

Computational Thinking Project

Function 1

```
def vaccination_graph():
```

```
    dfc = pd.read_excel('Vaccination_Rate.xlsx')
```

```
    df_fil=dfc[['Location','Vaccination Rate']]
```

```
    top_five=df_fil.iloc[:5,:]
```

```
    low_five=df_fil.iloc[-5,:]
```

```
    # Declaring the figure or the plot (y, x) or (width, height)
```

```
    plt.figure(figsize=[14, 10])
```

```
    # Append 'h' to the bar to make horizontal bar
```

```
    plt.barh(low_five['Location'],low_five['Vaccination Rate'], label = "Lowest vaccination rate", color = 'r')
```

```
    plt.barh(top_five['Location'],top_five['Vaccination Rate'],label = "Highest vaccination rate", color = 'g')
```

```
    # Creating the legend of the bars in the plot
```

```
    plt.legend()
```

```
    # Naming the x and y axis
```

```
    plt.xlabel('Vaccination rate')
```

```
    plt.ylabel('State')
```

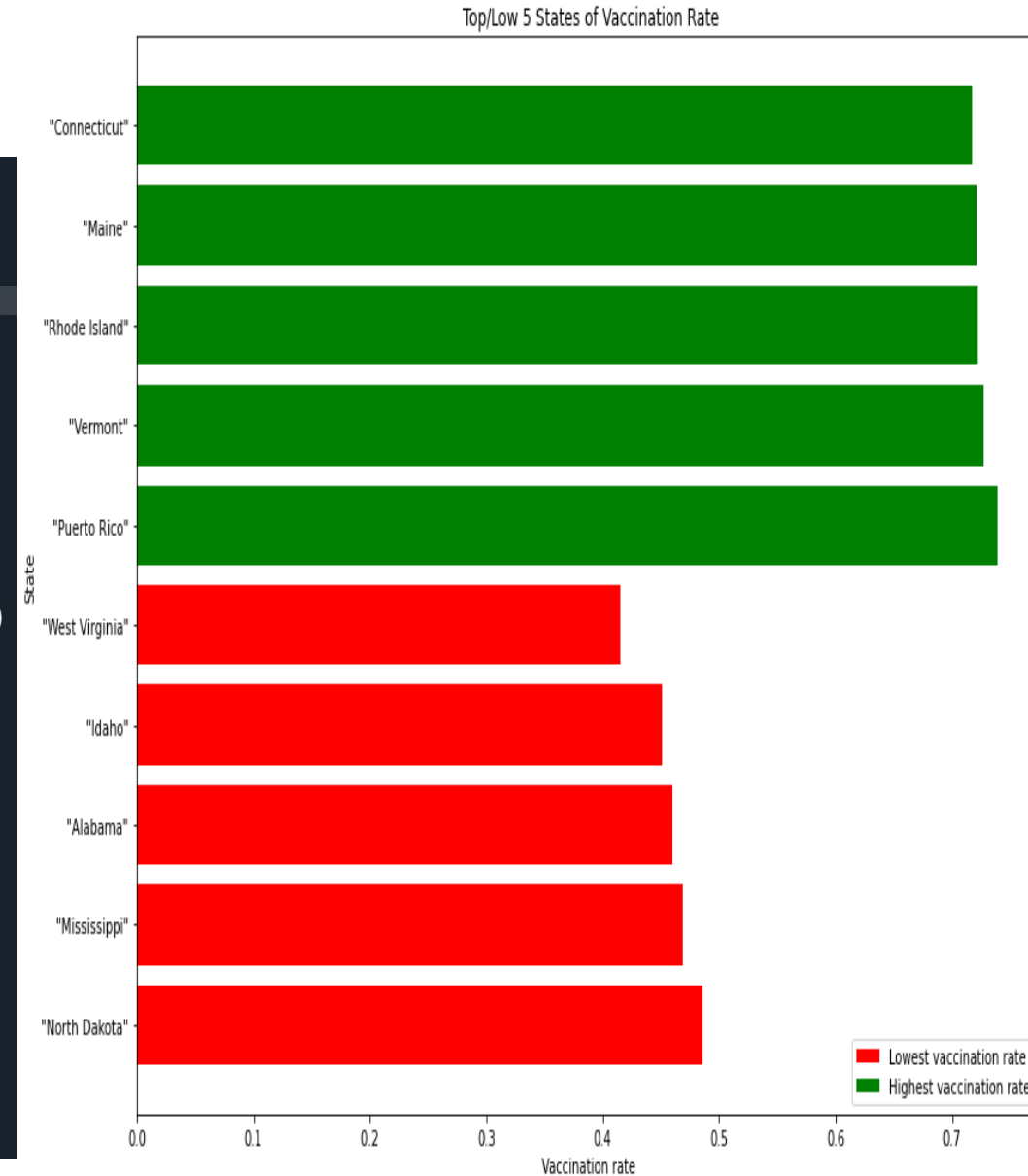
```
    # Giving the title for the plot
```

```
    plt.title(' Top/Low 5 States of Vaccination Rate')
```

```
    # Displaying the bar plot
```

