

Capstone Project - The Battle of Neighborhoods (Week 2)

An analysis of my local town's property market

Introduction

Buying a property is a big life time decision for many of us, therefore it is very important that we can make rational decisions based on as many facts as we can gather. Although many decisions might be made based on the actual condition and the appearance of the properties, the locations are also very influential for potential buyers to make their final purchase decisions.

A business case will be used in this study, which involves Mr. A who is our client who considers to purchase a 3-bedroom property in my local town Hitchin. The study aims at providing as much local information as possible to Mr. A to assist his purchase process. Mr. A is not from Hitchin therefore he has very little local connections and knowledge. He wants some recommendations for a property which is close to social venues such as restaurants and shops. He also mentioned that he wants to live close to schools as he has a young child. Mr. A is unaware of what kind of properties are available (such as flat or houses) in the area and what sort of budget he should prepare for the purchase. As a result, this study will try to provide information about the local market as a whole first before we further analyse the options which will fit Mr.A's requirements.

Hitchin is a traditional residential town within commuting distance to London for many people who wish to grow their families. Although this study only used Mr.A's specific requirements for the search, it can provide insight for people with young families who also wish to buy a new property in similar areas.

Data

Rightmove.com is one of the most popular websites for agents to list properties to let and for sale in the UK. It holds up to date information including properties' asking price, the number of bedrooms, property type, address and so on. Data on this website is generally very accurate. This study will aim at collecting useful data from the rightmove.com, so that all the live listings in

Hitchin at the time of search can be accessed, and it can give us a full picture of the housing market and the pricing levels.

Foursquare is another way of data collection for this study, local information such as venues, schools can be requested through its API. This will be useful to help Mr. A to find the appropriate locations with the social venues and schools he needs.

Wikipedia will also be used, this is to help to locate the postal areas in Hitchin and so that the town can be categorised and compared geographically.

A picture of our town centre.



Methodology

With the help of a pre-written library, a data frame including all the live listings of properties in Hitchin was established. It shows 253 active listings on the day of search. Below is a snapshot of the data frame.

	price	type	address	url	agent_url	postcode	number_bedrooms	search_date
0	575000.0	3 bedroom end of terrace house for sale	Store House Lane, Hitchin, Hertfordshire	http://www.rightmove.co.uk/property-for-sale/p...	http://www.rightmove.co.uk/estate-agents/agent...	NaN	3.0	2020-07-27 12:11:41.578682
1	2000000.0	6 bedroom house for sale	Tilehouse Street, Hitchin, Hertfordshire, SG5	http://www.rightmove.co.uk/property-for-sale/p...	http://www.rightmove.co.uk/estate-agents/agent...	SG5	6.0	2020-07-27 12:11:41.578682
2	1800000.0	5 bedroom detached house for sale	London Road, St Ippolyts, Hitchin, SG4	http://www.rightmove.co.uk/property-for-sale/p...	http://www.rightmove.co.uk/estate-agents/agent...	SG4	5.0	2020-07-27 12:11:41.578682
3	1750000.0	6 bedroom detached house for sale	Highbury Road, Hitchin, SG4	http://www.rightmove.co.uk/property-for-sale/p...	http://www.rightmove.co.uk/estate-agents/agent...	SG4	6.0	2020-07-27 12:11:41.578682
4	1750000.0	4 bedroom detached house for sale	Priority Way, Hitchin, Hertfordshire, SG4	http://www.rightmove.co.uk/property-for-sale/p...	http://www.rightmove.co.uk/estate-agents/agent...	SG4	4.0	2020-07-27 12:11:41.578682

The data frame was then cleaned, sorted and reorganised to reveal the most popular property type and size in the area.

Wikipedia data was then introduced to show how Hitchin was divided into sub-areas (postal areas), this helps to divide the town into smaller sections and makes comparison of locations later in the study easier.

Mean, Min, Max was used to process the price data for all the listings, this gives a clearer idea of the local house price and allows Mr.A to make more appropriate judgement of budgeting and expectations.

