PROTEIN PRODUCTS ADVERTISING CAMPAIGN (DATA SCIENCE CASE STUDY)

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MARCH 1, 2019

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Abstract

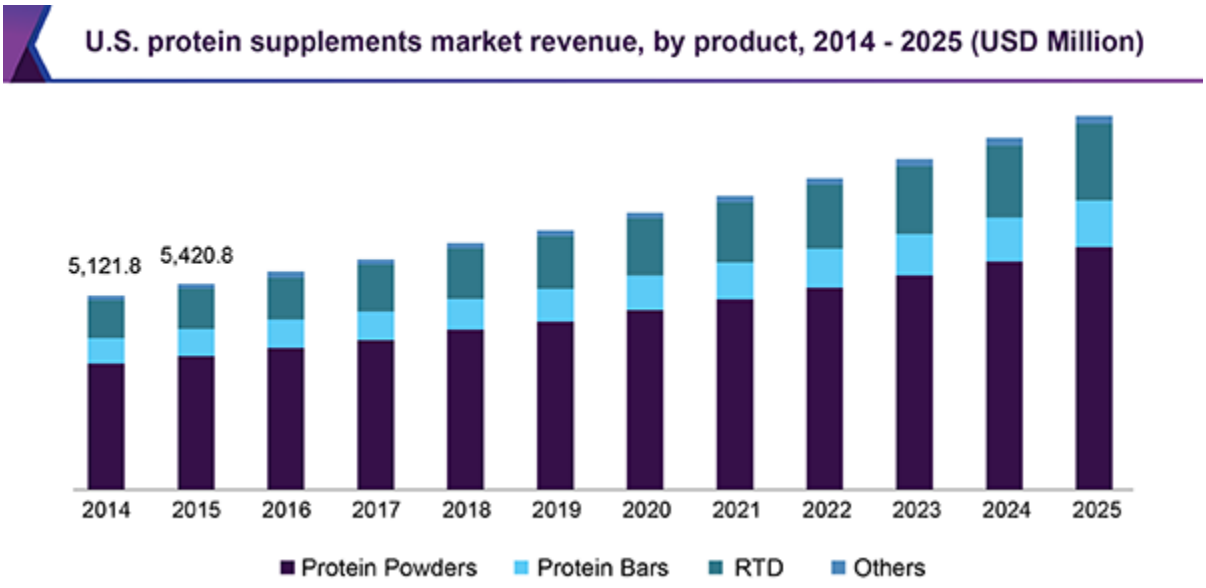
A company called Mass-Protein is releasing new protein products and intended to start an advertising campaign on social media that targets Toronto city. The job of the data science is basically identifying the locations of every gym is Toronto city and create a radical heat map for targeting audience by their location.

1. Introduction

Based on BBC 'Protein Supplement Advert Claims Wrong and Immoral' article, The British Dietetic Association (BDA) believes marketing for some products is both "wrong and immoral". In which It means that thousands of people are using protein powders as a "Substitute not a supplement". But the body which represents the sports nutrition industry says extra protein allows people to train harder.

The ESSNA (European Specialist Sports Nutrition Alliance) also argues that synthetic products enable faster recovery.

There's been a 20% year-on-year increase in sales of protein products over the last five years, according to Euromonitor figures obtained by Radio 1 News-beat. That makes them the fastest growing type of sport supplement in the UK. UK consumers spent £66 million on sports nutrition food and drink products in 2015, up by 27% from 2013. A statistical review by "Protein Supplements Market Size & Growth, Industry Report 2018-2025" described the annual protein supplements revenues by Product:



A company called Mass-Protein wants to start an advertising campaign for their new protein product in the city of Toronto and after several meetings the company made the plane of the process that need to be followed in order to get the highest value from there campaign, and it was as follow: -

1. Create a map which illustrate the administrative division of Toronto city.
2. Identifying the Boroughs including neighborhoods in Toronto City.
3. Identifying the ratio of gyms in each Boroughs.
4. Based on last findings, Start a Facebook, YouTube advertising campaign that targets people by their location.

1.1 Problem Statement

The company decided to invest a 100,000$ in this campaign and haired a Data Scientist to answer the following question: -

What's the amount of budget will we invest in each area in the city of Toronto for the advertising campaign?

1.2 Interested Party

Mass-Protein Company.

2. Literate Review

This Is not a research project so finding literate about the topic won't be straightforward process.

3. Methodology

3.1 Data Sources

- GeoJSON of Toronto Neighborhood's.
- Foursquare for location data.
- List of postal codes of Canada: M.

3.2 Data Collection Exercise

There are many places that you can find a Second-Level Administrative Division, I use the following link in order to get that data in a GeoJSON format: -

https://adamw523.com/toronto-geojson/

By using Foursquare API you'll be able to collect information about location at run time and it's highly customizable and easy to be used.

I had to find out a way for identifying the different neighborhood including Postal Codes in order to be able to merge this data with Foursquare data, So I used a Wikipedia page continuing this information and used scraping and cleaning techniques for enquiring the data.

3.3 Data Utilization

By using the previous data, I become able to create a map for Toronto city containing administrative division and identified every gym located in Toronto city and visualize it on the map.

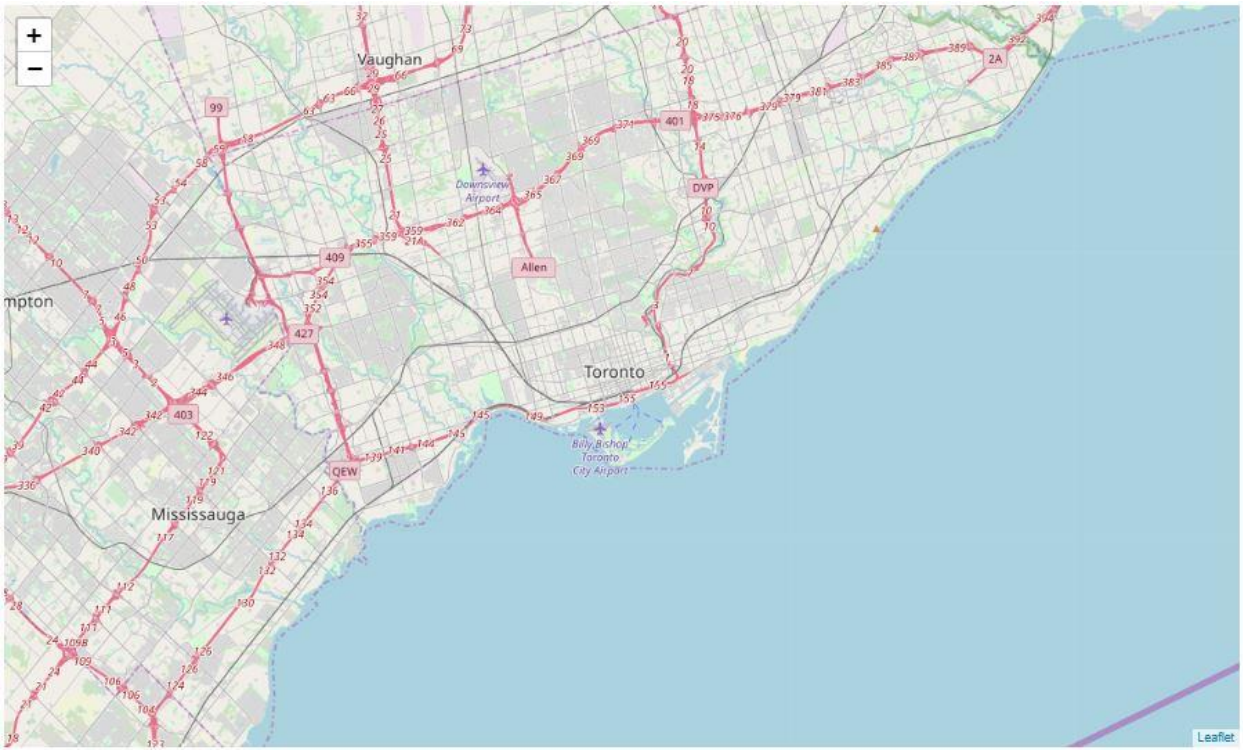
By taking the mean location from all gyms locations in Toronto city you'll get the center point for radial coverage.

The radial coverage can be described as follow: -

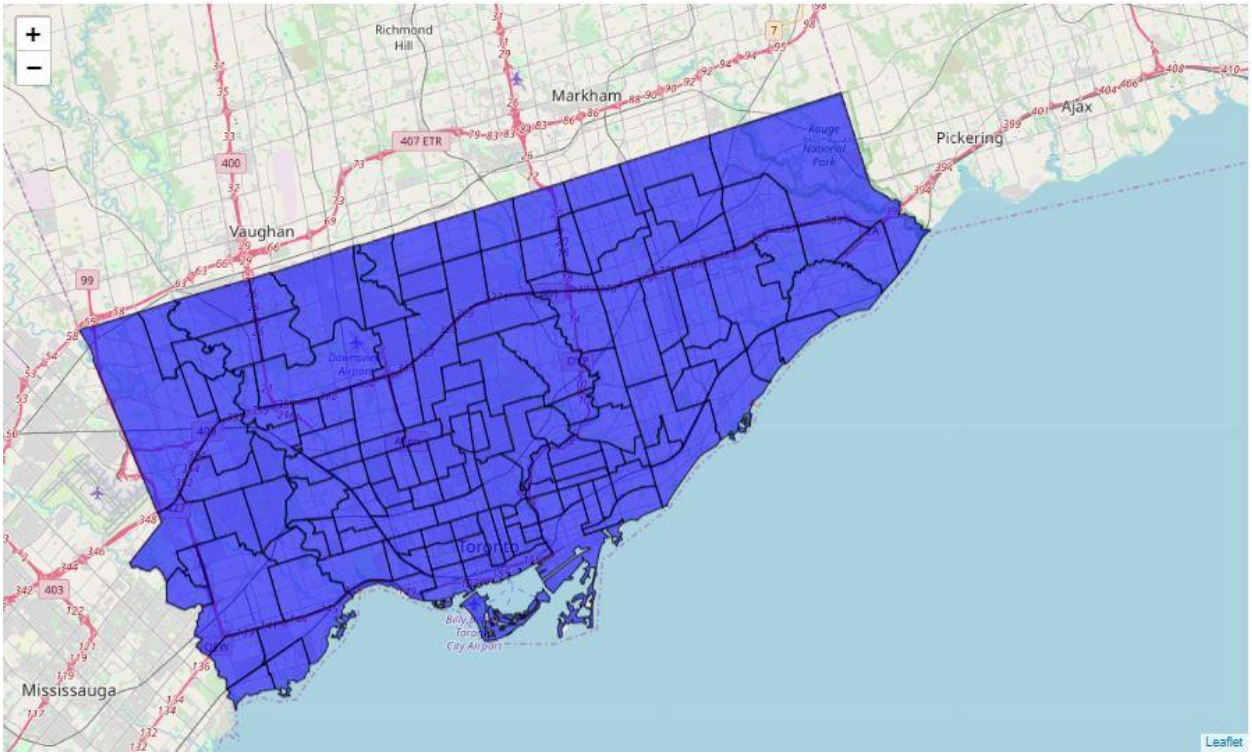
1. High level audience (Audience whiten a radius of **5.75km** from midpoint).
2. Mid level audience (Audience whiten a radius of **12.95km** from midpoint).
3. High level audience (Audience whiten a radius of **20.15km** from midpoint).

4 Results

After crating the following map for Toronto city:



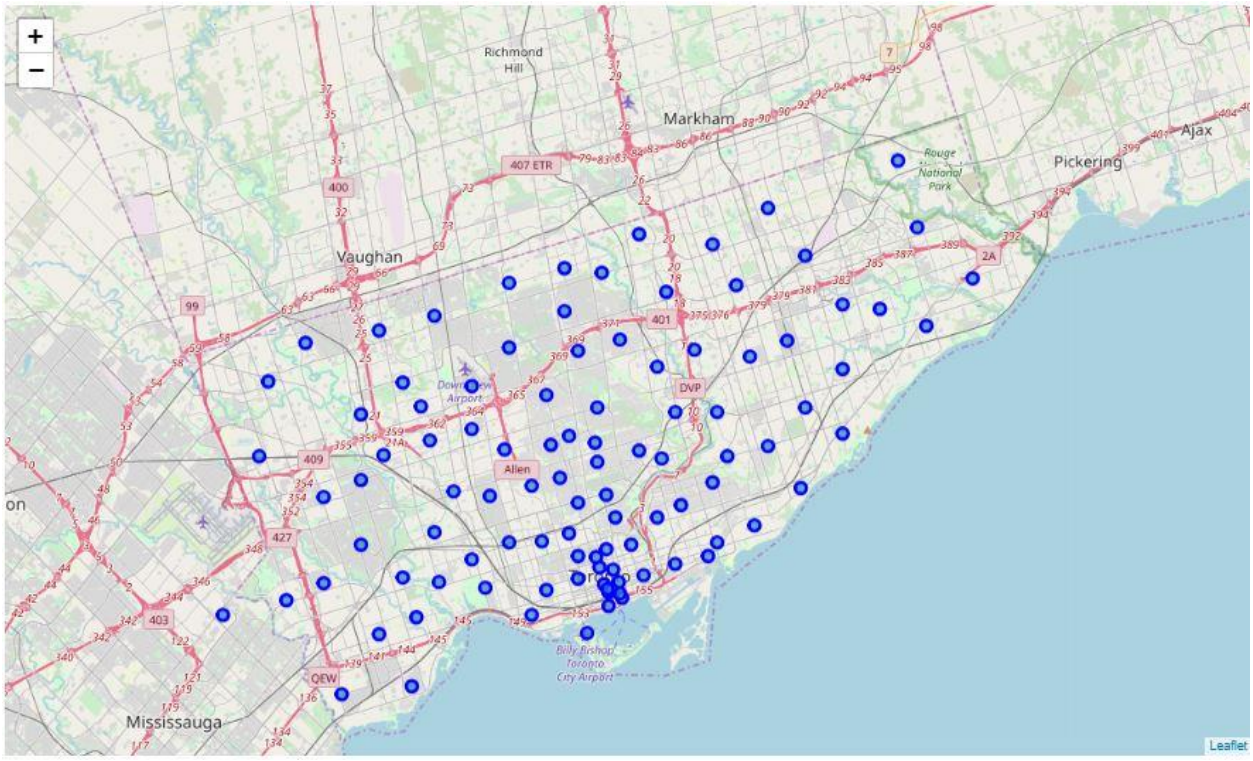
I used the GeoJSON data for visualizing the different administrative divisions of Toronto city:



Then I collected the data from the Wikipedia page resulting as follow

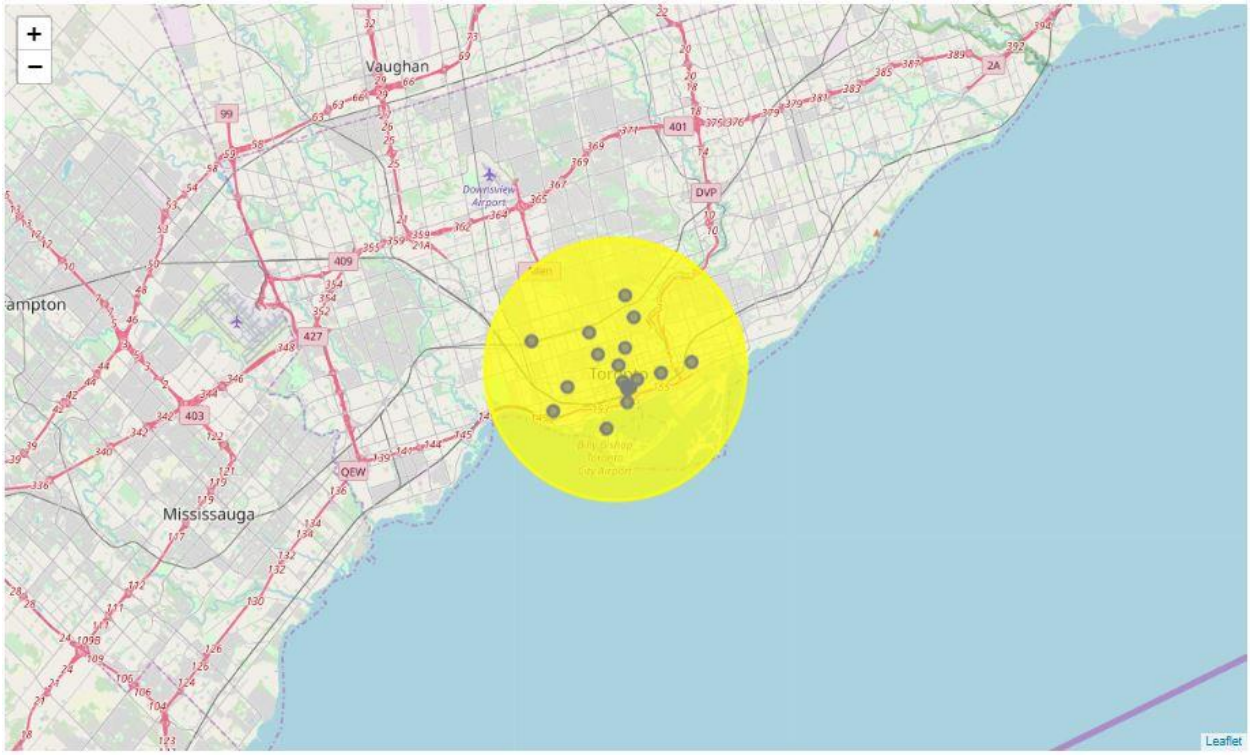
	Postcode	Neighbourhood	Borough	Latitude	Longitude
0	M1B	Rouge, Malvern	Scarborough	43.806686	-79.194353
1	M1C	Highland Creek, Rouge Hill, Port Union	Scarborough	43.784535	-79.160497
2	M1E	Guildwood, Morningside, West Hill	Scarborough	43.763573	-79.188711
3	M1G	Woburn	Scarborough	43.770992	-79.216917
4	M1H	Cedarbrae	Scarborough	43.773136	-79.239476

