```
import pandas as pd
import plotly.express as px
import plotly.graph_objects as go

data = pd.read_csv("/content/transformed_data.csv")
data2 = pd.read_csv("/content/raw_data.csv")
print(data)
```

```
         CODE      COUNTRY        DATE    HDI        TC        TD       STI  \
0         AFG  Afghanistan  2019-12-31  0.498  0.000000  0.000000  0.000000
1         AFG  Afghanistan  2020-01-01  0.498  0.000000  0.000000  0.000000
2         AFG  Afghanistan  2020-01-02  0.498  0.000000  0.000000  0.000000
3         AFG  Afghanistan  2020-01-03  0.498  0.000000  0.000000  0.000000
4         AFG  Afghanistan  2020-01-04  0.498  0.000000  0.000000  0.000000
...       ...          ...         ...    ...       ...       ...       ...
50413     ZWE     Zimbabwe  2020-10-15  0.535  8.994048  5.442418  4.341855
50414     ZWE     Zimbabwe  2020-10-16  0.535  8.996528  5.442418  4.341855
50415     ZWE     Zimbabwe  2020-10-17  0.535  8.999496  5.442418  4.341855
50416     ZWE     Zimbabwe  2020-10-18  0.535  9.000853  5.442418  4.341855
50417     ZWE     Zimbabwe  2020-10-19  0.535  9.005405  5.442418  4.341855

             POP    GDPCAP
0      17.477233  7.497754
1      17.477233  7.497754
2      17.477233  7.497754
3      17.477233  7.497754
4      17.477233  7.497754
...          ...       ...
50413  16.514381  7.549491
50414  16.514381  7.549491
50415  16.514381  7.549491
50416  16.514381  7.549491
50417  16.514381  7.549491

[50418 rows x 9 columns]
```

```
print(data.head())
```

```
  CODE      COUNTRY        DATE    HDI   TC   TD  STI        POP    GDPCAP
0  AFG  Afghanistan  2019-12-31  0.498  0.0  0.0  0.0  17.477233  7.497754
1  AFG  Afghanistan  2020-01-01  0.498  0.0  0.0  0.0  17.477233  7.497754
2  AFG  Afghanistan  2020-01-02  0.498  0.0  0.0  0.0  17.477233  7.497754
3  AFG  Afghanistan  2020-01-03  0.498  0.0  0.0  0.0  17.477233  7.497754
4  AFG  Afghanistan  2020-01-04  0.498  0.0  0.0  0.0  17.477233  7.497754
```

```
print(data2.head())
```

```
  iso_code     location        date  total_cases  total_deaths  \
0      AFG  Afghanistan  2019-12-31          0.0           0.0
1      AFG  Afghanistan  2020-01-01          0.0           0.0
2      AFG  Afghanistan  2020-01-02          0.0           0.0
3      AFG  Afghanistan  2020-01-03          0.0           0.0
4      AFG  Afghanistan  2020-01-04          0.0           0.0

   stringency_index  population  gdp_per_capita  human_development_index  \
0               0.0    38928341        1803.987                    0.498
1               0.0    38928341        1803.987                    0.498
2               0.0    38928341        1803.987                    0.498
3               0.0    38928341        1803.987                    0.498
4               0.0    38928341        1803.987                    0.498

  Unnamed: 9 Unnamed: 10 Unnamed: 11  Unnamed: 12  Unnamed: 13
0      #NUM!       #NUM!       #NUM!    17.477233  7.497754494
1      #NUM!       #NUM!       #NUM!    17.477233  7.497754494
2      #NUM!       #NUM!       #NUM!    17.477233  7.497754494
3      #NUM!       #NUM!       #NUM!    17.477233  7.497754494
4      #NUM!       #NUM!       #NUM!    17.477233  7.497754494
```

```
data["COUNTRY"].value_counts()
```

```
Afghanistan        294
Indonesia          294
Macedonia          294
Luxembourg         294
Lithuania          294
                  ...