Further analysis was done with Mr.A's specific requirements. The data frame was then narrowed down to reflect only properties with a minimum of 3 bedrooms and under the price of £350K. The properties fit the requirements fall in both area SG4 and SG5, therefore a further analysis for each area was carried out. This involves using the Foursquare API to request for local information of the two postal areas. This include:

- venues within 500 meters for each location
- all schools within 1000 meters from Hitchin center

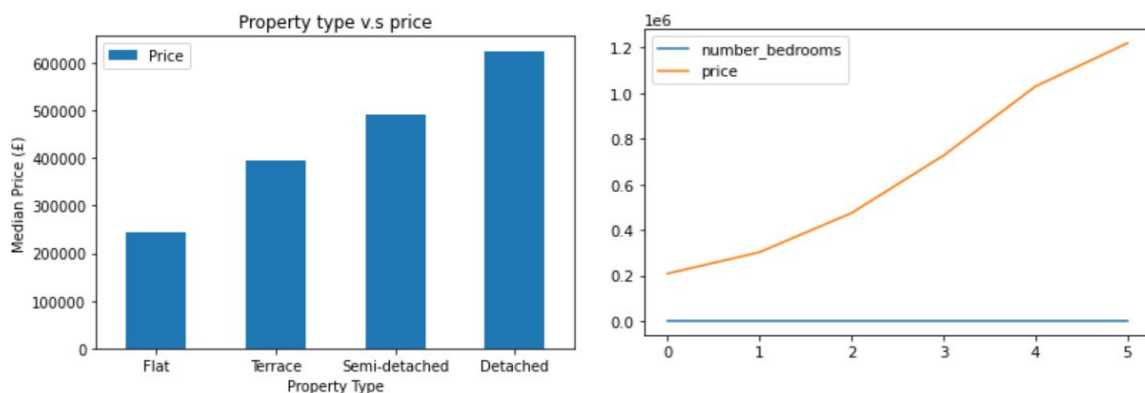
	name	hasPerk	location.address	location.lat	location.lng	location.distance	location.postalCode	location.cc	location.city	location.state	location.country
0	The Priory School	False	Bedford Rd.	51.951230	-0.284721	243	SG5 2UR	GB	Hitchin	Hertfordshire	United Kingdom
1	Samuel Lucas JMI School	False	NaN	51.951113	-0.284786	233	NaN	GB	NaN	NaN	United Kingdom
2	Grammar School Walk	False	Grammar School Walk	51.949555	-0.279636	261	NaN	GB	Hitchin	Hertfordshire	United Kingdom
3	Hitchin Boys' School	False	NaN	51.950774	-0.278804	360	NaN	GB	NaN	NaN	United Kingdom
4	Beats School Uniforms	False	67 Hermitage Road	51.949158	-0.275022	574	NaN	GB	Hitchin	Hertfordshire	United Kingdom
5	Highbury school	False	Standhill road	51.945661	-0.272903	820	NaN	GB	Hitchin	Hertfordshire	United Kingdom
6	Wilshere-dacre Junior School	False	NaN	51.955879	-0.281993	749	NaN	GB	NaN	NaN	United Kingdom

