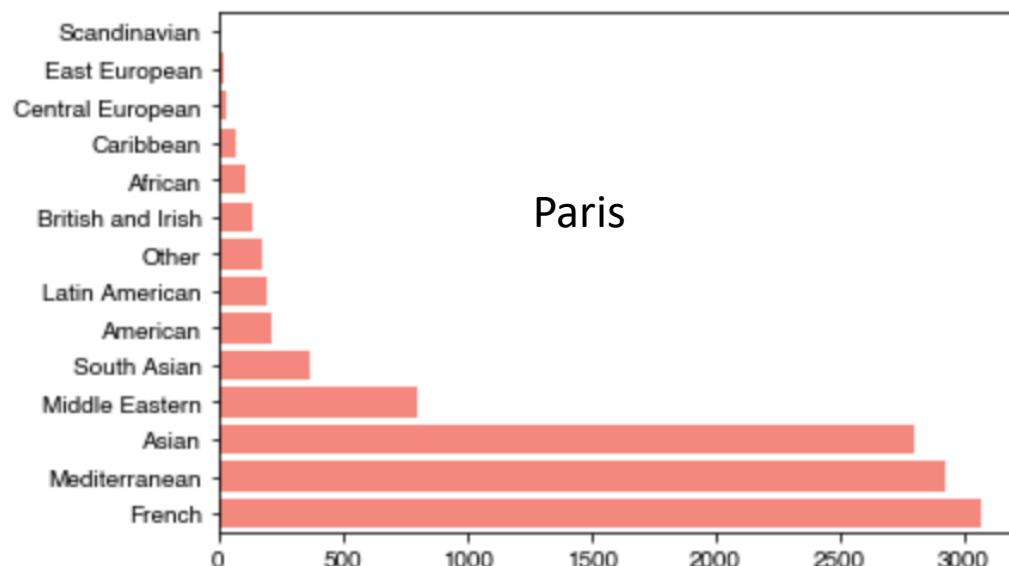
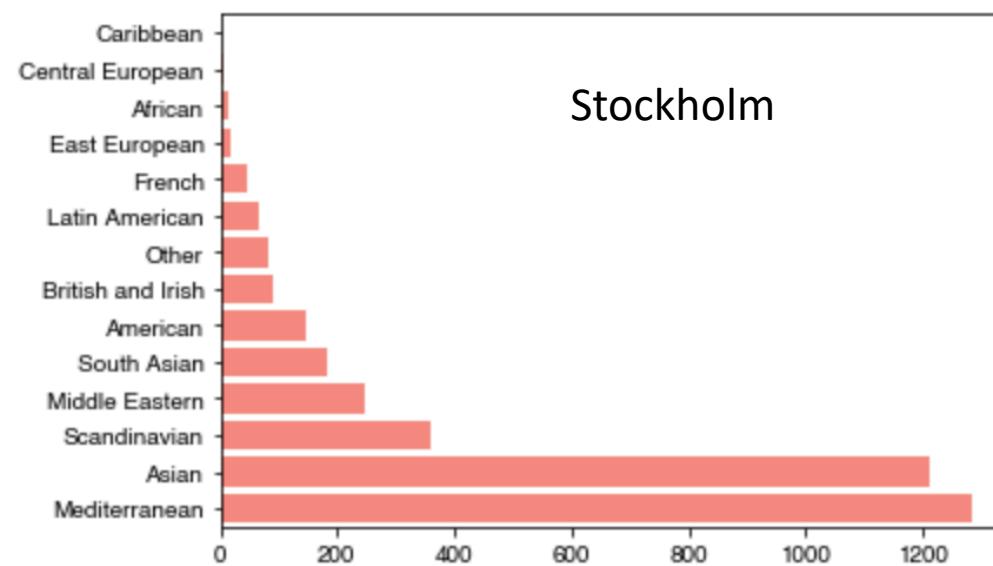
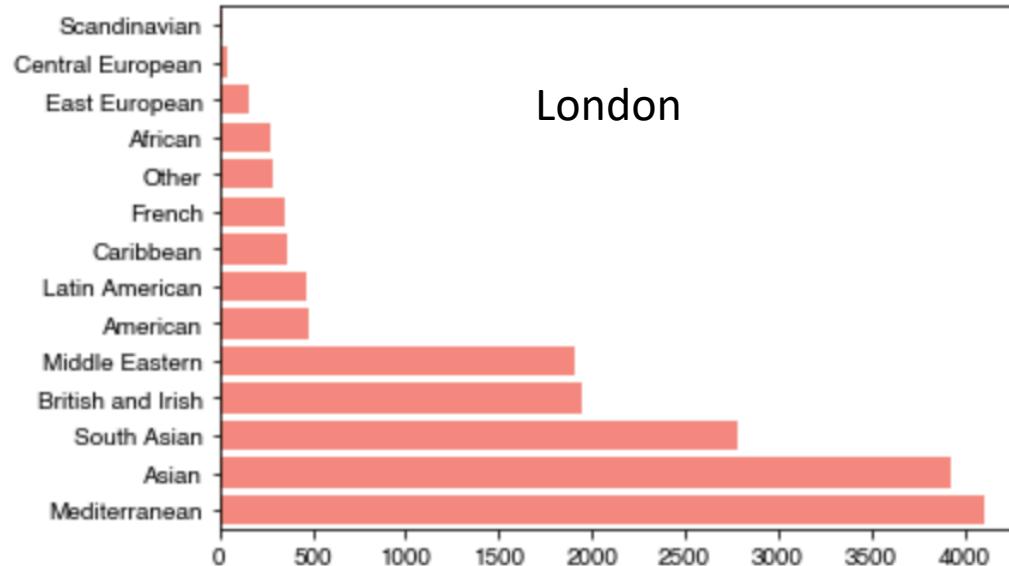
- Czech Restaurant -> East European
- Greek Restaurant -> Mediterranean