Tajikistan         172
Comoros            171
Lesotho            158
```

```
Hong Kong           51
Solomon Islands      4
Name: COUNTRY, Length: 210, dtype: int64
```

```
data["COUNTRY"].value_counts().mode()
```

```
0    294
Name: COUNTRY, dtype: int64
```

```
# Aggregating the data

code = data["CODE"].unique().tolist()
country = data["COUNTRY"].unique().tolist()
hdi = []
tc = []
td = []
sti = []
population = data["POP"].unique().tolist()
gdp = []

for i in country:
    hdi.append((data.loc[data["COUNTRY"] == i, "HDI"]).sum()/294)
    tc.append((data2.loc[data2["location"] == i, "total_cases"]).sum())
    td.append((data2.loc[data2["location"] == i, "total_deaths"]).sum())
    sti.append((data.loc[data["COUNTRY"] == i, "STI"]).sum()/294)
    population.append((data2.loc[data2["location"] == i, "population"]).sum()/294)

aggregated_data = pd.DataFrame(list(zip(code, country, hdi, tc, td, sti, population)),
                               columns = ["Country Code", "Country", "HDI",
                                          "Total Cases", "Total Deaths",
                                          "Stringency Index", "Population"])
print(aggregated_data.head())
```

```
  Country Code      Country       HDI  Total Cases  Total Deaths  \
0          AFG  Afghanistan  0.498000    5126433.0      165875.0   
1          ALB      Albania  0.600765    1071951.0       31056.0   
2          DZA      Algeria  0.754000    4893999.0      206429.0   
3          AND      Andorra  0.659551     223576.0        9850.0   
4          AGO       Angola  0.418952     304005.0       11820.0   

   Stringency Index  Population  
0          3.049673   17.477233  
1          3.005624   14.872537  
2          3.195168   17.596309  
3          2.677654   11.254996  
4          2.965560   17.307957  
```

```
# Sorting Data According to Total Cases

data = aggregated_data.sort_values(by=["Total Cases"], ascending=False)
print(data.head())
```

```
    Country Code        Country      HDI  Total Cases  Total Deaths  \
200          USA  United States  0.92400  746014098.0    26477574.0   
27           BRA         Brazil  0.75900  425704517.0    14340567.0   
90           IND          India  0.64000  407771615.0     7247327.0   
157          RUS         Russia  0.81600  132888951.0     2131571.0   
150          PER           Peru  0.59949   74882695.0     3020038.0   

