Food Service quality in the Dutch suburbs and business opportunities there

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1. Introduction

1.1 Background

Nieuwegein

Nieuwegein is a municipality and city in the Dutch province of Utrecht. It is bordered on the north by the city of Utrecht, the provincial capital. It is separated from Vianen to the south by the river Lek and borders on IJsselstein in the southwest and Houten in the east.

Nieuwegein was founded on 1 July 1971 as a planned city, following the merger of the former municipalities of Jutphaas and Vreeswijk. The new town was built for the expanding population of the city of Utrecht and grew rapidly during the decades following its foundation.

In the area between Jutphaas and Vreeswijk there used to be a settlement called Geyne. This settlement received city rights in 1295 but was destroyed in 1333, in a war between the Bishop of Utrecht and the Count of Holland. Today only Oudegein House remains from that time. After the boards of Vreeswijk and Jutphaas had debated for some time about the name of the new place (including the alternative "'t Gein" as a reference to Geyne, fell) they decided to name the new place after this old settlement.

Utrecht

Utrecht is host to Utrecht University, the largest university in the Netherlands, as well as several other institutions of higher education. Due to its central position within the country, it is an important transport hub for both rail and road transport. It has the second highest number of cultural events in the Netherlands, after Amsterdam. In the same way Utrecht has many food options that might cater to your average foodie.

1.2 Problem

Being as central as Utrecht its the property prices for both rent and purchase are above the ones in her nearby residential areas as Nieuwegein, De Meern, etc. But what does it mean to move to a suburb for a foodie? This is why this report will analyze the difference in supply quality and quantity of restaurants in Nieuwegein in comparison with Utrecht

1.3 Interest

As some foodies have an entrepreneur nature missing restaurant types could lead to a good business opportunity (e.g.: Opening a certain type of food service). Which if successful could be easily copied in other Dutch suburbs.

2. Data Description

When drafting this problem, we found the following list of sources to be used:

- Foursquare API to get restaurant information of Utrecht and Nieuwegein:

	city	name	categories	lat	lng
0	Utrecht	Louis Hartlooper Complex	Indie Movie Theater	52.081752	5.124147
1	Utrecht	Meneer Smakers	Burger Joint	52.081804	5.123941
2	Utrecht	Ledig Erf	Bar	52.081708	5.123739
3	Utrecht	Orloff aan de kade	Café	52.079644	5.123253
4	Utrecht	Centraal Museum	Art Museum	52.083784	5.125964
5	Utrecht	Koffie Leute Brauhaus	Coffee Shop	52.079445	5.122588
6	Utrecht	nijntje museum (Nijntje Museum)	Art Museum	52.083961	5.126053
7	Utrecht	Broei	Vegetarian / Vegan Restaurant	52.079285	5.123069
8	Utrecht	Kounosuke	Japanese Restaurant	52.079521	5.122904

	city	name	categories	lat	lng
0	Nieuwegein	Nettorama	Supermarket	52.031978	5.089349
1	Nieuwegein	DeMIX Fitness	Gym / Fitness Center	52.026297	5.093290
2	Nieuwegein	Sportcafe Merwestein	Sports Bar	52.026496	5.092953
3	Nieuwegein	Sunbob Nieuwegein	Cosmetics Shop	52.032699	5.089596
4	Nieuwegein	Bushalte Merwesteintunnel	Bus Stop	52.026360	5.095364

- A Second-level Administrative Divisions of the Netherlands from Spatial Data Repository of NYU
- Google Map, 'Search Nearby' option to get the center coordinates of each City

Out[7]:

	City	Latitude	Longitude
0	Nieuwegein	52.029870	5.092933
1	Utrecht	52.080986	5.127684

- NVM Market Information for The Dutch property market comparison

3. Methodology

3.1 First Insight: Data Exploration and Visualization

The assumption was that Foursquare has enough information on this area to be able to give us a gap in venues between Utrecht and Nieuwegein, but as we will see later in the results that was not the case. We still had a look at the top venues in Utrecht, which at least demonstrated the popularity of Caffe' (this CAN serve food) and French Restaurants. But before we got to that conclusion, we first had to find the coordinates for both. This led to the quick insight into data,

which quickly showed the huge quantity gap we are experiencing, this can be seen from the limited to venues analysis that is accessible at: link.

3.2 Aftermath

The real-estate data set [2] that was originally identified has already data aggregated for Region's as defined in [3]. After it was clear that the results will simply be very limited, and not be able to answer our questions, few new data set [4] was discovered.

Sadly, no equivalent data set to Foursquare was discovered by the time this report was being written.

4. Results

4.1 Popular venues for Utrecht and Nieuwegein – Analysis

As mentioned in the Methodology section, the results that we hope to be acquired from Foursquare were very limited for the chosen area. As such only 5 venues were discovered in Nieuwegein, while Utrecht had 32:

```
In [28]: print('{} venues were returned by Foursquare in Utrecht.'.format(nearby_venuesU.shape[0]))
         print('{} venues were returned by Foursquare in Nieuwegein.'.format(nearby_venuesN.shape[0]))

         32 venues were returned by Foursquare in Utrecht.
         5 venues were returned by Foursquare in Nieuwegein.

In [29]: print('There are {} uniques categories in Utrecht.'.format(len(nearby_venuesU['categories'].unique())))
         print('There are {} uniques categories in Nieuwegein.'.format(len(nearby_venuesN['categories'].unique())))

         There are 24 uniques categories in Utrecht.
         There are 5 uniques categories in Nieuwegein.
```

We still looked at the top 5 venue categories, for both, the frequency for Nieuwegein, is of course evenly distributed, as there are only 5 venues:

```
----Nieuwegein----
                   venue  freq
0            Supermarket   0.2
1             Sports Bar   0.2
2               Bus Stop   0.2
3         Cosmetics Shop   0.2
4   Gym / Fitness Center   0.2


----Utrecht----
                  venue  freq
0                   Bar  0.12
1                  Café  0.09
2            Art Museum  0.06
3           Supermarket  0.06
4      French Restaurant  0.06
```

The values for Utrecht are more representative, and in fact well represent the local cultural preference, but again the quantity and quality of data is simply to low to be able to produce the answers to the questions we posed at the start.

