



Internet Disparity

User Guide & Steps

Team

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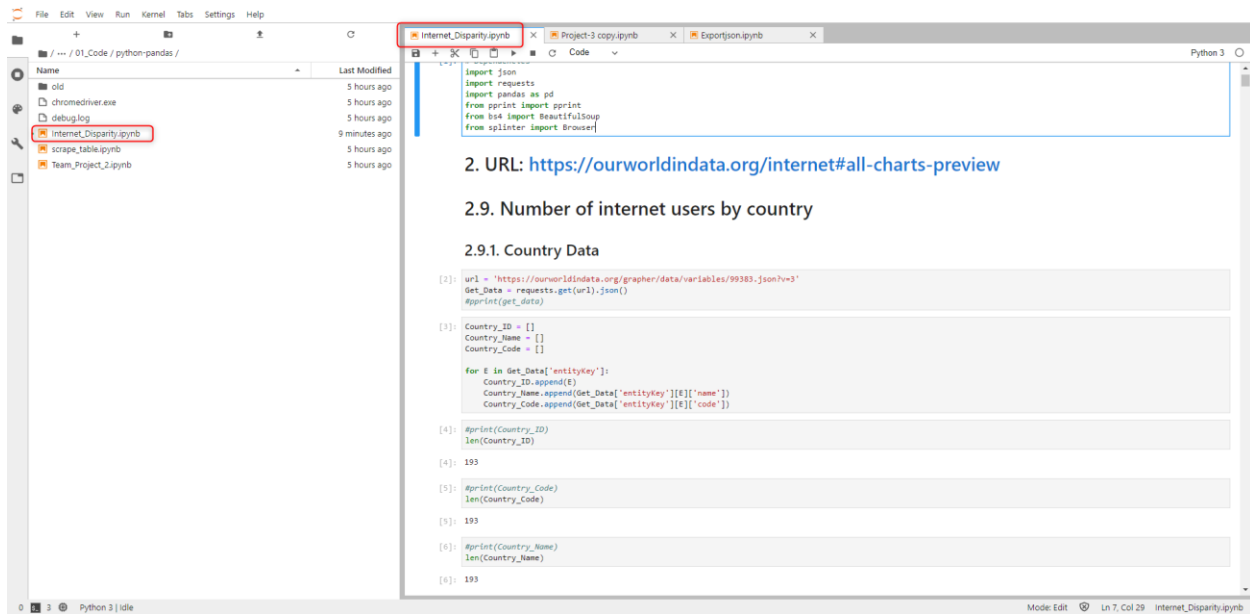
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1 Extract

1.1 Notebook



Path:

...\17_Global_Digital_Divide_Project_2\Project Work\02 - Analysis\01_Extraction\01_Code\python-pandas\Internet_Disparity.ipynb

1.2 Complementary files

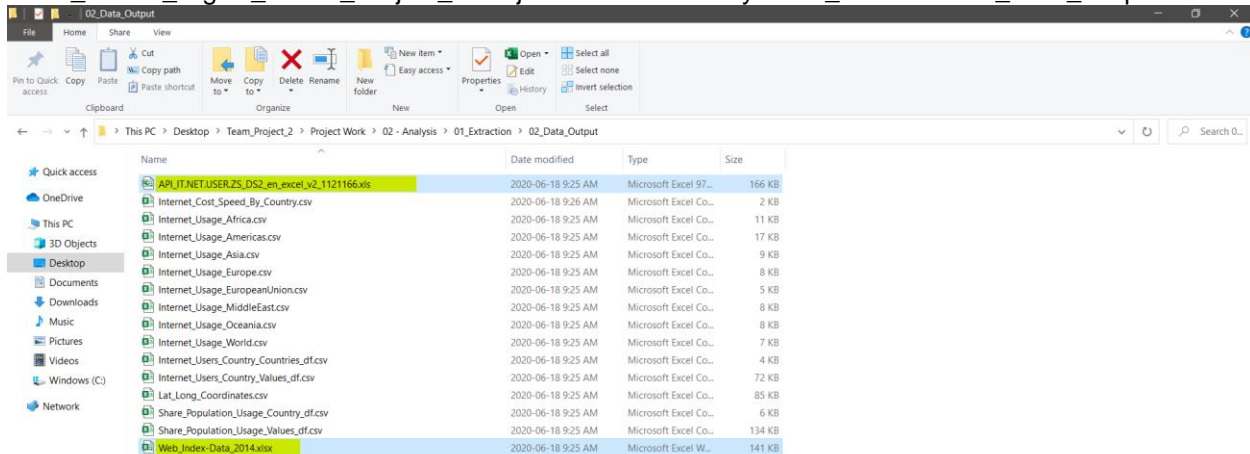
All files are automatically downloaded using the python/pandas code.