Final set of 14 cultural categories

The data - venues

Metropolitan area	Number of culturally categorised venues	Number of hexagons with categorised venues
London	17,112	1,815
Stockholm	3,751	800
Paris	10,930	1,037
Vilnius	1,036	180

Most popular cuisines: Asian and Mediterranean



K-means clustering

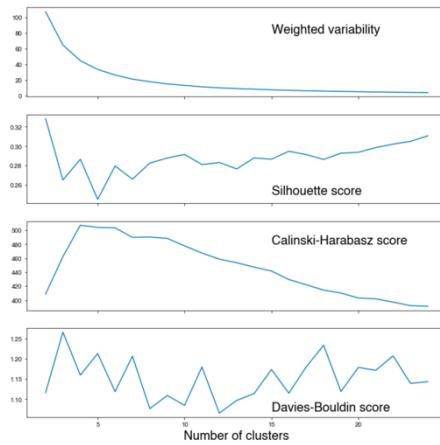
Defined a cultural profile for each area (hexagon) by normalising venue counts (per category) against the total number of venues in the area.

Number of features (cultural categories) between 7 (Stockholm) and 12 (London).

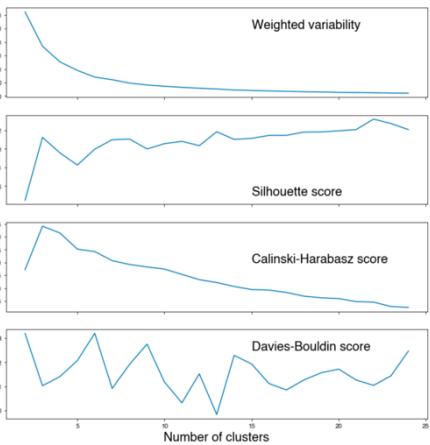
Tested with number of clusters varying between 2 and 24 with 12 replicas in each case.

