PROJECT ON COVID 19 IMPACT OF PAKISTAN

In [ ]:
```python
import numpy as np
import pandas as pd
import plotly.express as px
import matplotlib.pyplot as plt
```

In [ ]:
```python
covid_df=pd.read_csv('countries-aggregated.csv')
```

In [ ]:
```python
covid_df.head()
```

Out[ ]:

	Date	Country	Confirmed	Recovered	Deaths
0	2020-01-22	Afghanistan	0	0	0
1	2020-01-23	Afghanistan	0	0	0
2	2020-01-24	Afghanistan	0	0	0
3	2020-01-25	Afghanistan	0	0	0
4	2020-01-26	Afghanistan	0	0	0

In [ ]:
```python
covid_df.tail()
```

Out[ ]:

	Date	Country	Confirmed	Recovered	Deaths
161563	2022-04-12	Zimbabwe	247094	0	5460
161564	2022-04-13	Zimbabwe	247160	0	5460
161565	2022-04-14	Zimbabwe	247208	0	5462
161566	2022-04-15	Zimbabwe	247237	0	5462
161567	2022-04-16	Zimbabwe	247237	0	5462

In [ ]:
```python
covid_df.shape
```

Out[ ]:
```
(161568, 5)
```

In [ ]:
```python
covid_df_confirmed=covid_df[covid_df['Confirmed'] > 0]
```

In [ ]:
```python
covid_df_confirmed.head()
```

Out[ ]:

	Date	Country	Confirmed	Recovered	Deaths
33	2020-02-24	Afghanistan	5	0	0
34	2020-02-25	Afghanistan	5	0	0
35	2020-02-26	Afghanistan	5	0	0
36	2020-02-27	Afghanistan	5	0	0
37	2020-02-28	Afghanistan	5	0	0

In [ ]:

```
covid_df_confirmed[covid_df_confirmed.Country=='Pakistan']
```

Out[ ]:

	Date	Country	Confirmed	Recovered	Deaths
109378	2020-02-25	Pakistan	2	0	0
109379	2020-02-26	Pakistan	2	0	0
109380	2020-02-27	Pakistan	2	0	0
109381	2020-02-28	Pakistan	4	0	0
109382	2020-02-29	Pakistan	4	0	0
...	...	...	...	...	...
110155	2022-04-12	Pakistan	1526829	0	30362
110156	2022-04-13	Pakistan	1526952	0	30362
110157	2022-04-14	Pakistan	1526952	0	30362
110158	2022-04-15	Pakistan	1527151	0	30363
110159	2022-04-16	Pakistan	1527248	0	30363

782 rows × 5 columns

Let see Global spread of COVID using plotly

In [ ]:

```
fig=px.choropleth(covid_df, locations='Country', locationmode='country names', col
fig.update_layout(title= "Global Covid Spread View in the world")
```

Global Deaths due to Covid

In [ ]:

```
fig=px.choropleth(covid_df, locations='Country', locationmode='country names', col
fig.update_layout(title= "Global Deaths due to Covid Spread View in the world")
```

COVID CASES IN PAKISTAN

In [ ]:

```
df_pakistan= covid_df[covid_df.Country == 'Pakistan']
```

In [ ]:

```
df_pakistan
```

Out[ ]:

	Date	Country	Confirmed	Recovered	Deaths
109344	2020-01-22	Pakistan	0	0	0
109345	2020-01-23	Pakistan	0	0	0
109346	2020-01-24	Pakistan	0	0	0
109347	2020-01-25	Pakistan	0	0	0
109348	2020-01-26	Pakistan	0	0	0
...	...	...	...	...	...
110155	2022-04-12	Pakistan	1526829	0	30362
110156	2022-04-13	Pakistan	1526952	0	30362
110157	2022-04-14	Pakistan	1526952	0	30362
110158	2022-04-15	Pakistan	1527151	0	30363
110159	2022-04-16	Pakistan	1527248	0	30363

