

## **Data Focused Python**

### **Group project for Team 14: Go Freshmen**

#### **Group members:**

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#### **Brief Introduction:**

Our product aims to help CMU freshmen settle down in Pittsburgh easily. This is an integrated information platform that provides three aspects of information: safety and health, restaurant recommendation, and apartments renting. In safety and health sector, covid-19 confirmed cases and crime statistics are provided and they are divided by neighborhood. In restaurant recommendation sector, we provide restaurant information categorized by distance to CMU campus, prices, and ratings. In apartments renting sector, we provide data of apartments for rent nearby CMU campus.

#### **Data Source and Implementation:**

##### 1. Restaurant Recommendation

We Acquired restaurant data from Yelp Business Search Endpoint using API. We define our source data as searching results including keyword "restaurant" which locate in a radius of 10000 miles around CMU campus.

API Key:

"3c3UTWB8aykiNe9IAN7TLBRCjLE9UaNBfugv1NuRfo4dMl0oydSsHxAOp0Ho34t8  
hxTJxxcTw0nKdKetqT02otaIGiEwKgsWlCn12hGswN08g24IL9MaEi6K8AdAYXYx"

##### 2. Apartment Renting: [Apartments.com](https://www.apartments.com)

In this sector, we live scrape data from Apartments.com and parse html data by using beautiful soup. Only apartments nearby CMU campus are scraped. Here, we provide information of more than 450 apartments.






##### 3. Crime and Covid statistics

- For the Crime data, we collect data from WPRDC police incidents blotter of Pittsburgh using csv download link. We use the neighborhood data to create two box plots for the highest 10 and lowest 10 neighborhood; we combine longitude and latitude with Google Maps API to visualize heatmap.
- Google Maps API Key: "AIzaSyB9eUCbdQHA-d9neNixpaEdsDWOEUP4m30"
- For the Covid data, we collect data from Allegany County Covid Dashboard and generate a dashboard of confirm cases, deaths, positivity rate, number of individual testing, and hospitalizations of current and previous 7 days moving average, and the differences between the two.

#### **Install Instructions:**

Directory Structure:



**main.py** should be in the outside folder

 Apartments  
 crime\_covid  
 Restaurant  
 main.py  
 README.docx



**web\_scrape\_apartments.py** and **apmt\_data.csv** should be inside the **Apartments** folder

 apmt\_data.csv  
 web\_scrape\_apartments.py

**covid.py** and **crime.py** should be inside the **crime\_covid** folder

 covid.py  
 crime.py

**api\_data.py** and **Restaurant\_search.py** should be inside the **Restaurant** folder

 api\_data.py  
 Restaurant\_search.py

**Packages we used: Please “pip install” these packages in spyder console prior to running**

1. pandas
2. tableauscraper
3. matplotlib
4. gmplot
5. selenium
6. webdriver\_manager
7. geopy
8. folium
9. webbrowser
10. json
11. requests
12. os
13. time
14. ssl
15. bs4
16. numpy

**Start Using:**

1. Run main.py
2. Choose between the options you would like to see:

```
Welcome to Go Freshmen!
-----
Option menu:
  1. Introduction: Health & Safety in Pittsburgh
  2. Where to dine in Pittsburgh
  3. Where to live in Pittsburgh
  4. Exit

Please enter your choice:
```

3. For the Introduction, which is the COVID and Crime data, please choose 1

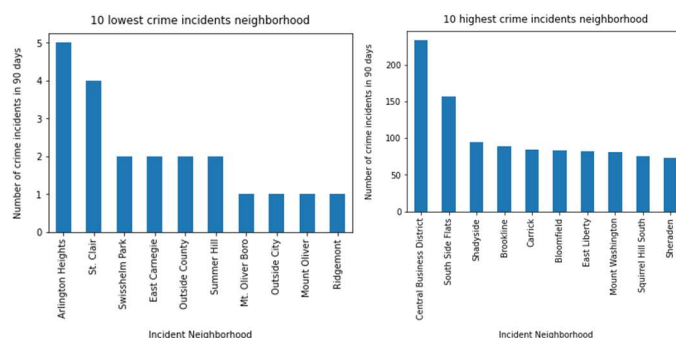
```
Please enter your choice: 1
-----
  1. Show me COVID statistics
  2. Show me Crime Statistics
  3. Exit
```

4. Choose between COVID and Crime data to see details. We choose COVID first. COVID dashboard is simply a summary of COVID related data. It is up-to-date data and will refresh every time you run the module.