K-means robustness (Calinski-Harabasz score)

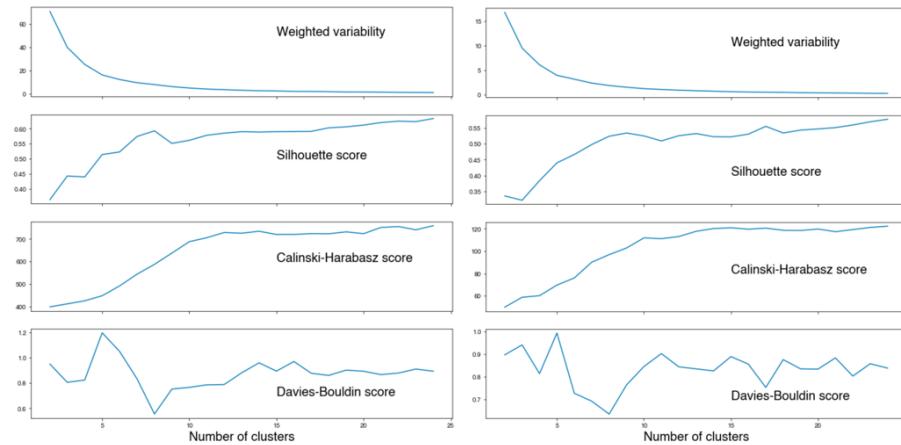
London



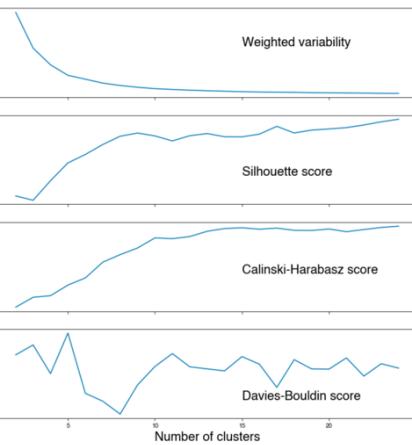
Paris



Stockholm



Vilnius