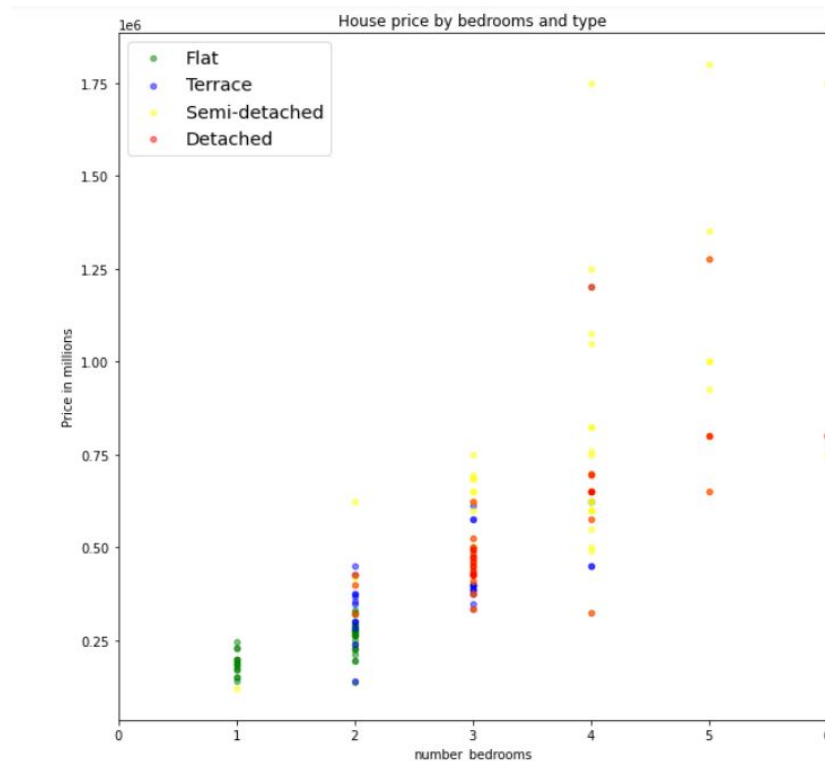
At this stage, Mr. A shortlisted 2 properties with one located in the SG4 area and the other in the SG5 area. A map was drawn with Python folium with all the venues, schools and the two shortlisted properties plotted in different colours.

Results and discussions

Findings

- We found that there are 235 listings currently in Hitchin
- The most popular listings are properties with 2 bedrooms
- The most popular listings are detached houses
- Two main areas in Hitchin are SG4 and SG5, and they have almost equal amounts of listings
- Two studied areas have similar amounts of social venues, they are mainly supermarkets, pubs and restaurants.
- The most expensive 3 beds property offered costs £ 750,000.00
- The cheapest 3 beds property offered costs £ 249,995.00
- An average 3 beds property offered costs £ 478089.91
- Mr.A's budget is mostly likely falling in the terrace type



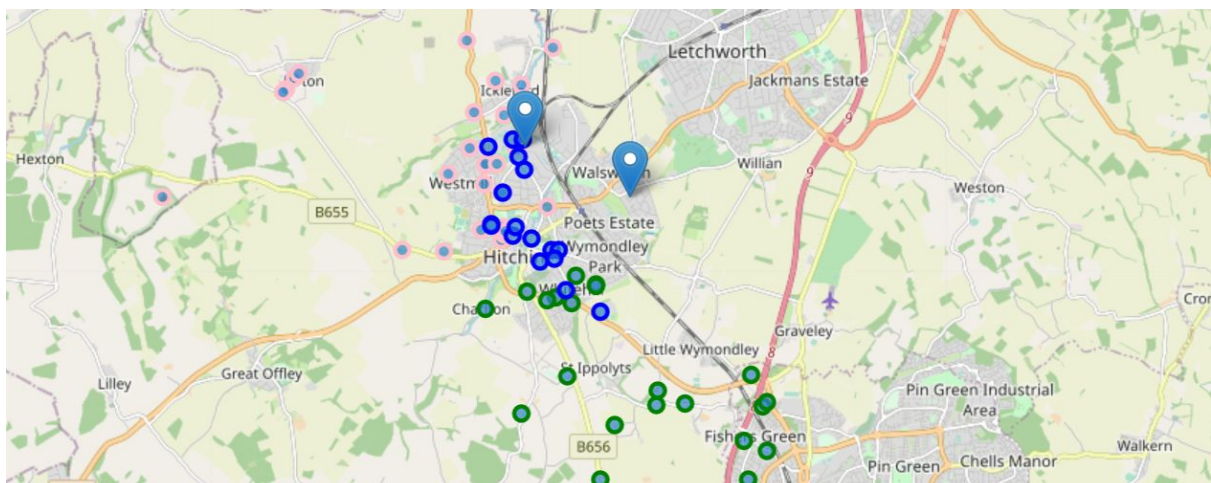


The plot on the left shows how different types of properties are distributed across the price spectrum, as well as the likelihood of the amount of bedrooms associated with different property types.

