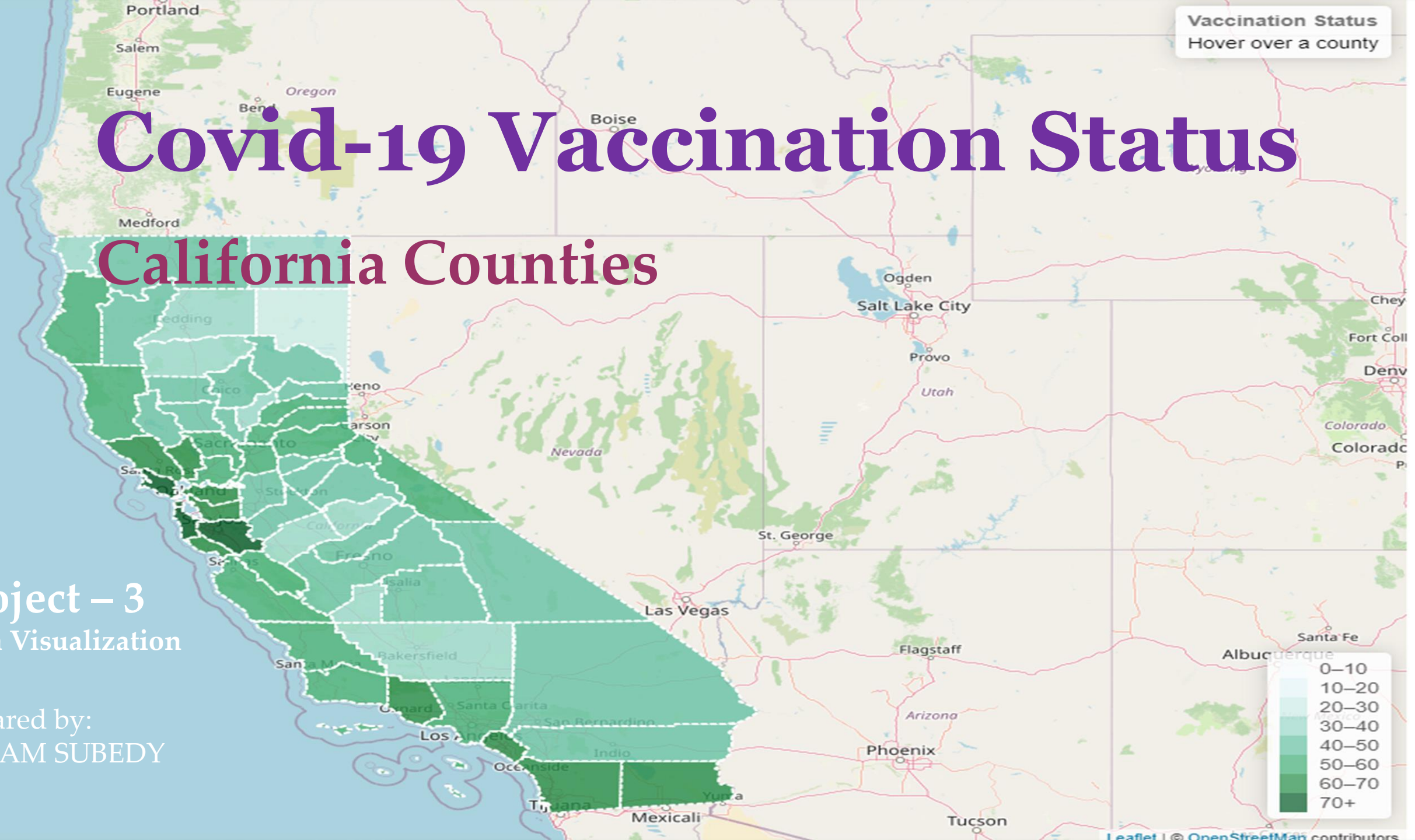
Covid-19 Vaccination Status

California Counties



Project – 3

Data Visualization

Prepared by:
TIKRAM SUBEDY

Purpose of the Project:

- Create a dashboard with web based interactive charts, data, and maps using the database created in the previous project of ETL.