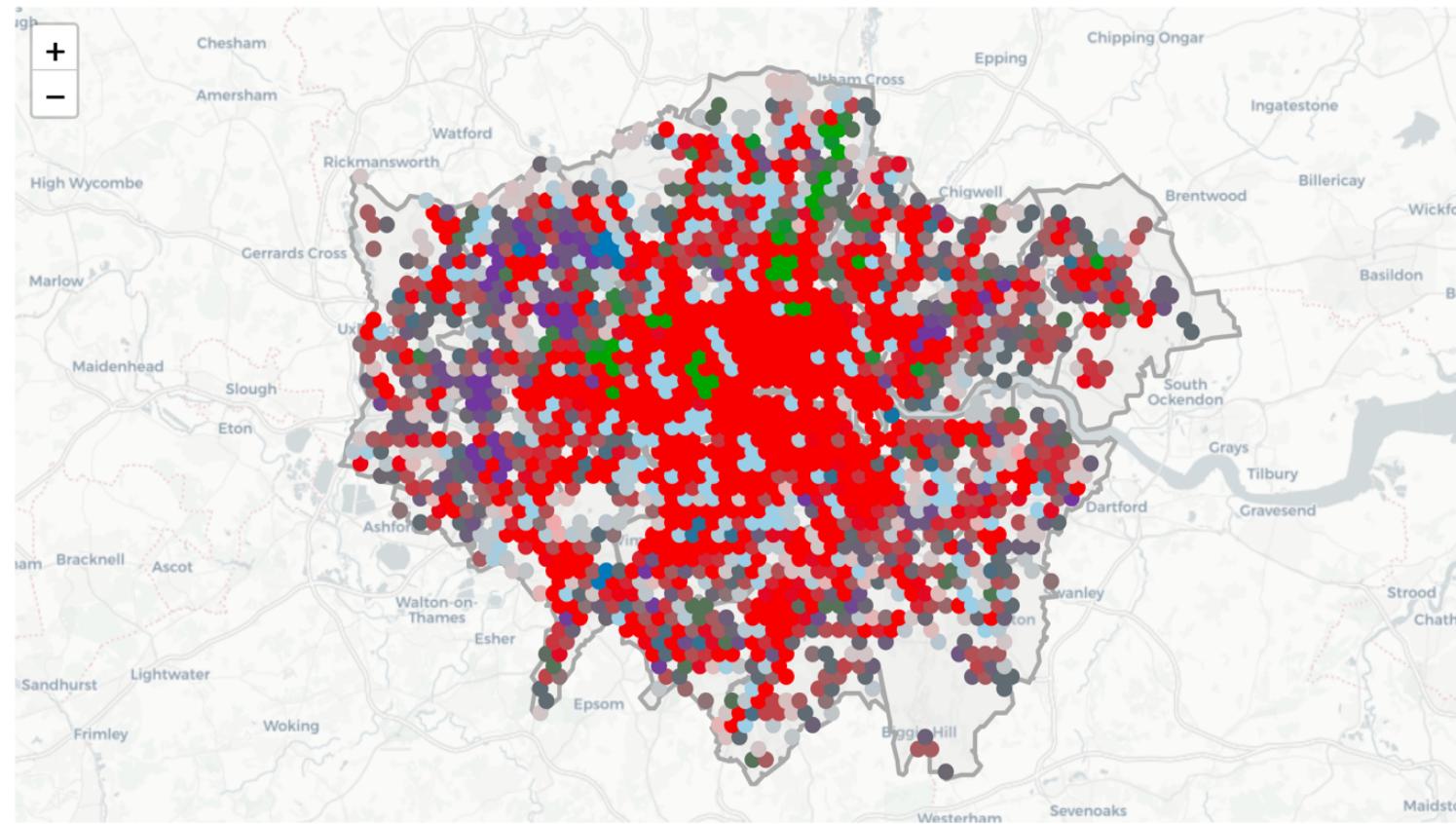


Robust clustering with 4-6 clusters for London and 3-4 for Paris

Unclear clustering for Stockholm and Vilnius. Choosing 8 for both, but results not very reliable.