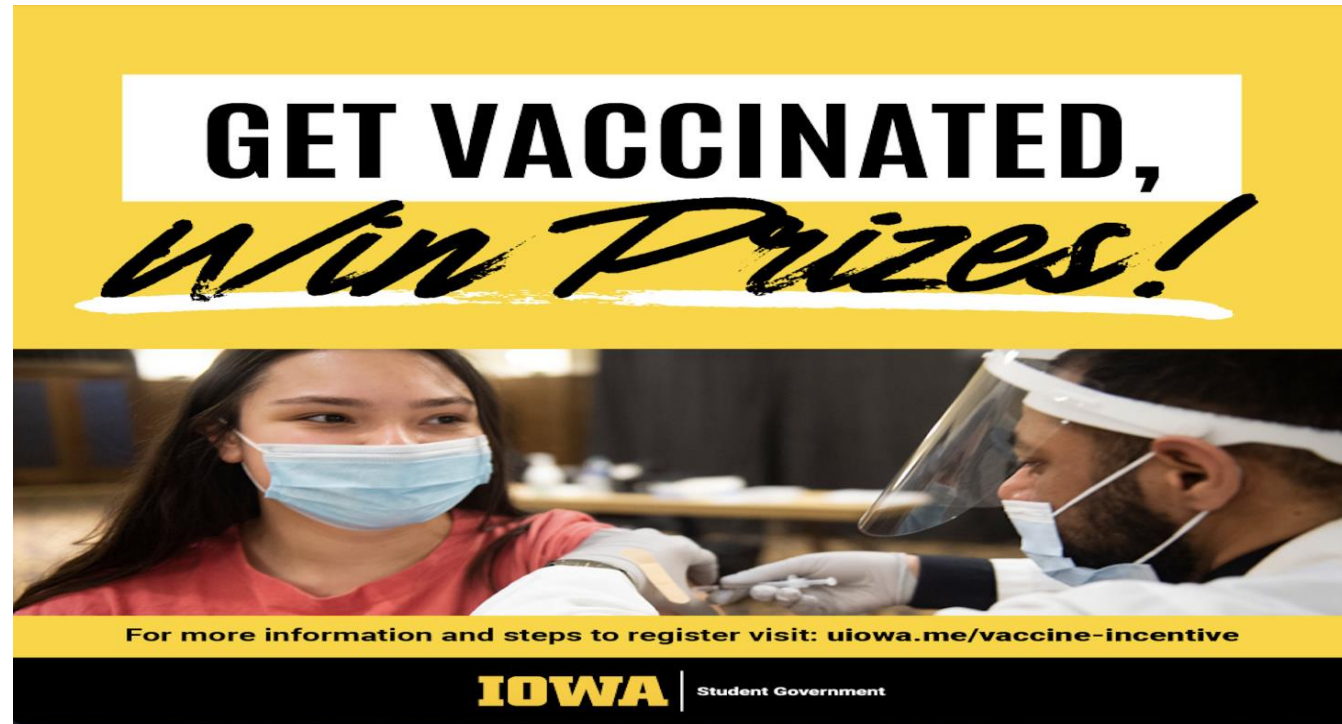
```
    plt.show()
```

```
    return plt.show()
```



Function 2

```
def vaccination_image():  
  
    # the image was downloaded from uiowa.edu website  
    img=io.imread('vaccination.jpeg')  
    print(img.shape)  
    plt.imshow(img)  
  
    #Cut the area we want from the original image  
    plt.figure()  
    img2 = img[110:290,100:950]  
    plt.imshow(img2)  
    io.imsave('get_vaccinated.jpeg',img2)  
  
    #Apply color to the background for emphasis  
    plt.figure()  
    img3 = img2[:]  
    img3[:, :, 1] = 0  
    plt.imshow(img3)  
    io.imsave('get_vaccinated_pink.jpeg',img3)  
  
    return plt.imshow(img3)
```



GET VACCINATED,

GET VACCINATED,

Function 3

```
def get_covidcase_description():  
    url = f'https://www.worldometers.info/coronavirus/usa/{sta  
    response = requests.get(url)  
    html_doc = response.text  
    soup = BeautifulSoup(html_doc, "lxml")  
    p_tag = soup.find_all('div', class_='maincounter-number')[  
    time.sleep(1)  
    return p_tag.text  
  
statenames = ["Iowa", "California", "Texas", "Florida", "New-York"  
file = open('statename.txt', 'w')  
  
for statename in statenames:  
    desc = get_covidcase_description()  
    file.write(f'Statename: {statename}\nTotal Coronavirus Cas  
  
file.close()
```

Statename: Iowa
Total Coronavirus Cases:
570,581

Statename: California
Total Coronavirus Cases:
4,994,483

Statename: Texas
Total Coronavirus Cases:
4,355,859

Statename: Florida
Total Coronavirus Cases:
3,749,572

Statename: New-York
Total Coronavirus Cases:
2,876,483

Statename: Pennsylvania
Total Coronavirus Cases:
1,791,030

Statename: Illinois
Total Coronavirus Cases:
1,854,186

Statename: Ohio
Total Coronavirus Cases:
1,735,925

Statename: Michigan
Total Coronavirus Cases:
1,535,147

Statename: Georgia
Total Coronavirus Cases:
1,670,988

Statename: Massachusetts
Total Coronavirus Cases:
947,463

Statename: Washington
Total Coronavirus Cases:
787,240

Statename: Arizona
Total Coronavirus Cases:
1,295,076

Statename: Maryland
Total Coronavirus Cases:
592,679

Function 4

```
def vaccination_age():
    dfx = pd.read_excel("Vaccination_Age.xlsx")
    df_age = dfx[['Location', 'Age 12-17', 'Age 18-64', 'Age 65+']]

    df_state = df_age.groupby('Location').mean()

    # Vaccination Rate in Age 12-17, set threshold line to 0.75
    plt.figure(figsize=[14, 10])
    df_state['Age 12-17'].plot(kind='bar')
    plt.legend()
    plt.xlabel('State')
    plt.ylabel('Vaccination Rate')
    plt.title('Vaccination Rate in Age 12-17')
    plt.axhline(y=0.75,linewidth=4,color='r')

    # Vaccination Rate in Age 18-64, set threshold line to 0.75
    plt.figure(figsize=[14, 10])
    df_state['Age 18-64'].plot(kind='bar')
    plt.legend()
    plt.xlabel('State')
    plt.ylabel('Vaccination Rate')
    plt.title('Vaccination Rate in Age 18-64')
    plt.axhline(y=0.75,linewidth=4,color='r')

    # Vaccination Rate in Age 65+, set threshold line to 0.75
    plt.figure(figsize=[14, 10])
    df_state['Age 65+'].plot(kind='bar')
    plt.legend()
    plt.xlabel('State')
    plt.ylabel('Vaccination Rate')
    plt.title('Vaccination Rate in Age 65+')
    plt.axhline(y=0.75,linewidth=4,color='r')

    # We were interested in states that had more than 75% of Vaccination Rate
    threshold=dfx[dfx['Age 18-64']>0.75]
    threshold.plot(kind='bar')
    dff_state=threshold.groupby('Location').mean()
    dff_state['Age 18-64'].plot(kind='bar',color='r')
    plt.legend()
    plt.xlabel('State')
    plt.ylabel('Vaccination Rate')
    plt.title('States that have Vaccination Rate above 75% among Age 18-64')
```