2 files out of 16 are stored in the default download folder.

Users will have to copy/paste those 2 files into folder below.

Path:

...\17_Global_Digital_Divide_Project_2\Project Work\02 - Analysis\01_Extraction\02_Data_Output



2 Transform

2.1 Create a PgAdmin (SQL) database

Later in the process, Jupyter Notebook will connect to the database and insert the data automatically.

Prior to that, create a database and update its name to 'Internet_DB', your username to 'localhost' & your password to 'localhost'.

Use these credentials to connect to the database.

It is highly suggested to change them at the end of the project to make them more personal.

Create a query to create the table by using this code located here:

...\17_Global_Digital_Divide_Project_2\Project Work\02 - Analysis\03_Load_Analyze_SQL\Analysis.sql

2.2 Jupyter Notebook

Pre-requisite:

User must have created a database named 'Internet_DB', prior to connecting to running this code.

Run this file that contains the code to load the data included in the database.

Path:

...\17_Global_Digital_Divide_Project_2\Project Work\02 - Analysis\02_Transform\Project-3 copy.ipynb

The top screenshot shows a Jupyter Notebook interface with the file 'Project-3 copy.ipynb' open. The code in the notebook is as follows:

```
[90]: w1.columns = map(str.lower, w1.columns)
[91]: cost_speed_3.columns = map(str.lower, cost_speed_3.columns)
[92]: # Creating Database connection
#connection_string = "postgres://An@1101@localhost:5432/Project_3"
#engine = create_engine(f'postgres://{connection_string}')
#connection = engine.raw_connection()
[93]: url = 'postgres://{user}:{pw}@{url}/{db}'.format(user="postgres",pw="localhost",url="localhost",db="Internet_DB")
#engine = create_engine(url)
[94]: # Confirm tables
#engine.table_names()
```

The bottom screenshot shows the same Jupyter Notebook interface with the file 'Project-3 copy.ipynb' open. The code in the notebook is as follows:

```
[1]: import pandas as pd
from sqlalchemy import create_engine
[2]: # Reading CSV files for Internet Usage regionalise across the world
csv_file = './01_Extraction/02_Data_Output/Internet_Usage_Africa.csv'
IU_Africa = pd.read_csv(csv_file)
csv_file = './01_Extraction/02_Data_Output/Internet_Usage_Americas.csv'
IU_America = pd.read_csv(csv_file)
csv_file = './01_Extraction/02_Data_Output/Internet_Usage_Asia.csv'
IU_Asia = pd.read_csv(csv_file)
csv_file = './01_Extraction/02_Data_Output/Internet_Usage_Europe.csv'
IU_Europe = pd.read_csv(csv_file)
csv_file = './01_Extraction/02_Data_Output/Internet_Usage_EuropeanUnion.csv'
IU_EU = pd.read_csv(csv_file)
csv_file = './01_Extraction/02_Data_Output/Internet_Usage_MiddleEast.csv'
IU_ME = pd.read_csv(csv_file)
csv_file = './01_Extraction/02_Data_Output/Internet_Usage_Oceania.csv'
IU_Oceania = pd.read_csv(csv_file)
[3]: IU_Africa.head()
[3]:
```