816 rows × 5 columns

Covid No of Cases Per Day in Pakistan

In [ ]:

```
df_pakistan['confirmed_cases_in24Hr']=df_pakistan['Confirmed'].diff()
```

```
C:\Users\HP\AppData\Local\Temp\ipykernel_6012\3901439478.py:1: SettingWithCopyWarn
ing:


A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stabl
e/user_guide/indexing.html#returning-a-view-versus-a-copy
```

In [ ]:

```
df_pakistan[df_pakistan.Confirmed>0]
```

Out[ ]:

	Date	Country	Confirmed	Recovered	Deaths	confirmed_cases_in24Hr
109378	2020-02-25	Pakistan	2	0	0	2.0
109379	2020-02-26	Pakistan	2	0	0	0.0
109380	2020-02-27	Pakistan	2	0	0	0.0
109381	2020-02-28	Pakistan	4	0	0	2.0
109382	2020-02-29	Pakistan	4	0	0	0.0
...	...	...	...	...	...	...
110155	2022-04-12	Pakistan	1526829	0	30362	101.0
110156	2022-04-13	Pakistan	1526952	0	30362	123.0
110157	2022-04-14	Pakistan	1526952	0	30362	0.0
110158	2022-04-15	Pakistan	1527151	0	30363	199.0
110159	2022-04-16	Pakistan	1527248	0	30363	97.0

782 rows × 6 columns

In [ ]:

```python
px.line(df_pakistan, x='Date', y=['Confirmed', 'confirmed_cases_in24Hr'])
```

In [ ]:

```python
# Maxium No of cases in a day
df_pakistan['confirmed_cases_in24Hr'].max()
```

Out[ ]:

```
12073.0
```

Two Approaches to take maximum number of confirmed cases per day Country wise

In [ ]:

```python
covid_df['per_day_covid_cases']=covid_df.Confirmed.diff()
```

In [ ]:

```python
covid_df.head()
```

Out[ ]:

	Date	Country	Confirmed	Recovered	Deaths	per_day_covid_cases
0	2020-01-22	Afghanistan	0	0	0	NaN
1	2020-01-23	Afghanistan	0	0	0	0.0
2	2020-01-24	Afghanistan	0	0	0	0.0
3	2020-01-25	Afghanistan	0	0	0	0.0
4	2020-01-26	Afghanistan	0	0	0	0.0

In [ ]:

In [ ]:

```python
countries=list(covid_df['Country'].unique())
maxi_infection_rate=[]
for c in countries:
    MIR=covid_df[covid_df.Country==c].Confirmed.diff().max()
    maxi_infection_rate.append(MIR)
```

```
In [ ]: whole_countries_infection_rate=pd.DataFrame()
        whole_countries_infection_rate["Country"]=countries
        whole_countries_infection_rate['maximum_infection']=maxi_infection_rate
```

```
In [ ]: whole_countries_infection_rate
```

Out[ ]:

	Country	maximum_infection
0	Afghanistan	3243.0
1	Albania	4789.0
2	Algeria	2521.0
3	Andorra	2313.0
4	Angola	5035.0
...	...	...
193	West Bank and Gaza	30356.0
194	Winter Olympics 2022	72.0
195	Yemen	287.0
196	Zambia	5555.0
197	Zimbabwe	9185.0

198 rows × 2 columns

Second Method:

```
In [ ]: covid_df.groupby('Country').max().sort_values('per_day_covid_cases',ascending=Fals
```

Out[ ]:

	Date	Confirmed	Recovered	Deaths	per_day_covid_cases
Country					
US	2022-04-16	80625120	6298082	988609	1383795.0
United Kingdom	2022-04-16	21916961	24693	172014	848169.0
Turkey	2022-04-16	14991669	5478185	98551	823225.0
Korea, South	2022-04-16	16305752	180719	21092	621317.0
Germany	2022-04-16	23416663	3659260	132942	527487.0
...	...	...	...	...	...
Antarctica	2022-04-16	11	0	0	11.0
MS Zaandam	2022-04-16	9	7	2	7.0
Holy See	2022-04-16	29	27	0	7.0
Marshall Islands	2022-04-16	7	4	0	3.0
Micronesia	2022-04-16	1	1	0	1.0