     Stringency Index  Population  
200          3.350949   19.617637  
27           3.136028   19.174732  
90           3.610552   21.045353  
157          3.380088   18.798668  
150          3.430126   17.311165  
```

```
# Top 10 Countries with Highest Covid Cases

data = data.head(10)
print(data)
```

```
    Country Code         Country       HDI  Total Cases  Total Deaths  \
200          USA   United States  0.924000  746014098.0    26477574.0   
27           BRA          Brazil  0.759000  425704517.0    14340567.0   
90           IND           India  0.640000  407771615.0     7247327.0   
157          RUS          Russia  0.816000  132888951.0     2131571.0   
150          PER            Peru  0.599490   74882695.0     3020038.0   
125          MEX          Mexico  0.774000   74347548.0     7295850.0   
```

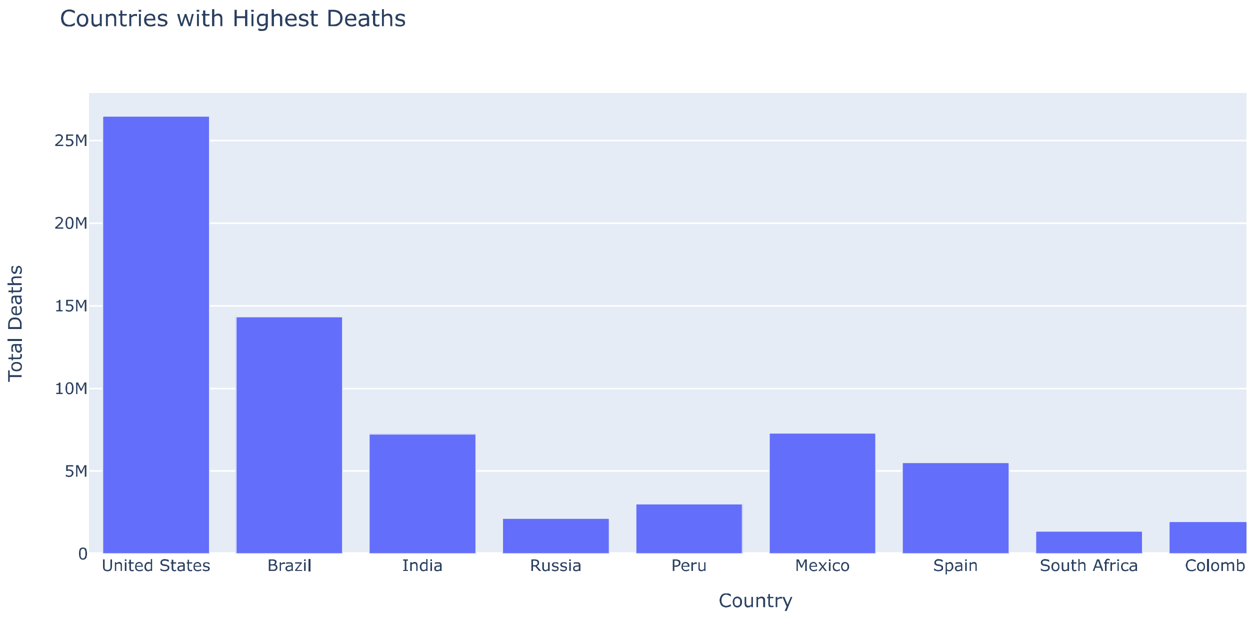
```
    178          ESP           Spain  0.887969   73717676.0     5510624.0
    175          ZAF    South Africa  0.608653   63027659.0     1357682.0
    42           COL        Colombia  0.581847   60543682.0     1936134.0
    199          GBR  United Kingdom  0.922000   59475032.0     7249573.0

         Stringency Index  Population
    200          3.350949   19.617637
    27           3.136028   19.174732
    90           3.610552   21.045353
    157          3.380088   18.798668
    150          3.430126   17.311165
    125          3.019289   18.674802
    178          3.393922   17.660427
    175          3.364333   17.898266
    42           3.357923   17.745037
    199          3.353883   18.033340
```

```
data["GDP Before Covid"] = [65279.53, 8897.49, 2100.75,
                            11497.65, 7027.61, 9946.03,
                            29564.74, 6001.40, 6424.98, 42354.41]
data["GDP During Covid"] = [63543.58, 6796.84, 1900.71,
                            10126.72, 6126.87, 8346.70,
                            27057.16, 5090.72, 5332.77, 40284.64]
print(data)
```

```
        Country Code         Country       HDI  Total Cases  Total Deaths  \
    200          USA   United States  0.924000  746014098.0    26477574.0
    27           BRA          Brazil  0.759000  425704517.0    14340567.0
    90           IND           India  0.640000  407771615.0     7247327.0
    157          RUS          Russia  0.816000  132888951.0     2131571.0
