# IBM Data Science Professional Certificate Capstone Project – “Where Shall I Live When I Re-Locate?”

This report provides an overview of the work undertaken to complete the IBM Data Science Professional Certificate Capstone Project. This will comprise an introduction, explanation of the data used, explanation of the methodology used, presentation of results, a discussion around observations drawn from the results, and a conclusion.

## Introduction

The world is more digitally connected than ever, with many people having the ability to work or study from home (or anywhere for that matter) rather than travel to work, an educational institution or any other place. With this being said, the need to attend events in person from time to time (or all the time) is likely to never completely disappear, and as such people are still re-locating frequently.

The question this work attempts to answer is “Where Shall I live When I Re-Locate?”. Of course, this can be answered by doing your research on the city or area you are due to move to, via talking to the locals, reading anecdotal information, or scouring the internet for information. However this approach would likely be incredibly time consuming and laborious if you were to research all the areas you may be interested in, and you may not receive objective opinions from all these data sources. Due to these limitations, this work presents an objective data-driven approach to categorise postcode districts into discrete categories, to provide the user with a first-pass understanding of what an area may have to offer before then delving into researching the area further.

An example use case of this work may be if a user is moving from an area well known to themselves to a new city, and they wish to move to a similar area. The user can check the category their current home is in, and then find any areas in their future city that have the same category. These areas can then be considered further before the user decides where to move to.

Although the approach here could likely be applied to all areas around the world, due to the required complexities of this project the problem has been bounded to consider all Great British postcode districts only. This work would therefore be of interest to anyone moving within Great Britain, or anyone moving to Great Britain to live or visit.

## Data

This project utilises three separate sources of data. A description of these data sources and how they are used is given below:

1. Data – Venue information including location information, venue name, and venue category for venues around Great Britain.

Use – This information is used to compare different postcode districts by comparing the type and frequency of venues within a given postcode district.

Source – This information is pulled from FourSquare via the available API, by requesting venue information for a given longitude/latitude.[1]

1. Data – A list of longitudes/latitudes for all postcode districts in Great Britain.

Use – This is used to 1) input into the FourSquare API requests to receive the desired venue information, and 2) plot all postcode districts on a map to allow for easy visualisation of the final categories associated with their locations.

Source – roblascelles github[2]

1. Data – A geojson file containing shape data for all the postcode areas within Great Britain.

Use – This is to be used to aid data visualisation only. These areas will be plotted on a map of Great Britain to aid the users understanding of the geography, but will also be used to split the map into discrete layers that the user can turn on/off depending on if they are interested in that area or not.

Source – Office for National Statistics licensed under the Open Government Licence v.3.0[3] Contains Ordnance Survey data © Crown copyright and database right 2020

Contains Royal Mail data © Royal Mail copyright and database right 2020

## References

[1] <https://developer.foursquare.com/>

[2] <https://github.com/roblascelles/uk-postcode-map/blob/master/data/uk-postcode-area.json>

[3] <https://www.freemaptools.com/download-uk-postcode-lat-lng.htm>