Data Sources, Collection and Processing:

- Data Sources:
  - California department of public health
    - https://data.chhs.ca.gov/dataset/vaccine-progress-dashboard
  - World Population Review
    - https://worldpopulationreview.com/us-counties/states/ca
  - Github:
    - https://github.com/codeforgermany/click_that_hood/blob/main/public/data/california-counties.geojson

Data Sources, Collection and Processing:

- Data Extraction:
  - Web scraping
  - Downloading datafiles

```
# California Population data by county (web scrapping)
# setting up splinter

executable_path = {'executable_path': ChromeDriverManager().install()}
browser = Browser('chrome', **executable_path, headless=False)

url = 'https://worldpopulationreview.com/us-counties/states/ca'
browser.visit(url)

table = pd.read_html(url)
county_population = table[0]

# saving the datafile as a csv file
county_population.to_csv('./data/county_population2021_data.csv', index = False)
county_population.head()
```

Data Sources, Collection and Processing:

- Data Processing:
  - Python Pandas

```
# California COVID-19 cases and tests by county downloaded from
# https://data.chhs.ca.gov/dataset/covid-19-time-series-metrics-by-county-and-state

cases_data = pd.read_csv("./data/statewide_covid_19_cases_by_county.csv", encoding = 'utf8')

cases_data = cases_data.query('area !="All CA Counties"')
cases_data = cases_data.query('area !="All CA and Non-CA Counties"')
cases_data = cases_data.query('area !="Outside California"')
cases_data = cases_data.query('area !="Unknown"')
cases_data = cases_data.query('area !="California"')
cases_data = cases_data.query('area_type =="County"')
cases_data = cases_data.dropna()
cases_data
```

```
# Selecting only the residence county as reported in the data (elemination method is used)
ca_vaccin_data = csv_data.query('county !="All CA Counties"')
ca_vaccin_data = ca_vaccin_data.query('county !="All CA and Non-CA Counties"')
ca_vaccin_data = ca_vaccin_data.query('county !="Outside California"')
ca_vaccin_data = ca_vaccin_data.query('county !="Unknown"')
ca_vaccin_data = ca_vaccin_data.query('county !="California"')
# getting new dataframe for total vaccination (fully, partially vaccinated) by counties

county_vac_data = pd.DataFrame(ca_vaccin_data, columns = ['county', 'administered_date',\
                                          'partially_vaccinated', 'fully_vaccinated'])

county_vac_data['month'] = pd.DatetimeIndex(county_vac_data['administered_date']).month_name()

# Creating a new dataframe with months as variable to be utilized for ploting by months
county_vac_data_cleaned = pd.DataFrame(county_vac_data, columns=['county', 'month','administered_date','fully_vaccinated','p

county_vac_data_cleaned.to_csv('./data/county_vac_data_cleaned.csv', index = False)
county_vac_data_cleaned
```

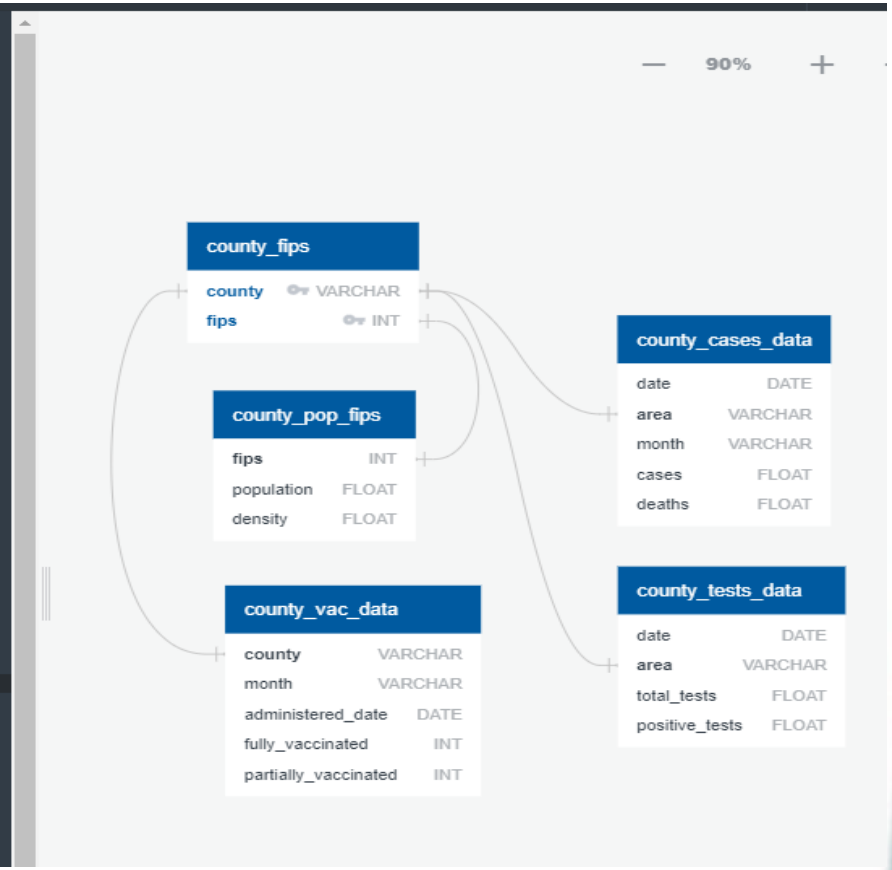
s	cumulative_total_tests	positive_tests	cumulativ
0	30087	65.0	
0	31392	78.0	
0	32731	38.0	

Data Sources, Collection and Processing:

- Creating Database (Relational):
  - ERD, SQL (Postgres, PgAdmin)

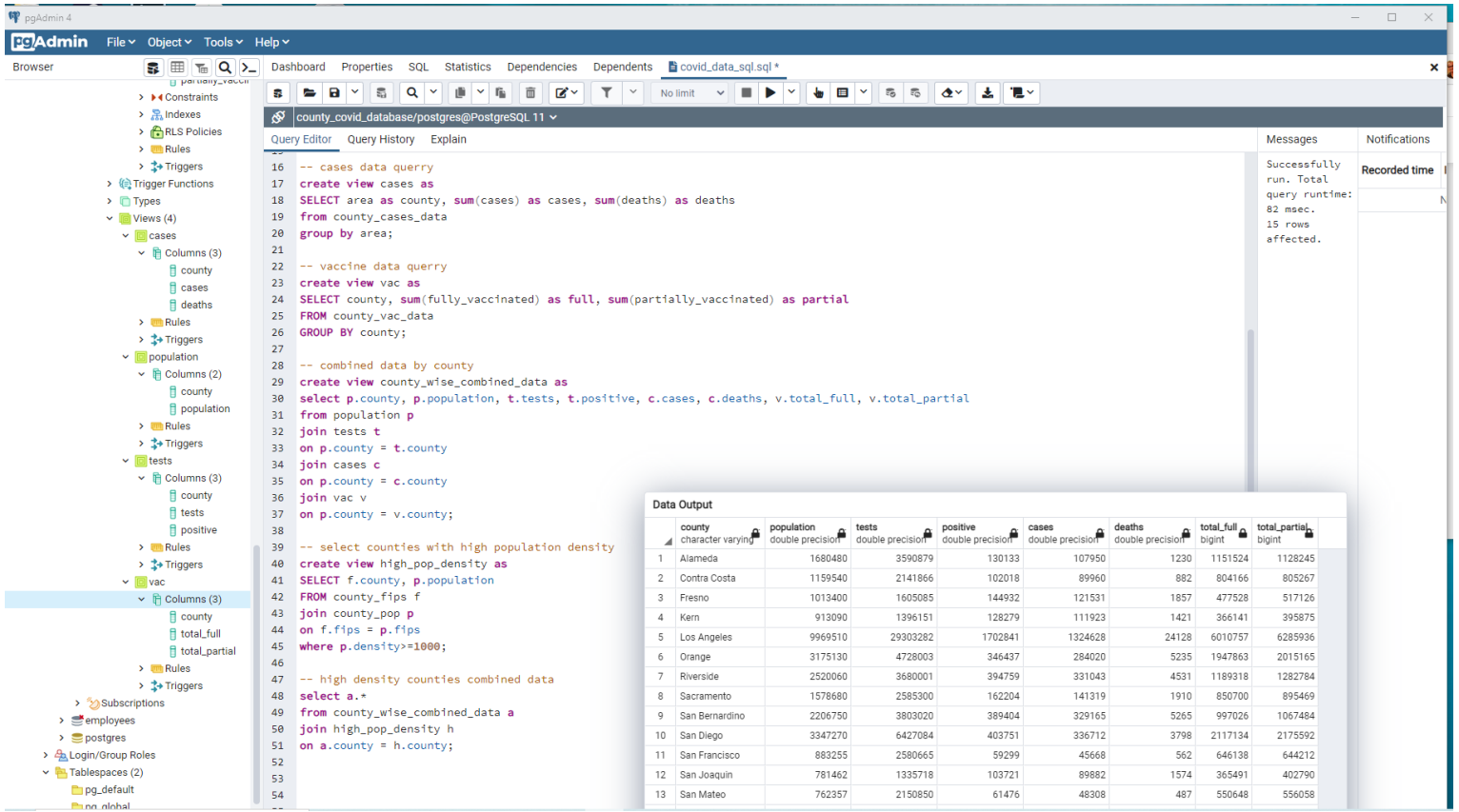
CA_Covid_database

```
1   county_pop_fips
2   -
3   fips INT FK - county_fips.fips
4   population FLOAT
5   density FLOAT
6
7   county_fips
8   -
9   county VARCHAR PK
10  fips INT PK
11
12
13  county_tests_data
14  -
15  date DATE
16  area VARCHAR FK - county_fips.county
17  total_tests FLOAT
18  positive_tests FLOAT
19
20
21  county_cases_data
22  -
23  date DATE
24  area VARCHAR FK - county_fips.county
25  month VARCHAR
26  cases FLOAT
27  deaths FLOAT
28
29  county_vac_data
30  -
31  county VARCHAR FK - county_fips.county
32  month VARCHAR
33  administered_date DATE
34  fully_vaccinated INT
35  partially_vaccinated INT
36
37
```



Data Sources, Collection and Processing:

- Creating Database (Relational):
  - ERD, SQL (Postgres, PgAdmin)



Data Sources, Collection and Processing:

- Loading Database:
  - SQLAlchemy

```
from sqlalchemy import create_engine
engine = create_engine(f'postgresql://{username}:{password}@localhost:5432/county_covid_database')
connection = engine.connect()
```

```
# Loading combined dataset (using sql view 'county_wise_combined_data')

combined_data = pd.read_sql("SELECT * from county_wise_combined_data", connection)
combined_data.to_csv('./data/combined_data.csv', index = False)
combined_data.head()
combined_data["percentFullVax"] = round(combined_data['total_full']/combined_data['population'] *100, 2)

combined_data["percentCases"] = round(combined_data['cases']/combined_data['population'] *100, 2)

combined_data["percentDeaths"] = round(combined_data['deaths']/combined_data['population'] *100, 2)

combined_data
```

county	population	tests	positive	cases	deaths	total_full	total_partial	percentFullVax	percentCases	percentDeaths
Alameda	1680480.0	3590879.0	130133.0	107950.0	1230.0	1151524	1128245	68.52	6.42	0.07
Alpine	1209.0	2151.0	46.0	98.0	0.0	705	790	58.31	8.11	0.00
Amador	40446.0	149585.0	5485.0	4745.0	58.0	17826	19639	44.07	11.73	0.14
Butte	196880.0	289588.0	18739.0	17542.0	228.0	96451	100901	48.99	8.91	0.12
Calaveras	46319.0	55933.0	3768.0	3270.0	65.0	20647	21932	44.58	7.06	0.14
Colusa	21805.0	23090.0	2199.0	2343.0	16.0	10478	11059	48.05	10.75	0.07
Contra Costa	1159540.0	2141866.0	102018.0	89960.0	882.0	804166	805267	69.35	7.76	0.08
Del Norte	27956.0	127754.0	3646.0	3210.0	29.0	10578	11220	37.84	11.48	0.10
El Dorado	197037.0	245215.0	14841.0	14052.0	124.0	100822	104156	51.17	7.13	0.06
Fresno	1013400.0	1605085.0	144932.0	121531.0	1857.0	477528	517126	47.12	11.99	0.18
Glenn	29245.0	31724.0	3152.0	3038.0	24.0	12613	12727	43.13	10.39	0.08
Humboldt	134186.0	193795.0	8638.0	7500.0	50.0	75391	76411	56.18	5.59	0.04

Data Sources, Collection and Processing:

- Loading Data:
  - GeoJson

```
: 1 import json
  2 with open("./data/countyGeoJson.js") as f:
  3     geodata = json.load(f)
  4 with open("./data/combined_data.js") as f:
  5     data = json.load(f)
```

```
: 1 for x in data:
  2     for y in geodata["features"]:
  3         if y["properties"]["name"] == x["county"]:
  4             y["properties"]["data"] = x
  5 countyGeoData = geodata
  6 countyGeoData
```

```
: {'type': 'FeatureCollection',
 'features': [{'type': 'Feature',
   'properties': {'name': 'Alameda',
    'cartodb_id': 1,
    'created_at': '2015-07-04T21:04:58Z',
    'updated_at': '2015-07-04T21:04:58Z',
    'data': {'county': 'Alameda',
     'population': 1680480.0,
     'tests': 3590879.0,
     'positive': 130133.0,
     'cases': 107950.0,
     'deaths': 1230.0,
     'total_full': 1151524,
     'total_partial': 1128245,
     'percentFullVax': 68.52,
     'percentCases': 6.42,
     'percentDeaths': 0.07}},
   'geometry': {'type': 'MultiPolygon',
    'coordinates': [[[[-122.312934, 37.897333],
```

```
: 1 with open('countyGeoData.js', 'w') as fp:
  2     json.dump(countyGeoData, fp, sort_keys=False, indent=4)
  3
```

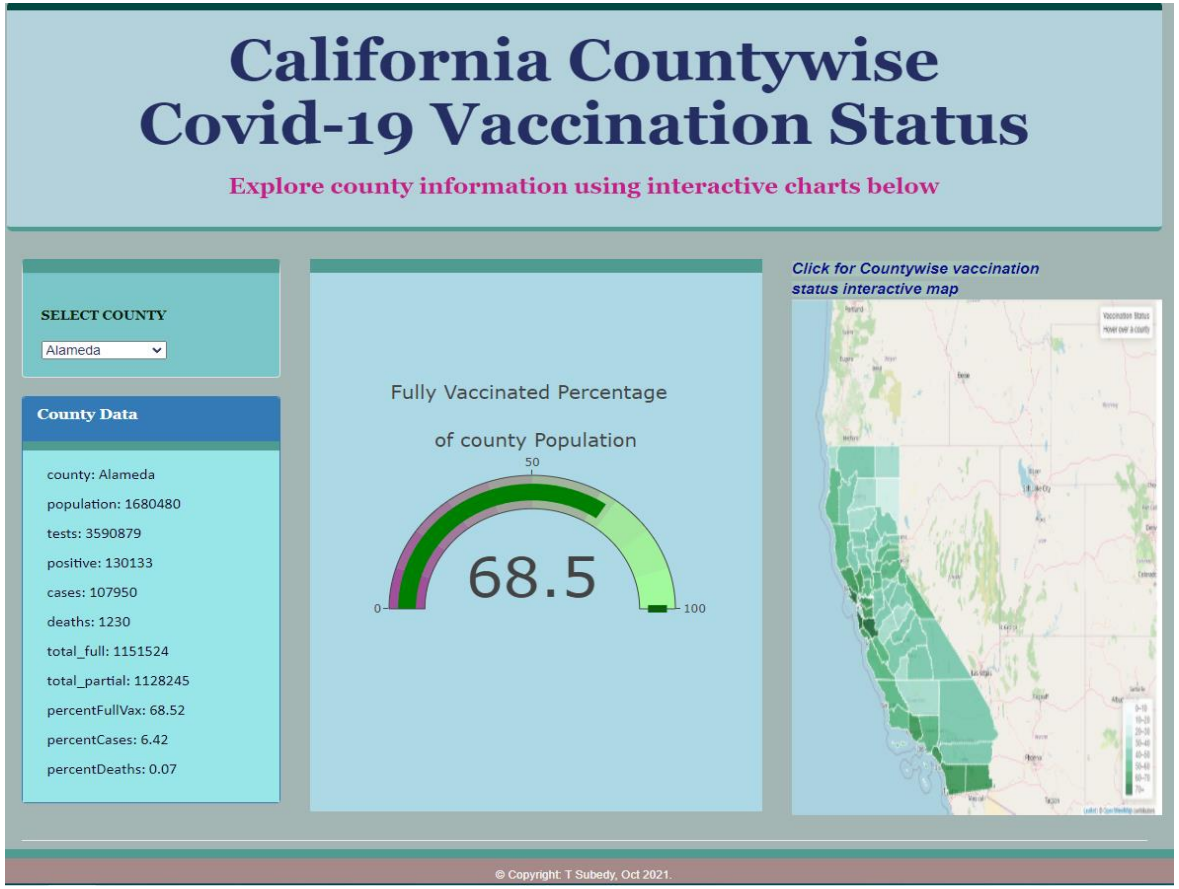
Data Sources, Collection and Processing:

- Data Visualization:
  - Javascript,
  - Plotly,
  - Leaflets
  - HTML, CSS

Dashboard and Data Visualization:

- Dashboard:
  - Javascript
  - Plotly
  - Html/ CSS
  - Mapping
  - Leaflets

https://tsubedy.github.io/Project_3/



Dashboard and Data Visualization:

- Dashboard:
  - Javascript
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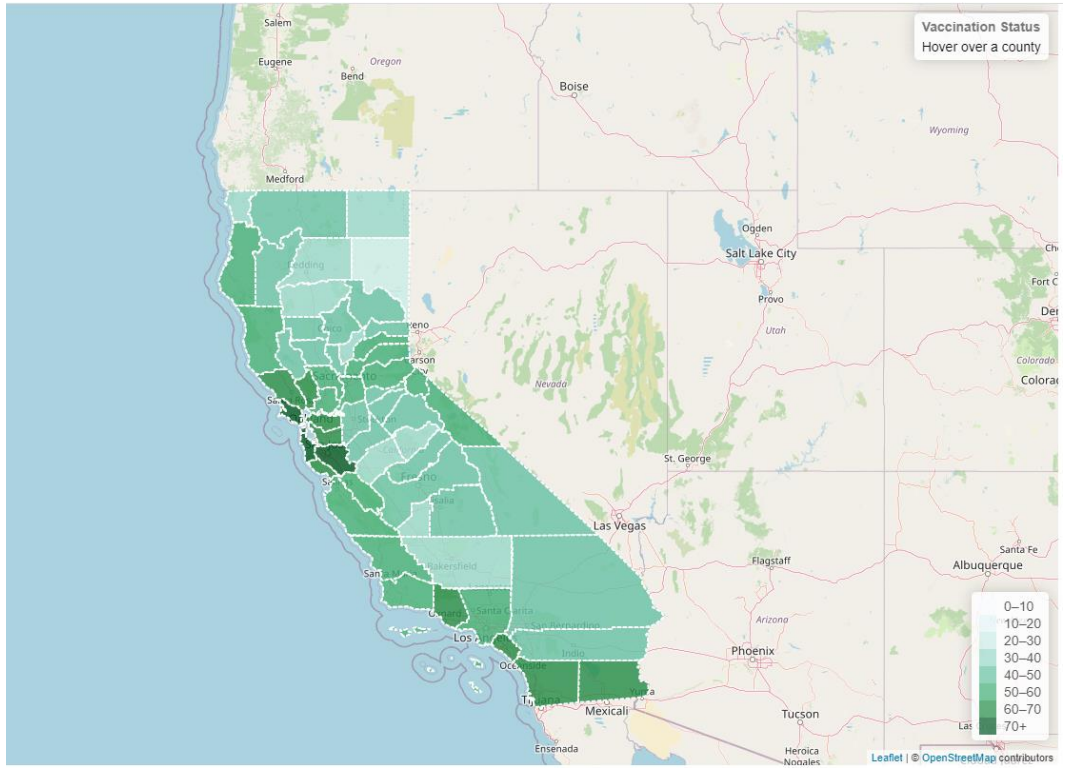

Dashboard and Data Visualization:

- Dashboard:
  - Javascript
  - Plotly
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Limitations:

- The project is a part of the assignments from the class of Data Analytics Bootcamp and is limited to demonstrate the technical skills learned so far in the class.

- Some of data used for this project are not up to date as they were downloaded as csv files from the source sites.

- Data analyses are not included as it is beyond the scope of this project.

Questions:

? ? ?

THANK YOU !!!