City clusters - London

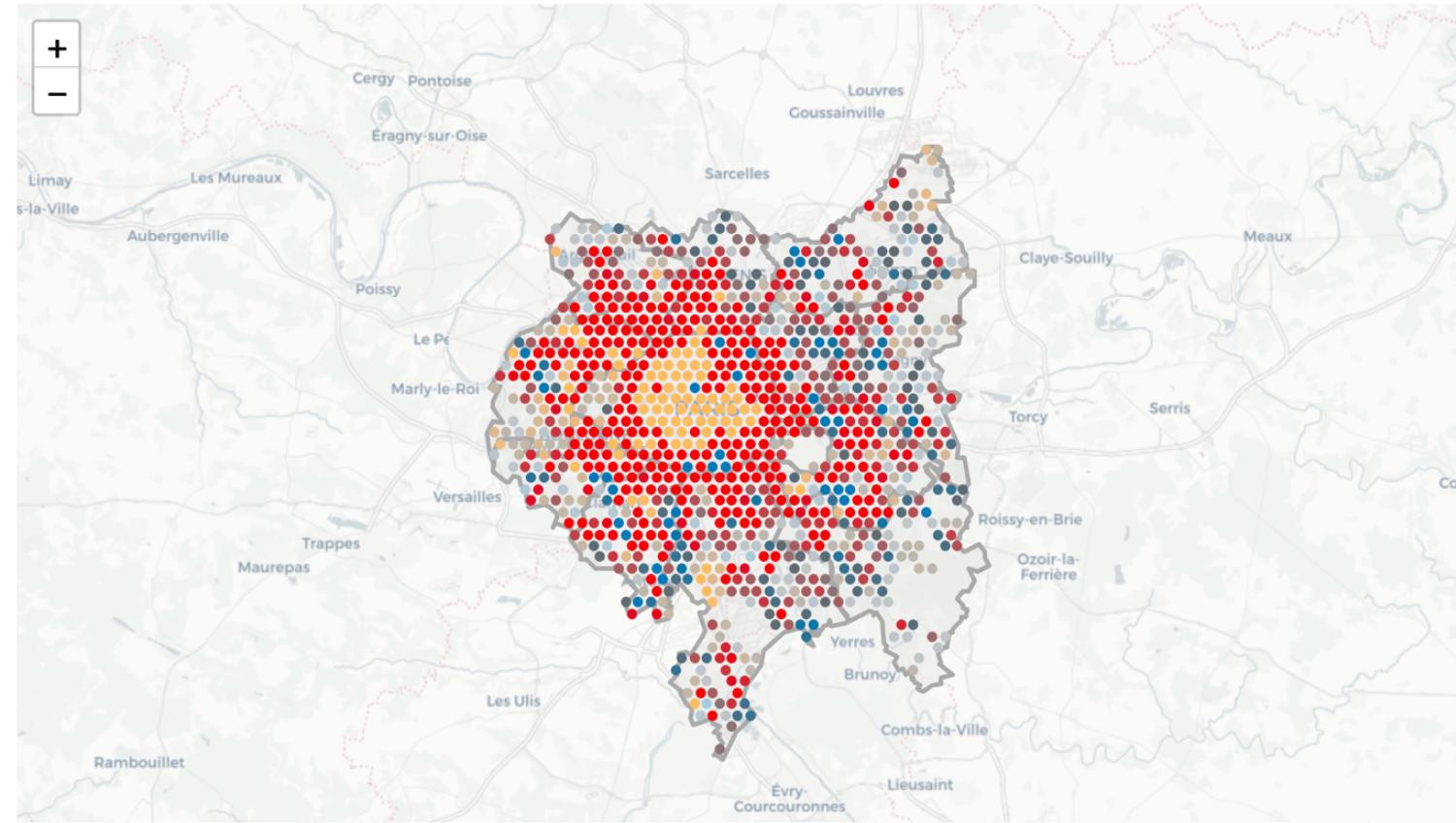
Greater London painted by culinary culture



Mixed cluster (red) dominates
South Asian (purple) cluster in the West
Middle Eastern (green) in the North and West
Mediterranean (pale blue) – spread throughout