	AFRICA 2020 POPULATION AND INTERNET USERS STATISTICS	AFRICA 2020 POPULATION AND INTERNET USERS STATISTICS.1	AFRICA 2020 POPULATION AND INTERNET USERS STATISTICS.2	AFRICA 2020 POPULATION AND INTERNET USERS STATISTICS.3	AFRICA 2020 POPULATION AND INTERNET USERS STATISTICS.4	AFRICA 2020 POPULATION AND INTERNET USERS STATISTICS.5	AFRICA 2020 POPULATION AND INTERNET USERS STATISTICS.6
0	AFRICA	Population (2020 Est)	InternetUsers 31-Dec-2000	InternetUsers 31-Dec-2019	Penetration (% Population)	InternetGrowth % 2000 - 2020	Facebook subscribers31-DEC-2019
1	Algeria	43851044	50000	25428159	58.0 %	50.756 %	19000000
2	Angola	32860272	30000	7078067	21.5 %	23.493 %	2244000
3	Benin	12123200	15000	3801758	31.4 %	25.245 %	920000
4	Botswana	2351627	15000	1116079	47.5 %	6.455 %	830000

```
[4]: IU_Africa.insert(0, 'Region', 'Africa')
[5]: IU_Africa.rename(columns={"AFRICA 2020 POPULATION AND INTERNET USERS STATISTICS": "Countries",
"AFRICA 2020 POPULATION AND INTERNET USERS STATISTICS.1": "Population",
```

3 Load

3.1 PgAdmin (SQL)

Pre-requisite:

User must have created a database named 'Internet_DB', prior to connecting to running this code.

The database was loaded at the end of the previous step by Jupyter Notebook, automatically.

Verify that tables are populated by running queries below.

The screenshot shows the PgAdmin 4 interface with a SQL query executed in the Query Editor. The query consists of seven lines, each selecting all data from a different table. The results are displayed in the Data Output pane below the editor.

```
1 select * from cost_speed;
2
3 select * from country;
4
5 select * from wi;
6
7 select * from world;
```

	world_regions	population	pop	Internet_users	penetration_rate	growth	Internet_world
	test	test	test	test	test	test	test
1	Africa	1340586447	17.2 %	526710313	39.3 %	11,567 %	11.3 %
2	Asia	4294516659	55.1 %	2366213308	55.1 %	1,970 %	50.9 %
3	Europe	834955197	10.7 %	727848547	87.2 %	592 %	15.7 %
4	Latin America / Car...	68545826	8.5 %	453702292	68.9 %	2,411 %	10.0 %
5	Middle East	26091690	3.3 %	183212099	70.2 %	5,477 %	3.9 %
6	North America	368895647	4.7 %	348908868	94.6 %	223 %	7.5 %
7	Oceania / Australia	42890838	0.5 %	28917600	67.7 %	279 %	0.6 %
8	WORLD TOTAL	7796949710	100.0 %	4648228067	59.6 %	1,187 %	100.0 %

4 Flask app

4.1 Python code

Pre-requisite:

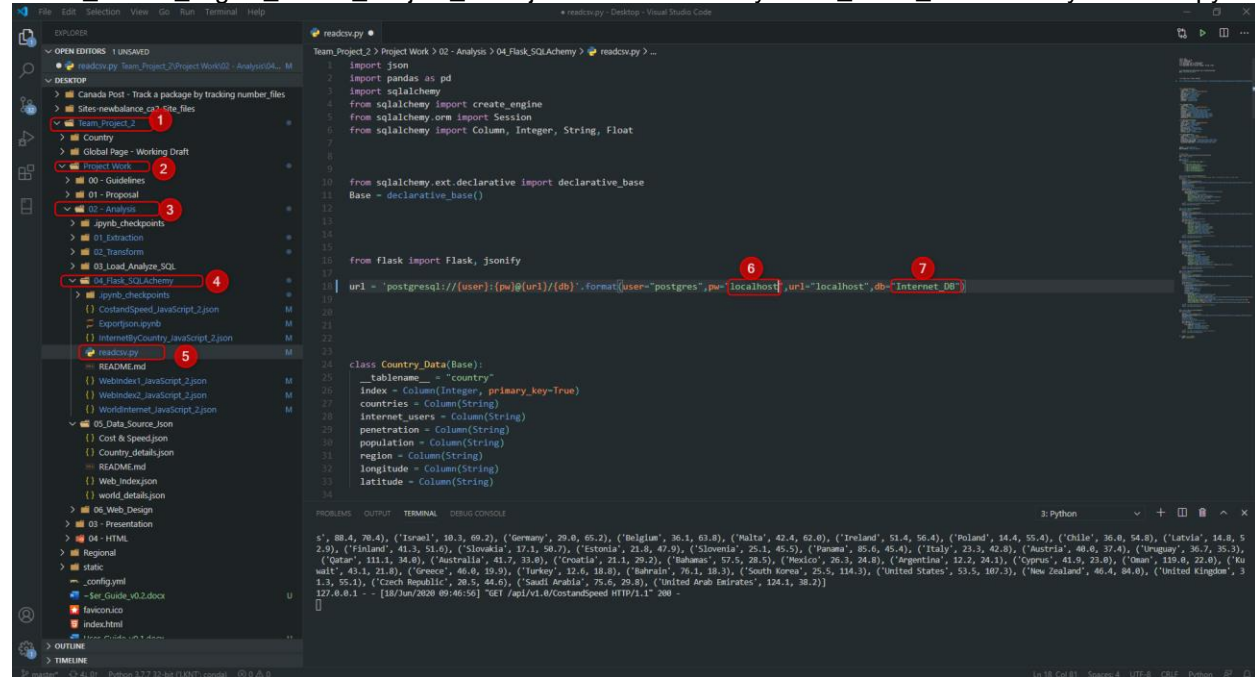
User must have created a database named 'Internet_DB', prior to connecting to running this code.

