Data Analytics Project Presentation

A brief project to visualise and locate the live music venues of Sydney and Perth

Presenter: Parker

I am taking this project as an extention to my thesis, as most of the research methods used were qualitative such as interviews and site analysis, I would like see how this data course can supply me with the new tools.

Live music contributes to the unique economic, social and cultural values of urban environments, cities around the world have utilise it as an initiative to activate night time economy.

Is it really that important?


Perth before lockdown
Perth during lockdown

So yes, very important!

But, it has been challenged by many contemporary issues, such as gentrification – the replacement and changes of social-economic status in a neighbourhood . There were 176 live music venues ceased operation since the introduction of the lockout laws in Sydney.

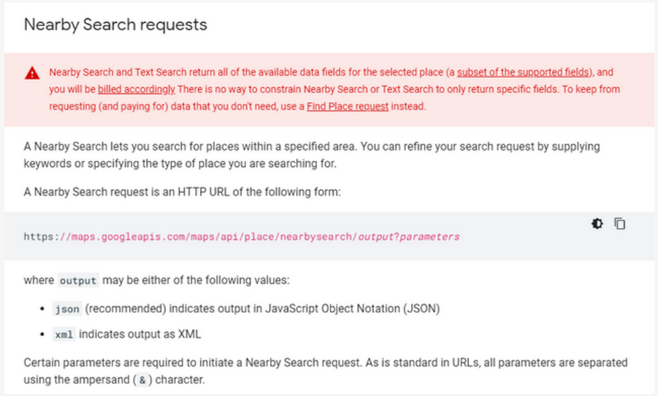
Having the spatial data from a time period to another time period, helps us to understand how has the live music ecology been impacted by certain policy, gentrification and other contemporary urban challenges.

To measure the impact, we need historical spatial data, and there is none, so we have to make our own.

Where are the venues?

1. Find out the best source to get the data

Google Map API Place Search is the very practical option, but it has lits limitations.



Nearby Search requests

Nearby Search and Text Search return all of the available data fields for the selected place (a subset of the supported fields), and you will be billed accordingly There is no way to constrain Nearby Search or Text Search to only return specific fields. To keep from requesting (and paying for) data that you don't need, use a Find Place request instead.

A Nearby Search lets you search for places within a specified area. You can refine your search request by supplying keywords or specifying the type of place you are searching for.

A Nearby Search request is an HTTP URL of the following form:

```
https://maps.googleapis.com/maps/api/place/nearbysearch/output?parameters
```

where `output` may be either of the following values:

- `json` (recommended) indicates output in JavaScript Object Notation (JSON)
- `xml` indicates output as XML

Certain parameters are required to initiate a Nearby Search request. As is standard in URLs, all parameters are separated using the ampersand (`&`) character.

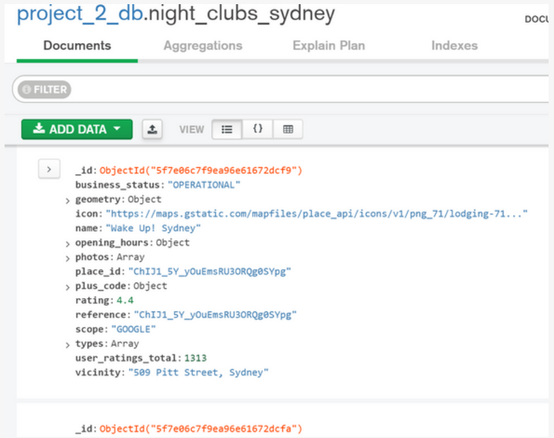
2. Find out how the data is structured

Then you have it, a nicely formatted data from google. Although some of the details are not too correct, but at least we have what we need to visualise.

```
[{'business_status': 'OPERATIONAL',
  'geometry': {'location': {'lat': -33.8713517, 'lng': 151.1947299},
   'viewport': {'northeast': {'lat': -33.8699477697085,
     'lng': 151.1961274302915},
    'southwest': {'lat': -33.8726457302915, 'lng': 151.1934294697085}}},
  'icon': 'https://maps.gstatic.com/mapfiles/place_api/icons/v1/png_71/lodgi
  'name': 'The Dunkirk Hotel',
  'opening_hours': {'open_now': False},
  'photos': [{'height': 3180,
    'html_attributions': ['<a href="https://maps.google.com/maps/contrib/100
    'photo_reference': 'CmRaAAAASo4W8zvQjsGSf6-0AV3AnmaS-FiOf3E_9splky5wcTsg
cSFCIlWKIl-8Ty-SHysHWX4OgI3zTmG00-5XOCnEhB64JH8Ym1wZSCzDQNVccXzGhSaXW_4Cy3Az
    'width': 4770}],
  'place_id': 'ChIJ4UEnPTGuEmsRkjpDW7FRSko',
  'plus_code': {'compound_code': '45HV+FV Pyrmont NSW, Australia',
   'global_code': '4RRH45HV+FV'},
  'rating': 4.3,
```

3. Store it in MongoDB Database

As most data is in JSON format, saving it in MongoDB seems appropriate.



project_2_db.night_clubs_sydney

Documents | Aggregations | Explain Plan | Indexes

FILTER

ADD DATA | VIEW

```
_id: ObjectId("5f7e06c7f9ea96e61672dcf9")
business_status: "OPERATIONAL"
geometry: Object
icon: "https://maps.gstatic.com/mapfiles/place_api/icons/v1/png_71/lodging-71..."
name: "Wake Up! Sydney"
opening_hours: Object
photos: Array
place_id: "ChIJ1_5Y_yOuEmsRU3ORQg0SYpg"
plus_code: Object
rating: 4.4
reference: "ChIJ1_5Y_yOuEmsRU3ORQg0SYpg"
scope: "GOOGLE"
types: Array
user_ratings_total: 1313
vicinity: "509 Pitt Street, Sydney"

_id: ObjectId("5f7e06c7f9ea96e61672dcfa")
```

How to use the data?

1. Set Up a Flask Web App

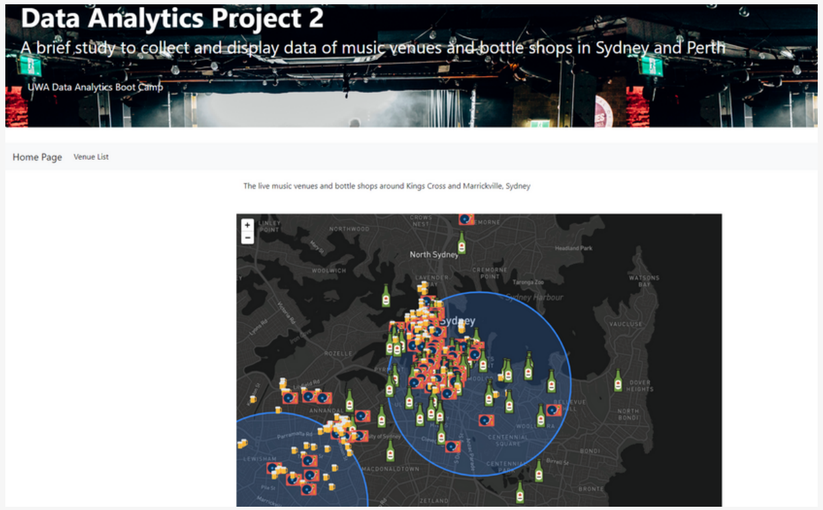
The flask web app enable us to store our data in local server, as we can later retrive our data from API calls

How to visualise the data on a map?

1. D3.js and jQuery to read our data

```
// All bars marker
//////////////////////////////////////////////
//////////////////////////////////////////////
//////////////////////////////////////////////
$.get('Raw Data/all_bars.csv', function(bars_data) {


  // Use PapaParse to convert string to array of objects
  var all_bars_data = Papa.parse(bars_data, {header: true, dynamicTyping: true}).data;

  // For each row in data, create a marker and add it to the map
  // For each row, columns `Latitude`, `Longitude`, and `Title` are required
  for (var i in all_bars_data) {
    var row = all_bars_data[i]

    var bars_marker =  L.marker([row.Latitude, row.Longitude], {
      opacity: 1,
      icon: beer_icon
    }).bindPopup('Bars Name:' + row.name + "<br>Address:" + row.vicinity)


    bars_marker.addTo(sydneyMap)
  }

});
```

2. Then let Leaflet to do the magic

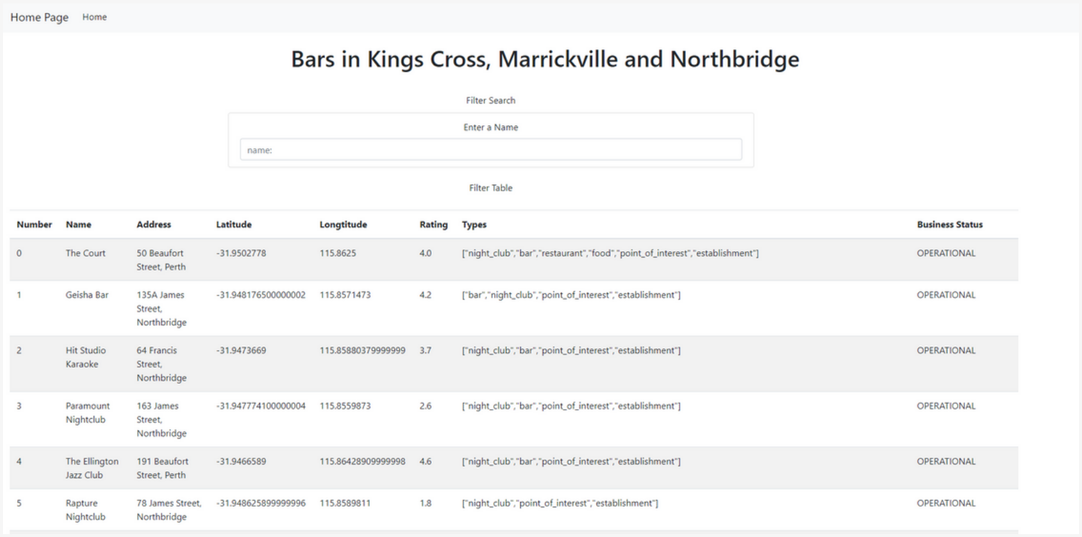


How to visualise the data in a table?

1. D3.js to read our data

```
var tbody = d3.select ("tbody")

d3.csv("Raw Data/all_nc.csv", function(data) {
    console.log(data)

    data.forEach(function(bars_data){
        var row = tbody.append("tr");
        // use append method to insert table data for each row
        Object.entries(bars_data).forEach(function([key,value]){
            console.log(key, value)
            // use append to insert a cell for each value
            // use text to insert data to each cell
            var cell = row.append("td").text(value);
        });
    });

})

var button = d3.select("filter_btn");

button.on("click", function(){
    // select the input element and get the html node
    var inputElement = d3.select(".form-control");
    // get the value property of the input element
    var inputName = inputElement.property("value");
    //console.log(inputDate)
    // filter data for the date value to get data that is searched for
    var filteredData = data.filter(ufo => bars_data.name === inputName);
    //console.log(filteredData);
```

2. html page to show the data table



Number	Name	Address	Latitude	Longtitude	Rating	Types	Business Status
0	The Court	50 Beaufort Street, Perth	-31.9502778	115.8625	4.0	["night_club","bar","restaurant","food","point_of_interest","establishment"]	OPERATIONAL
1	Geisha Bar	135A James Street, Northbridge	-31.948176500000002	115.8571473	4.2	["bar","night_club","point_of_interest","establishment"]	OPERATIONAL
2	Hit Studio Karaoke	64 Francis Street, Northbridge	-31.9473669	115.85880379999999	3.7	["night_club","bar","point_of_interest","establishment"]	OPERATIONAL
3	Paramount Nightclub	163 James Street, Northbridge	-31.947774100000004	115.8559873	2.6	["night_club","bar","point_of_interest","establishment"]	OPERATIONAL
4	The Ellington Jazz Club	191 Beaufort Street, Perth	-31.9466589	115.86428909999998	4.6	["night_club","bar","point_of_interest","establishment"]	OPERATIONAL
5	Rapture Nightclub	78 James Street, Northbridge	-31.948625899999996	115.8589811	1.8	["night_club","point_of_interest","establishment"]	OPERATIONAL

Demo page :

http://127.0.0.1:5500/Project-2-Live-Music-Venus-in-Sydney/templates/index.html

Limitation and difficulties:

- It is hard to get the appopriate data for a specific topic
- Google Maps API Place Search only gives a maximum of 60 results for normal users, and some of the searches are repeated
- Google blocked me for too much web scrapping, so be careful!

Okay, that's it!

And who wants to give a roast?