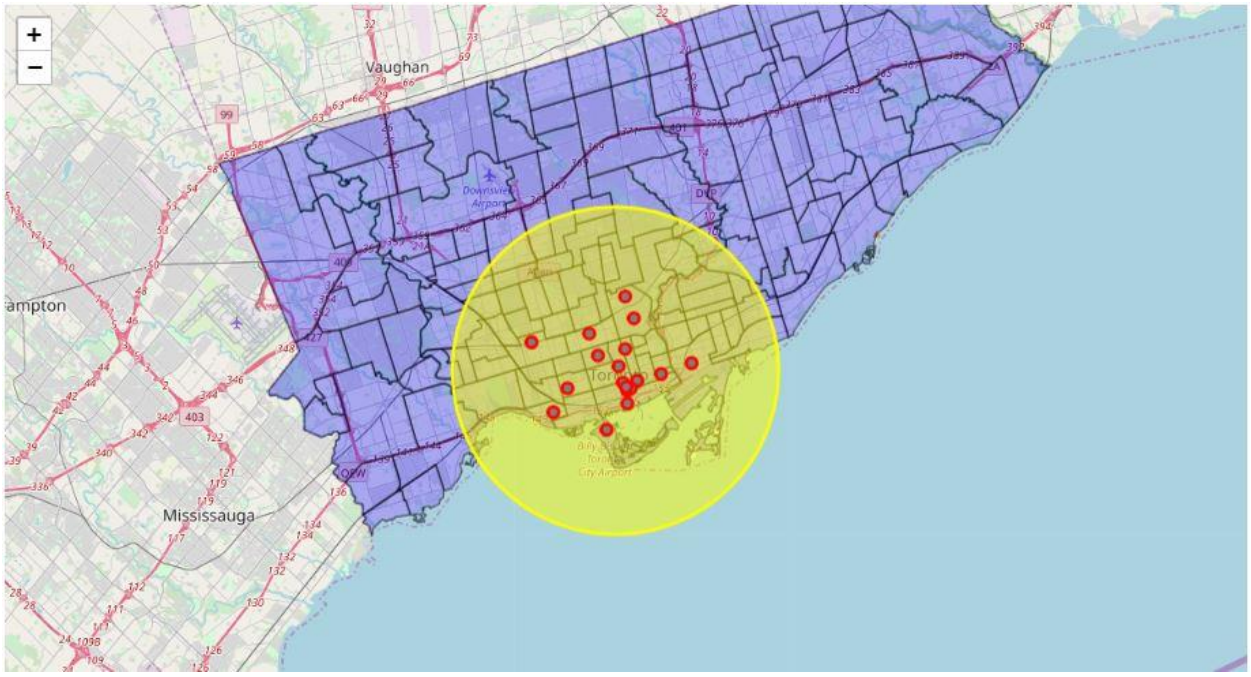
By using this data, I became able to set a point for each neighborhood on the map



Then after collecting every gym location I had to identify every gym postal code based on the previous data and then visualize it on the map.