198 rows × 5 columns

Maximum Covid Cases in the world

In [ ]:

```
px.bar(whole_countries_infection_rate,x='Country', y='maximum_infection', color='C
```

Observations: USA, UK and Turkey are the top three countries that have most affected with Covid

Datewise Pakistan Covid confirmed cases Graph

In [ ]:

```
from cgitb import text


lockdown_start_data= '2020-04-01'
lockdown_month_later='2020-05-01'
fig=px.line(df_pakistan, x='Date', y= 'confirmed_cases_in24Hr')

fig.add_shape(
    dict(type="line",
    x0=lockdown_start_data, y0=0, x1=lockdown_start_data, y1=df_pakistan['confirmed
    line=dict(color="Red",width=3))
)

fig.add_annotation(dict(x=lockdown_start_data, y=df_pakistan['confirmed_cases_in24H
```

Observations: In Pakistan, National Lockdown imposed on 01-Apr-2020, and after imposing lock down, the maximum No of cases figure fall down gradually

Death Cases in Pakistan

In [ ]:

```
df_pakistan['death_rate']=df_pakistan['Deaths'].diff()
```

```
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ing:


A value is trying to be set on a copy of a slice from a DataFrame.
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e/user_guide/indexing.html#returning-a-view-versus-a-copy
```

In [ ]:

```
df_pakistan[df_pakistan.Confirmed >0]
```

Out[ ]:

	Date	Country	Confirmed	Recovered	Deaths	confirmed_cases_in24Hr	death_rate
109378	2020-02-25	Pakistan	2	0	0	2.0	0.0
109379	2020-02-26	Pakistan	2	0	0	0.0	0.0
109380	2020-02-27	Pakistan	2	0	0	0.0	0.0
109381	2020-02-28	Pakistan	4	0	0	2.0	0.0
109382	2020-02-29	Pakistan	4	0	0	0.0	0.0
...	...	...	...	...	...	...	...
110155	2022-04-12	Pakistan	1526829	0	30362	101.0	0.0
110156	2022-04-13	Pakistan	1526952	0	30362	123.0	0.0
110157	2022-04-14	Pakistan	1526952	0	30362	0.0	0.0
110158	2022-04-15	Pakistan	1527151	0	30363	199.0	1.0
110159	2022-04-16	Pakistan	1527248	0	30363	97.0	0.0

782 rows × 7 columns

In [ ]:

```
fig=px.line(df_pakistan, x='Date', y= ['confirmed_cases_in24Hr','death_rate'])
fig.show()
```

Normalize the data for better understaning in graph between confirmed and death Cases

In [ ]:

```
df_pakistan['confirmed_cases_in24Hr']=df_pakistan['confirmed_cases_in24Hr']/df_pak
```

```
C:\Users\HP\AppData\Local\Temp\ipykernel_6012\1873229556.py:1: SettingWithCopyWarn
ing:


A value is trying to be set on a copy of a slice from a DataFrame.
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e/user_guide/indexing.html#returning-a-view-versus-a-copy
```

In [ ]:

```
df_pakistan['death_rate']=df_pakistan['death_rate']/df_pakistan['death_rate'].max(
C:\Users\HP\AppData\Local\Temp\ipykernel_6012\2713287117.py:1: SettingWithCopyWarn
ing:


A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stabl
e/user_guide/indexing.html#returning-a-view-versus-a-copy
```

In [ ]:

```
fig=px.line(df_pakistan, x='Date', y= ['confirmed_cases_in24Hr','death_rate'])
fig.show()
```

Observation: On 14-Jun-2020, No of Covid cases were maximum in a day, while on 19-Nov-2020, Death rate was on maximum Peak. From 26-Dec-2021, no of death cases fall down, while increase in confirmed cases.