Run the .py file to get data from the database.

Use credentials defined previously.

Path:

... \17_Global_Digital_Divide_Project_2\Project Work\02 - Analysis\04_Flask_SQLAchemy\readcsv.py



```
1 import json
2 import pandas as pd
3 import sqlalchemy
4 from sqlalchemy import create_engine
5 from sqlalchemy.orm import Session
6 from sqlalchemy import Column, Integer, String, Float
7
8
9
10 from sqlalchemy.ext.declarative import declarative_base
11 Base = declarative_base()
12
13
14
15 from flask import Flask, jsonify
16
17
18 url = 'postgresql://(user):(pw)@({uri})/{db}'.format(user='postgres',pw='localhost',uri='localhost',db='Internet_DB')
19
20
21
22 class CountryData(Base):
23     __tablename__ = "country"
24     index = Column(Integer, primary_key=True)
25     countries = Column(String)
26     internet_users = Column(String)
27     penetration = Column(String)
28     population = Column(String)
29     region = Column(String)
30     longitude = Column(String)
31     latitude = Column(String)
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```

Please don't be mislead by the file name 'readcsv.py' .

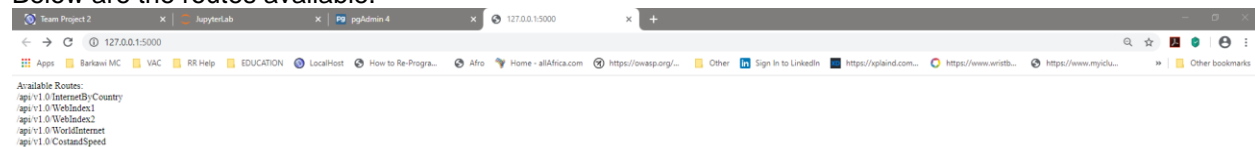
5 Api

5.1 Default url

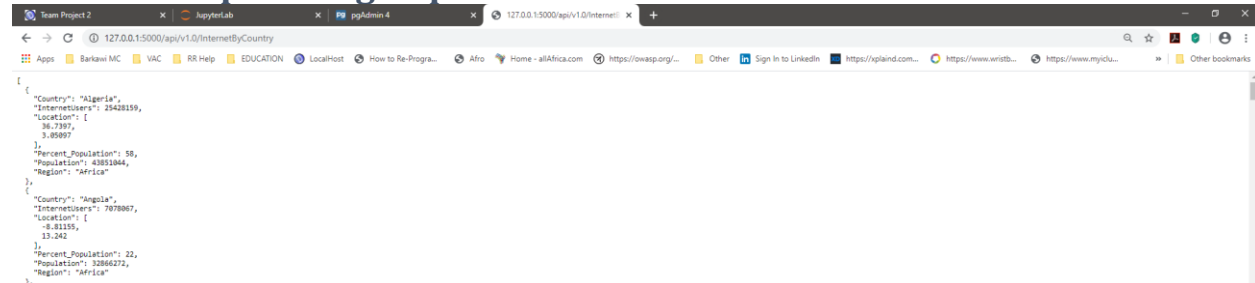
The API is created at the following address → url = <http://127.0.0.1:5000/> .

Copy/paste the url above in your browser to see JSON data.

Below are the routes available.



5.2 Example using a specific route



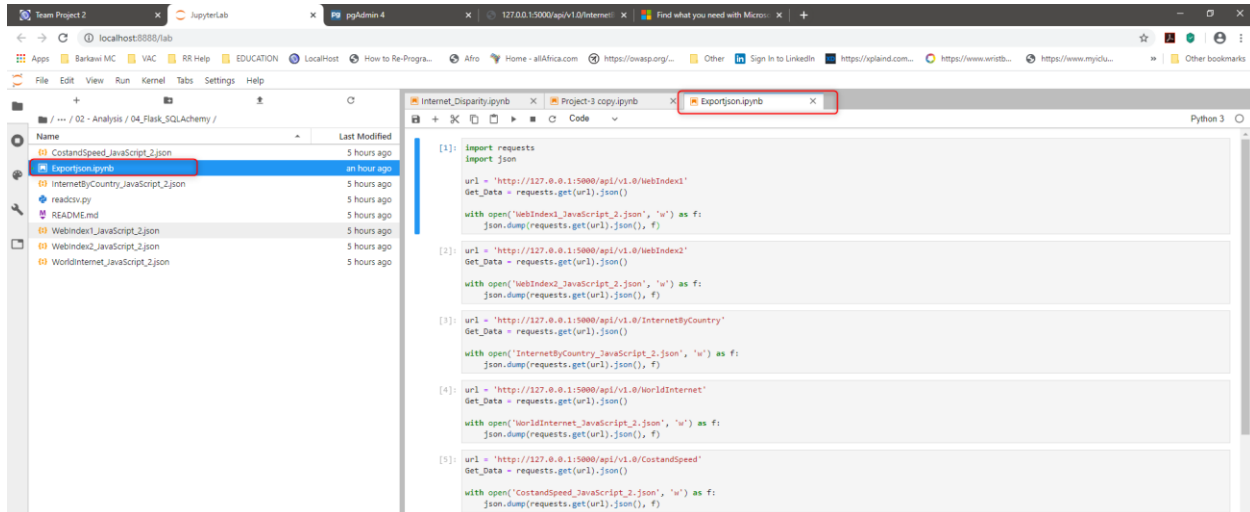
6 Json files

6.1 Jupyter Notebook & Create Json Files

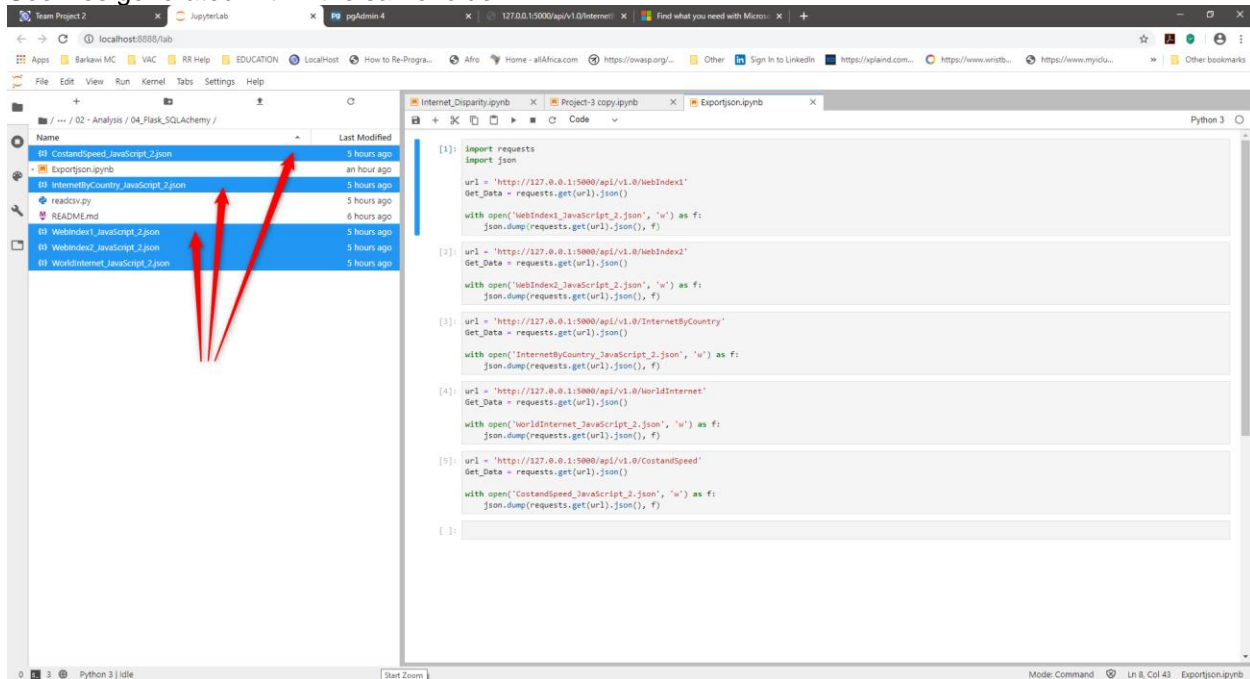
Run Jupyter Notebook to generate JSON files.

Path:

...\17_Global_Digital_Divide_Project_2\Project Work\02 - Analysis\04_Flask_SQLAlchemy\Exportjson.ipynb



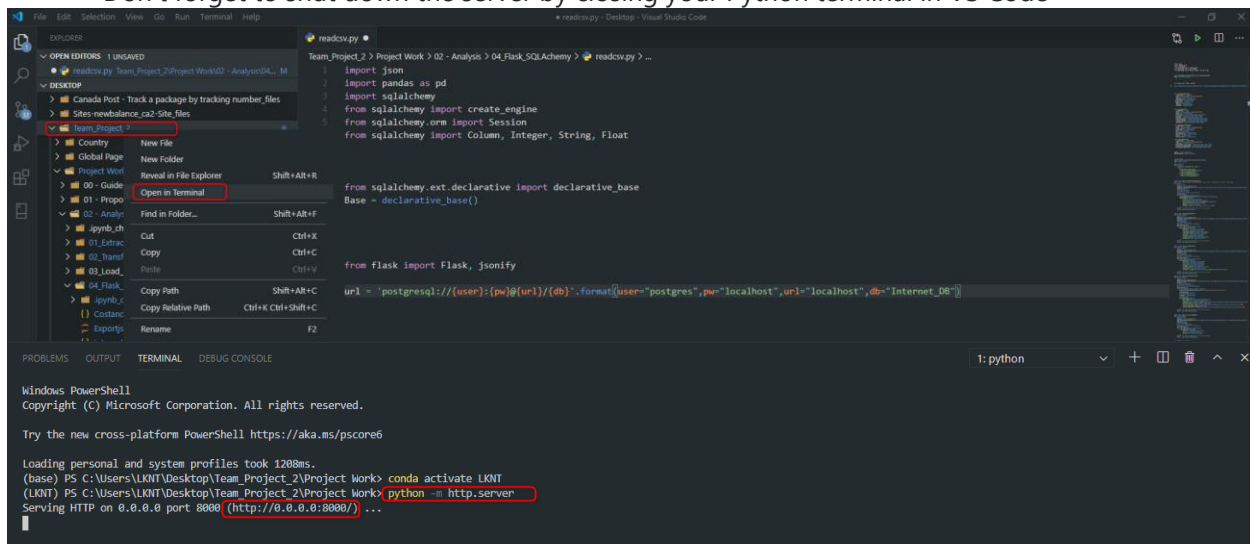
See files generated within the same folder.



7 Create the python server to render the html pages

7.1 Terminal & Server

- Download this entire project from Github
- Open VS Code or your IDE
- Choose 'File > Open Folder'
- Select the path to the folder located 1 level above the folder where the index.html is located.
 - Example if your index file is located: Documents/.../Folder_Level_1_Above/17_Global_Digital_Divide_Project_2/index.html
 - Select: Folder_Level_1_Above
- Right click the folder that contains your index.html, it should be named: 17_Global_Digital_Divide_Project_2
- Select: Open in integrated terminal
- It should open the terminal
- In the terminal do the following:
 - Type the command `'conda activate Your Environment Name'` ;
Your_Environment_Name is the name of your Python environment you defined
 - Run the server by typing the following: `'Python -m http.server'`
 - Then, copy/paste this url (<http://localhost:8000/>) into your browser and press enter
- The page should load the charts and you can now selection menu or dropdown list to show the desired information
- Don't forget to shut down the server by closing your Python terminal in VS Code



7.2 Localhost

Use your browser and go to the following url: <http://localhost:8000/>

Go to the website, see result below:

