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1 Introduction

1.1 Problem

Migration has recently been one of the hottest topics in politics. In the book “Statup Migrants” by Nicolai Strøm-Olsen and Maria Amelie¹, it is claimed that the first-generation migrants usually launch conventional businesses like restaurant/café, grocery stores to provide their families when they cannot find relevant jobs and those businesses usually require less capital relative to tech startups. So the question is if immigrants actually contribute to small businesses in the country where they settle down.

1.2 Discussion

The purpose here is not to argue in favor of or against the book. Instead, I will try to find out if there is any relationship between immigrants and less capital-heavy businesses in Oslo, Norway. Clustering method of unsupervised machine learning has been deployed to group boroughs in Oslo. Then I have benefited visualization tools Python offers to look for any pattern in data.

¹ Read more here: <https://www.amazon.com/Startup-Migrants-Nicolai-Str%C3%B8m-Olsen/dp/8293097574>

2 Data description

2.1 Data sources

Data that have been used for this analysis freely available on the internet. The overview over boroughs in Oslo scraped from the Wikipedia². The data on immigration population have been taken from Statistics Bank of Oslo Municipality³. The borough coordinates in json-format for folium maps are easily accessible on the internet as well⁴. Finally, Foursquare API has been used to fetch venues in Oslo boroughs⁵.

The following variables constitute analysis:

- “Borough”: The boroughs in Oslo
- “Latitude”: Latitude coordinates for boroughs
- “Longitude”: Longitude coordinates for boroughs
- “ImmigrantsTotal”: Number of people with immigrant background
- “Venue”: Venue data fetched from Foursquare API

² Read more here: https://no.wikipedia.org/wiki/Liste_over_Oslos_bydeler

³ Read more here: <http://statistikkbanken.oslo.kommune.no/webview/index.jsp?catalog=http%3A%2F%2Fstatistikkbanken.oslo.kommune.no%3A80%2Fobj%2FfCatalog%2FCatalog51&submode=catalog&mode=documentation&top=yes>

⁴ Read more here: https://hannemelling.carto.com/tables/bydeler_xls/public/map

⁵ Read more here: <https://developer.foursquare.com/places-api>