	Type	Current 7 Average	Previous 7 Average	Change from 7 Period
0	Cases	357.3	372.7	-15.4
1	Deaths	4.1	4.3	-0.2
2	Hospitalizations	19.9	22.6	-2.7
3	Positivity (PCR)	6.5%	6.2%	0.3%
4	Individuals Tested	6609.7	7059.1	-449.4

5. There are different options to see for Crime data. 10 lowest and 10 highest crime neighborhoods are histograms showing the number of incidents and the names of the neighborhoods. They are also up-to-date data.

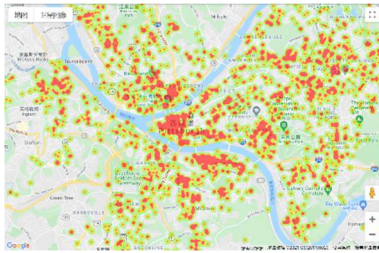
```
  1. Show me the 10 lowest crime incidents neighborhood
  2. Show me the 10 highest crime incidents neighborhood
  3. Show me the crime statistics in my own neighbourhood
  4. Show me the crime heatmap in Pittsburgh
  5. Exit
```



6. Choose 3 to customize your search for a specific neighborhood, and it will show you the number of the input neighborhood in the last 90 days.

```
What neighborhood do you want to search?squirrel hill south
The total crime incidents of squirrel hill south neighborhood is 75
```

7. Choose 4 for crime heatmap, and it will pop up a browser window to show the heatmap of crimes in Pittsburgh.



8. You can always choose Exit to return to the previous page. When you are in the main page, choose 2 to search for restaurants that are near a specific address.

```
Option menu:
  1. Introduction: Health & Safety in Pittsburgh
  2. Where to dine in Pittsburgh
  3. Where to live in Pittsburgh
  4. Exit

Please enter your choice: 2
-----

Enter the street name: 401 Shady Avenue
Select Action:
  1. Filter
  2. Change Address
  3. Display Results
  4. Remove Filters
  5. Exit
```

9. You can add filters to those restaurants by distance, prices, and ratings. Note that the data is up to date because each time you run the module it will pull off data using API in Yelp.

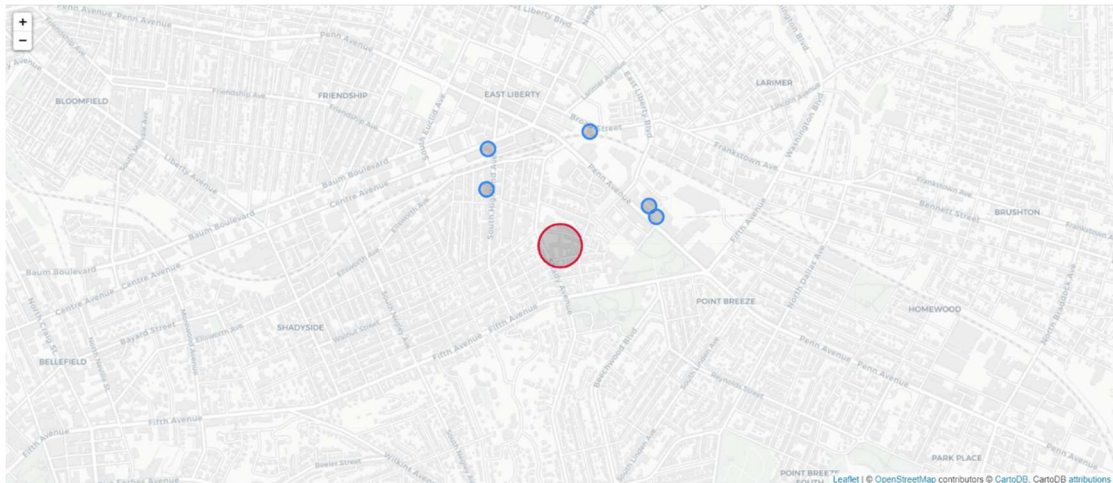
```
Select Filter:
  1. Filter by Distance(meter)
  2. Filter by Ratings
  3. Filter by Price

1

Please enter distance (m): 2000
```

	name	rating	price	display_phone	distance
2	Noodlehead	4.5	\$\$	(412) 295-4580	463
160	Somi	3.5	\$\$		490
145	Galley Bakery Square	3.5	\$\$		506
125	The Fire Side Public House	4.0	\$\$	(412) 661-9900	592
153	Piada Italian Street Food	4.5			604

10. You can also see a map of the selected restaurants. It will also pop up a browser window to show your input location and restaurants that you have filtered.