Then I calculated the mean point for all points in order to crate radial coverage area.

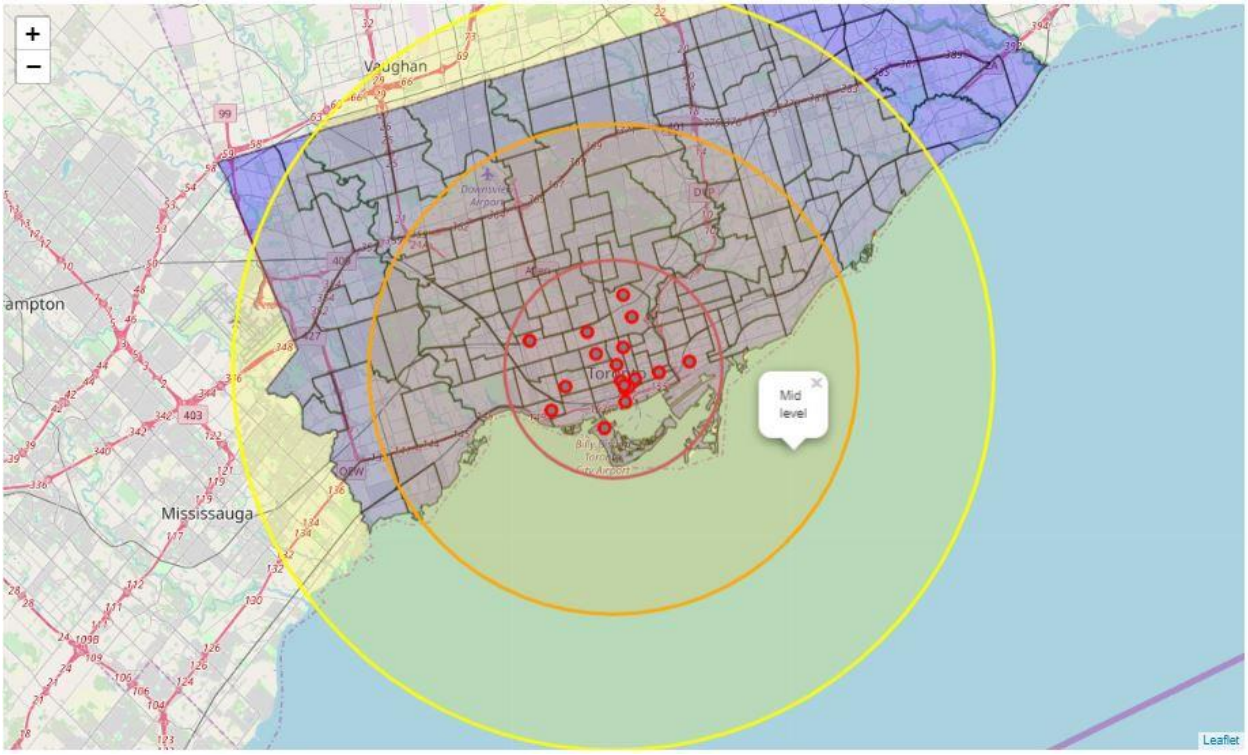

Vaughan
Mississauga
Leaflet


Vaughan
Mississauga

5 Conclusion

The company protein products shouldn't be used without a professional supervisor by a trainer and by taking that under consideration the target audience area will be divided into 3 sections:

1. High level audience (Audience whiten a radius of **5.75km** from midpoint)
2. Mid level audience (Audience whiten a radius of **12.95km** from midpoint)
3. High level audience (Audience whiten a radius of **20.15km** from midpoint)



5.1 Feature Developments

This work is only a sample for a non-real company, i tried to show the steps of how such work would be done. The data was limited to only 30 Gym and that's caused because i use a free personal account on Foursquare.

For further study's the samples should at least represent 80% of the entire gyms in Toronto and some other factors should also effect on target community such as: -

1. Age (12 - 40 Years).
2. Usage pattern.
3. Familiarity with such products.
4. Population density.
5. etc.

5. References

1. http://www.bbc.co.uk/newsbeat/article/38555693/protein-supplement-advert-claims-wrong-and-immoral.
2. https://www.grandviewresearch.com/industry-analysis/protein-supplements-market.
3. https://adamw523.com/toronto-geojson/.