City clusters - Paris

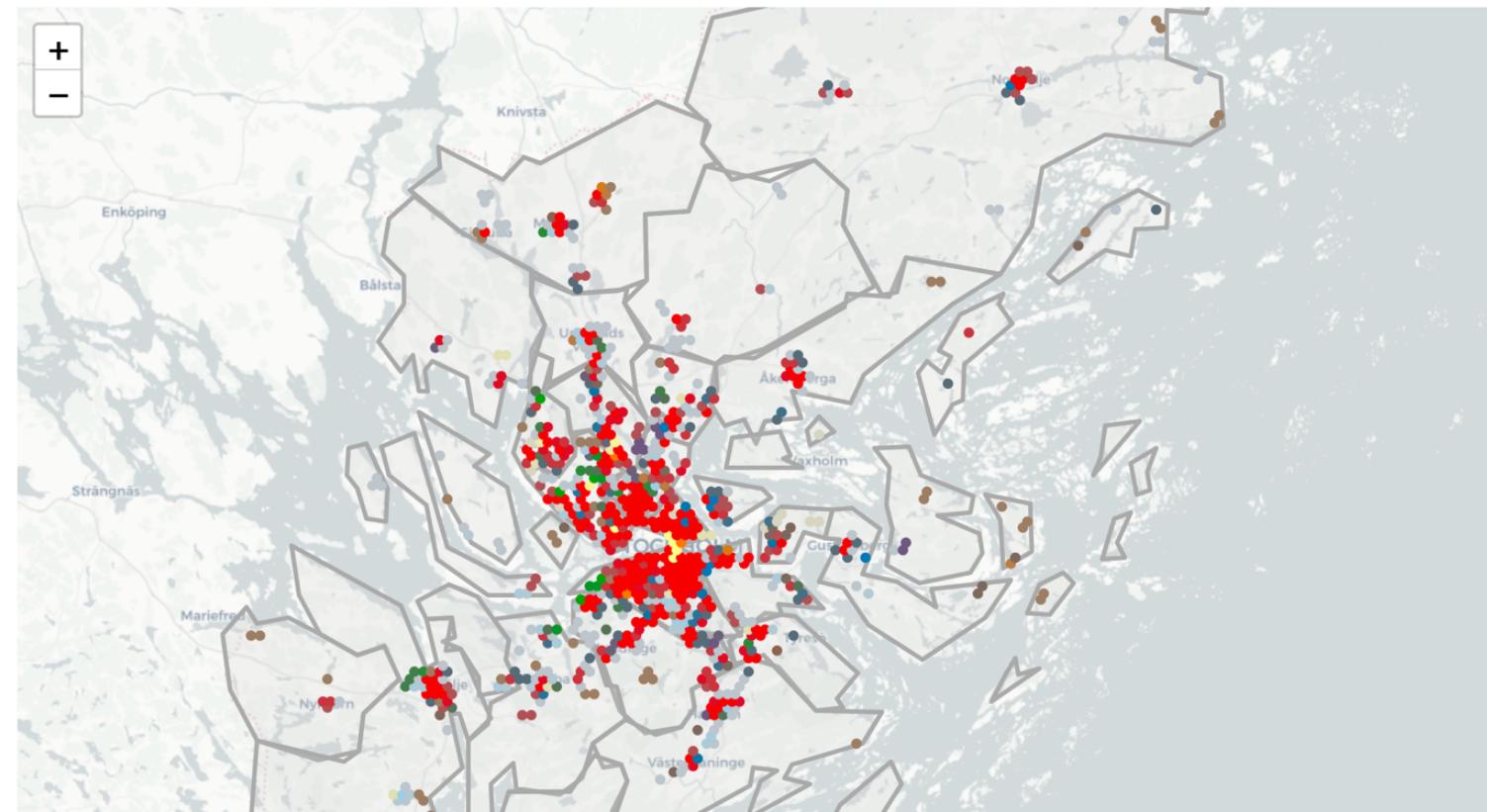
Greater Paris painted by culinary culture



Mixed cluster (red) still the largest, forming a ring around the centre
French (yellow) dominates the centre
Pockets of Asian and French elsewhere