11. You can always choose Exit to return to the previous page. When you are in the main page, choose 3 to enter the apartments recommendation system. You can choose to live scrape the data or not using beautifulsoup, and it will take 10-20 seconds. After collecting the data, you can see choose from different options.

```

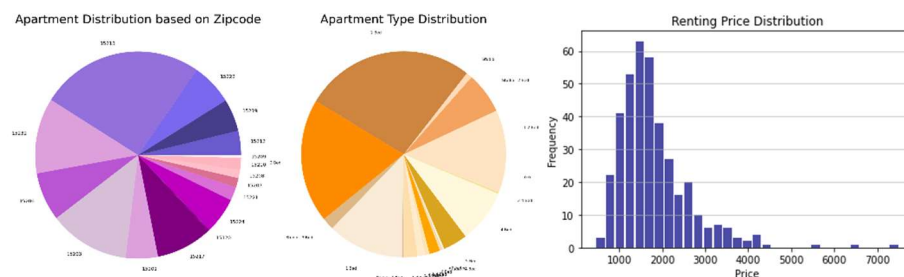
Option menu:
  1. Introduction: Health & Safety in Pittsburgh
  2. Where to dine in Pittsburgh
  3. Where to live in Pittsburgh
  4. Exit

Please enter your choice: 3
-----

Do you want to try live scraping? (Y/N) It takes about 10 secondsy
-----

  1. Show me the location distribution of apartments
  2. Show me the type distribution of apartments
  3. Show me the price distribution of apartments
  4. I want to customize my own zipcode and budget
  5. Exit
  
```

12. Choose 1 or 2 for pie charts of the distribution of apartments. Location distribution is categorized by zip codes, and type distribution is categorized by types of apartments. Choose 3 for bar chart of the price distribution of apartments in Pittsburgh.



13. You can also customize your own zip code and budget to search. It will return to you a list of apartments that suits you. A detailed CSV file called `apmt_search_result` will automatically be saved to your program folder containing the information of apartments.



1. Show me the location distribution of apartments
2. Show me the type distribution of apartments
3. Show me the price distribution of apartments
4. I want to customize my own zipcode and budget
5. Exit

Please enter your choice: 4

What is the zip code that you are interested in? 15217

What is the price that you can afford? 2000

Apartment_Link	Apartment_Name	Apartment_Add	Apartment_Price	Apartment_Tel	Apartment_Type
16 <a href="https://www.apartments.com/walnut-towers-at-frick-park-pittsburgh-pa/vbe85ne/">https://www.apartments.com/walnut-towers-at-frick-park-pittsburgh-pa/vbe85ne/</a>	Walnut Towers at Frick Park	7070 Forward Ave, Pittsburgh, PA	15217 \$1,300 - 1,995	(412) 206-5629	1-2 Bed
61 <a href="https://www.apartments.com/wendover-pittsburgh-pa/155ygwf/">https://www.apartments.com/wendover-pittsburgh-pa/155ygwf/</a>	Wendover	5562 Hobart St, Pittsburgh, PA	15217 \$1,135 - 1,620	(412) 357-4925	1-2 Bed