For instance, if Mr.A wishes to purchase a 3 bedroom property, he is mostly likely to come across with a

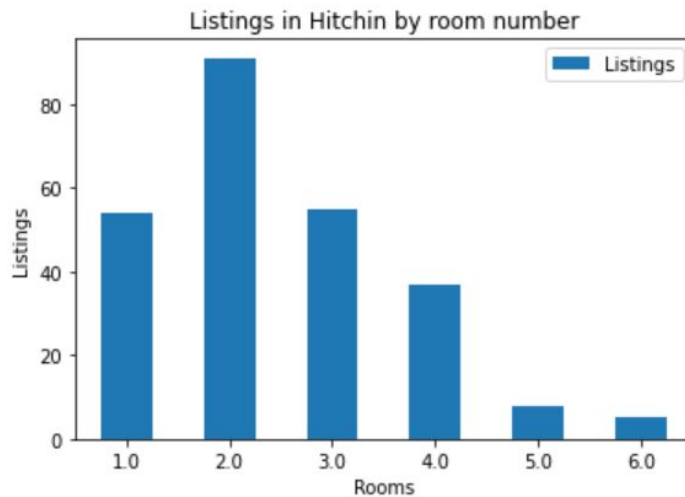
detached property (red). However, for his budget 350K, he could possibly end up finding a terrace house or flat.

Furthermore, the below is a map of Hitchin, green markers refer to all the venues in the SG4 area and the pink markers are the venues in the SG5 area. Schools are plotted with blue markers. The two shortlisted properties are also marked on the map, the one on the left is located on the road called Shepherds Mead, Hitchin SG5, and the one on the right is on the road named Desborough Road, Hitchin SG4.



As Mr. A enjoys social venues and has education needs for his young child, it is suggested on the map that the property located in Shepherds Mead might be

better fit for his housing needs. This is because it is in general closer to these locations than the other property.



	Rooms	Listings
1	2.0	89
2	3.0	57
0	1.0	52
3	4.0	36
4	5.0	9
5	6.0	5

	Venues	Address	lat	lng
0	The Rusty Gun	London Rd	51.913593	-0.258418
1	Sainsbury's	Hitchin Rd	51.924433	-0.219610
2	Sainsbury's Petrol Station	Hitchin Road	51.925049	-0.218859
3	M&S Simply Food	Stevenage Rd	51.940363	-0.269186
4	A Really Big Field	NaN	51.921593	-0.254966

	Postcode	Listings
0	SG4	88
1	SG5	81

Discussion

Hitchin is a small town where the amount of social venues and attractions are limited compared to larger cities such as London, therefore people who decided to move here might not be people who are hugely interested in venues such as restaurants and shops. Therefore the recommendations drawn based on this type of data can be less meaningful for people who highly value social venues and see them as must haves.

Also, to use this town to demonstrate location data analysis techniques might limit the potential of location analysis techniques.

In addition, less structured data is available for smaller towns, this can affect the accuracy of the research as some data might be missing due to unavailability of venues on databases.

Further study can be done using a larger city such as London, as this might provide useful findings to a larger group of stakeholders.

Conclusion

The study has looked into the Hitchin's house market as a whole and found the general property trends, price and advertising preferences. It also looked at the local areas and explored its social venues and schools. The distribution of such venues were visualised on a map setting.

Using Mr.A's purchase support as a case study, further techniques were used to find the best matching property for him and potentially provide meaningful insight for people who have the intention to move to a similar town to grow young families.

It is shown from the local map that property 2 is closer to all the venues and schools, since these are important for Mr. A, it would be a better fit for him to purchase, giving that this house also meets all his other requirements such as price, the number of bedrooms as well as some other non-location related elements.