City clusters - Stockholm

Greater Stockholm painted by culinary culture



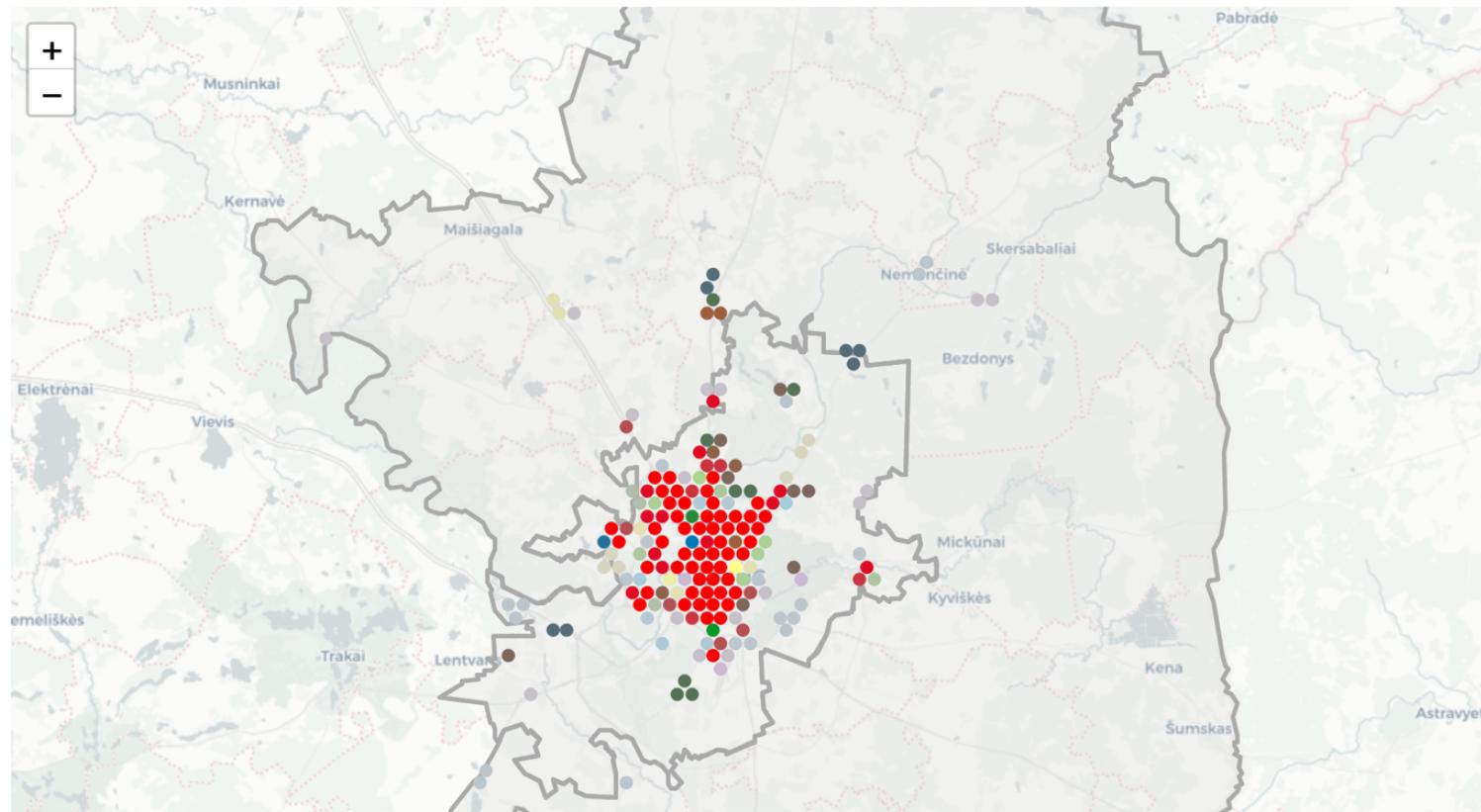
Dense core, hardly any data outside it.

Mixed cluster (red) still the largest, dominating the core

Pockets of other cuisines here and there, but no strong pattern

City clusters - Vilnius

Vilnius painted by culinary culture



Dense core, hardly any data outside it.

Mixed cluster (red) still the largest, dominating the core

Pockets of other cuisines here and there, but no strong pattern

Conclusion

- All cities exhibit strong preference for Mediterranean and Asian food.
- Paris is unique with its strong core of French cuisine in the centre. Other cities do not show such a strong preference for their “own” cuisine.
- London and Paris both show a weak streak of separateness in food culture:
 - South Asian cluster in the West of London
 - French cluster in the core of Paris
- The mixed cluster is the largest in all 4 cities, but the diversity of the “mix” is greatest in London (only 45% is accounted by Asian and Mediterranean, vs 76% in Stockholm).
- No data to answer if transculturality is taking hold (no category for fusion cuisine in Foursquares API)