#	A	B	C	D	E	F	G
1		Apartment_Name	Apartment_Add	Apartment_Price	Apartment_Tel	Apartment_Type	Apartment_Link
2	16	Walnut Towers at	7070 Forward Ave	\$1,300 - 1,995	(412) 206-5629	1-2 Bed	<a href="https://www.apartments.com/walnut-towers-at-frick-park-pittsburgh-pa/vbe85ne/">https://www.apartments.com/walnut-towers-at-frick-park-pittsburgh-pa/vbe85ne/</a>
3	61	Wendover	5562 Hobart St	\$1,135 - 1,620	(412) 357-4925	1-2 Bed	<a href="https://www.apartments.com/wendover-pittsburgh-pa/155ygwf/">https://www.apartments.com/wendover-pittsburgh-pa/155ygwf/</a>
4	64	Maxon Towers	6315 Forbes Ave	\$1,605 - 3,300	(412) 688-6248	1-3 Bed	<a href="https://www.apartments.com/maxon-towers-squirrel-hill-pa/03jt62/">https://www.apartments.com/maxon-towers-squirrel-hill-pa/03jt62/</a>
5	65	Morrowfield	2715 Murray Ave	\$820 - 1,615	(844) 404-5887	Studio - 2 Bed	<a href="https://www.apartments.com/morrowfield-pittsburgh-pa/34lt28g/">https://www.apartments.com/morrowfield-pittsburgh-pa/34lt28g/</a>
6	69	The Reserve at Sur	1435 Parkview Bl	\$1,980 - 2,580	(844) 564-8456	2-3 Bed	<a href="https://www.apartments.com/the-reserve-at-summerset-at-frick-park-pittsburgh-pa/wm9hrck/">https://www.apartments.com/the-reserve-at-summerset-at-frick-park-pittsburgh-pa/wm9hrck/</a>
7	75	6385 Alderson St	Pittsburgh, PA 15	\$1,550	(412) 532-4536	2 Bed	<a href="https://www.apartments.com/6385-alderson-st-pittsburgh-pa/6tyjrrr/">https://www.apartments.com/6385-alderson-st-pittsburgh-pa/6tyjrrr/</a>
8	89	Velma Court	772 Greenfield A	\$595 - 895	(844) 203-8541	Studio - 2 Bed	<a href="https://www.apartments.com/velma-court-pittsburgh-pa/mx1hj1/">https://www.apartments.com/velma-court-pittsburgh-pa/mx1hj1/</a>
9	113	Condo for Rent	5715 Beacon St	\$1,050	(412) 419-1019	1 Bed	<a href="https://www.apartments.com/5715-beacon-st-pittsburgh-pa-unit-315/d0rypck/">https://www.apartments.com/5715-beacon-st-pittsburgh-pa-unit-315/d0rypck/</a>
10	117	Apartment for Ren	6373 Alderson St	\$1,695	(724) 330-4618	2 Bed	<a href="https://www.apartments.com/6373-alderson-st-pittsburgh-pa/19vbjx4/">https://www.apartments.com/6373-alderson-st-pittsburgh-pa/19vbjx4/</a>
11	118	Apartment for Ren	1838 Shaw Ave	\$1,750	(724) 330-4615	3 Bed	<a href="https://www.apartments.com/1838-shaw-ave-pittsburgh-pa/zbtow0z/">https://www.apartments.com/1838-shaw-ave-pittsburgh-pa/zbtow0z/</a>
12	119	Apartment for Ren	1125 Greenfield	\$1,475	(786) 598-2787	4 Bed	<a href="https://www.apartments.com/1125-greenfield-ave-pittsburgh-pa/vzslshek/">https://www.apartments.com/1125-greenfield-ave-pittsburgh-pa/vzslshek/</a>
13	121	Townhome for Ren	2526 Beechwood	\$1,995	(412) 506-8459	3 Bed	<a href="https://www.apartments.com/2526-beechwood-blvd-pittsburgh-pa/sn6k4f6/">https://www.apartments.com/2526-beechwood-blvd-pittsburgh-pa/sn6k4f6/</a>
14	198	Apartment for Ren	5552 Covode St	\$895	(724) 602-9730	1 Bed	<a href="https://www.apartments.com/5552-covode-st-pittsburgh-pa/v4peczd/">https://www.apartments.com/5552-covode-st-pittsburgh-pa/v4peczd/</a>
15	200	Apartment for Ren	5635 Hobart St	\$850 - 870	(412) 557-7973	1 Bed	<a href="https://www.apartments.com/5635-hobart-st-pittsburgh-pa/mmbb84h/">https://www.apartments.com/5635-hobart-st-pittsburgh-pa/mmbb84h/</a>
16	201	Apartment for Ren	5637 Hobart St	\$815 - 830	(412) 314-1018	1 Bed	<a href="https://www.apartments.com/5637-hobart-st-pittsburgh-pa/kgve868/">https://www.apartments.com/5637-hobart-st-pittsburgh-pa/kgve868/</a>
17	202	Apartment for Ren	5813 Bartlett St	\$925	(724) 972-0255	1 Bed	<a href="https://www.apartments.com/5813-bartlett-st-pittsburgh-pa/8bs27j2/">https://www.apartments.com/5813-bartlett-st-pittsburgh-pa/8bs27j2/</a>
18	203	Apartment for Ren	5703 Hobart St	\$1,199	(412) 218-0238	1 Bed	<a href="https://www.apartments.com/5703-hobart-st-pittsburgh-pa/y4d55yr/">https://www.apartments.com/5703-hobart-st-pittsburgh-pa/y4d55yr/</a>
19	206	Apartment for Ren	5862 Forbes Ave	\$770	(412) 253-6539	Studio	<a href="https://www.apartments.com/5862-forbes-ave-pittsburgh-pa/m6swwik/">https://www.apartments.com/5862-forbes-ave-pittsburgh-pa/m6swwik/</a>

Link to the online demo: <https://youtu.be/XWdgb15vevE>