4.2 House prices for Utrecht and Nieuwegein – Analysis attempt

Below you can see the geographical representation of the two places we have been investigating, Utrecht is marked with a red arrow, while the blue one points to Nieuwegein. For reference the map contains Amsterdam as well, as an easier point of reference.
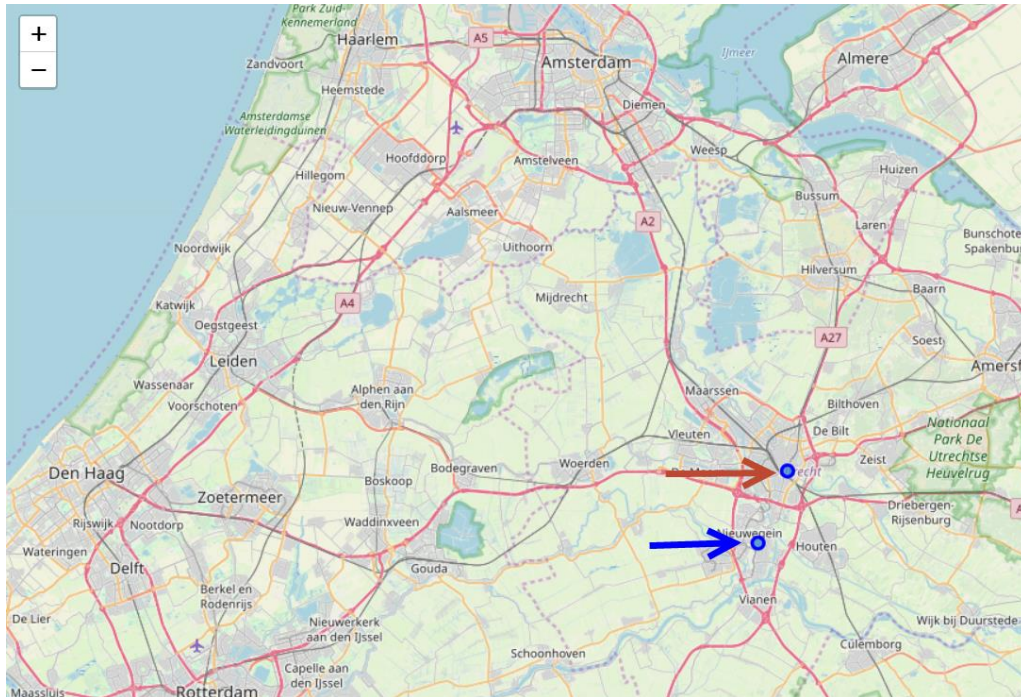
Data available on NVM, turned out to be aggregated, as seen below:

The area marked with 9,7% of price increase contains both Utrecht and Nieuwegein[3].

As the data on the originally indicated source doesn't contains this distinction, we couldn't carry out the analysis which would have an insightful look into the kind of properties that foodies might prefer in a property, and even the new data set discovered only answer the question of **average asking price** and **average asking price per square meter**. This seems to be limited partially by what the *Centraal Bureau voor de Statistiek* (CBS), or simply the department of Statistics in the Netherlands is collecting.

5. Discussion

This project has been a good example of how a to quick judgment on the quality of data can easily lead to a failed analysis, which leads to a warning that in the next iteration more time would be spent on sourcing data sets, and in possible doing an initial data discovery and visualization (as in fact the methodology would recommend) and in case the data is not easily publicly available a new problem would be formulated.

As part of the new dataset we can already see some concrete differences in the real estate prices, here we can see ***Asking price per square meter***, the data represent Year to Date data of 2019:

	YTD 2019
Nieuwegein	2792,18
Utrecht	3650,73
Diffenece	*858,55*
% Nieuwegein price of Difference	*30,80*

6. Conclusion

It's unfortunate how a problem that seem so easily solvable, in fact need much more thought to be able to construct a precise model or showing the precise differences between the two locations, it's implied but not really proved.

I would like to thank any of my peers that will read this, as it was a bumpy ride. But overall it has been an interesting experience tiding together so all different things learnt through the Data Science courses by IBM.

7. Sources

[1] FUNDA Facts Q3 2019 https://www.funda.nl/voormakelaars/artikel/funda-facts-q3-2019/

[2] Dutch Real-Estate Market Information https://www.nvm.nl/marktinformatie/marktinformatie

[3] Dutch Real-Estate Market Region Qualification https://www.nvm.nl/-/media/files/nvmopenbaar/marktinformatie/nvm-regio-indeling.pdf

[4] Dutch Real-Estate Detailed Prices per City/Town https://www.huizenzoeker.nl/woningmarkt/