    150          PER            Peru  0.599490   74882695.0     3020038.0
    125          MEX          Mexico  0.774000   74347548.0     7295850.0
    178          ESP           Spain  0.887969   73717676.0     5510624.0
    175          ZAF    South Africa  0.608653   63027659.0     1357682.0
    42           COL        Colombia  0.581847   60543682.0     1936134.0
    199          GBR  United Kingdom  0.922000   59475032.0     7249573.0

         Stringency Index  Population  GDP Before Covid  GDP During Covid
    200          3.350949   19.617637          65279.53          63543.58
    27           3.136028   19.174732           8897.49           6796.84
    90           3.610552   21.045353           2100.75           1900.71
    157          3.380088   18.798668          11497.65          10126.72
    150          3.430126   17.311165           7027.61           6126.87
    125          3.019289   18.674802           9946.03           8346.70
    178          3.393922   17.660427          29564.74          27057.16
    175          3.364333   17.898266           6001.40           5090.72
    42           3.357923   17.745037           6424.98           5332.77
    199          3.353883   18.033340          42354.41          40284.64
```

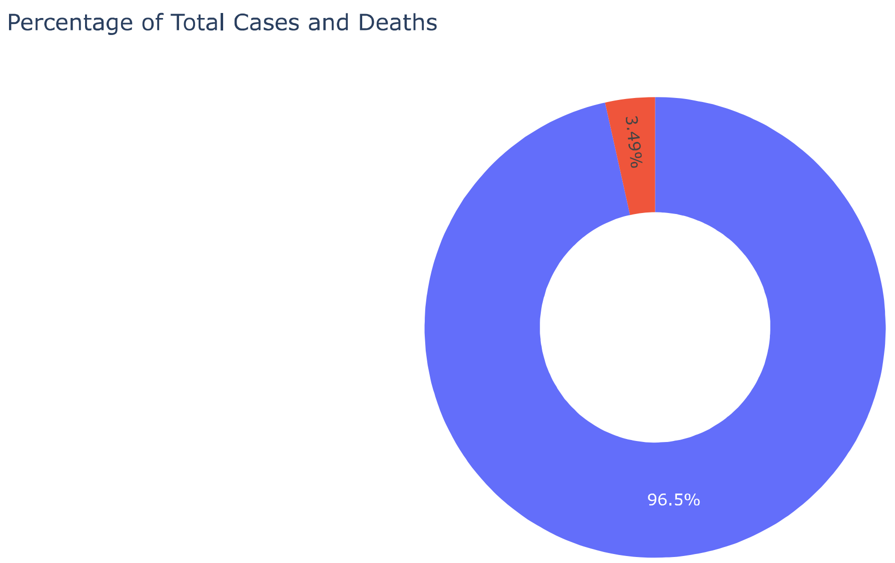
```
figure = px.bar(data, y='Total Cases', x='Country',
            title="Countries with Highest Covid Cases")
figure.show()
```

```
figure = px.bar(data, y='Total Deaths', x='Country',
            title="Countries with Highest Deaths")
figure.show()
```



```
fig = go.Figure()
fig.add_trace(go.Bar(
    x=data["Country"],
    y=data["Total Cases"],
    name='Total Cases',
    marker_color='indianred'
))
fig.add_trace(go.Bar(
    x=data["Country"],
    y=data["Total Deaths"],
    name='Total Deaths',
    marker_color='lightsalmon'
))
fig.update_layout(barmode='group', xaxis_tickangle=-45)
fig.show()
```

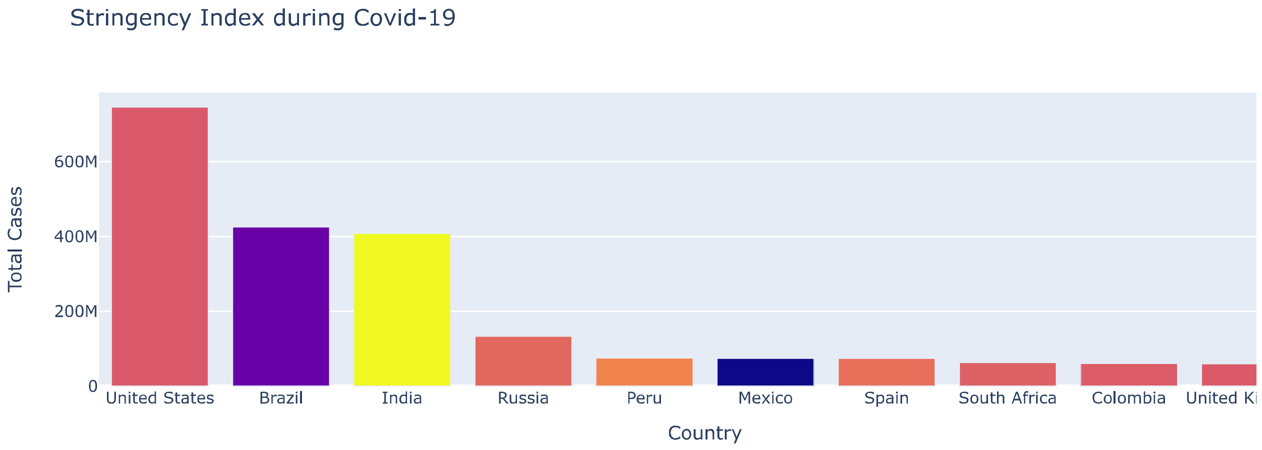
```
# Percentage of Total Cases and Deaths
cases = data["Total Cases"].sum()
deceased = data["Total Deaths"].sum()

labels = ["Total Cases", "Total Deaths"]
values = [cases, deceased]

fig = px.pie(data, values=values, names=labels,
             title='Percentage of Total Cases and Deaths', hole=0.5)
fig.show()
```


Percentage of Total Cases and Deaths

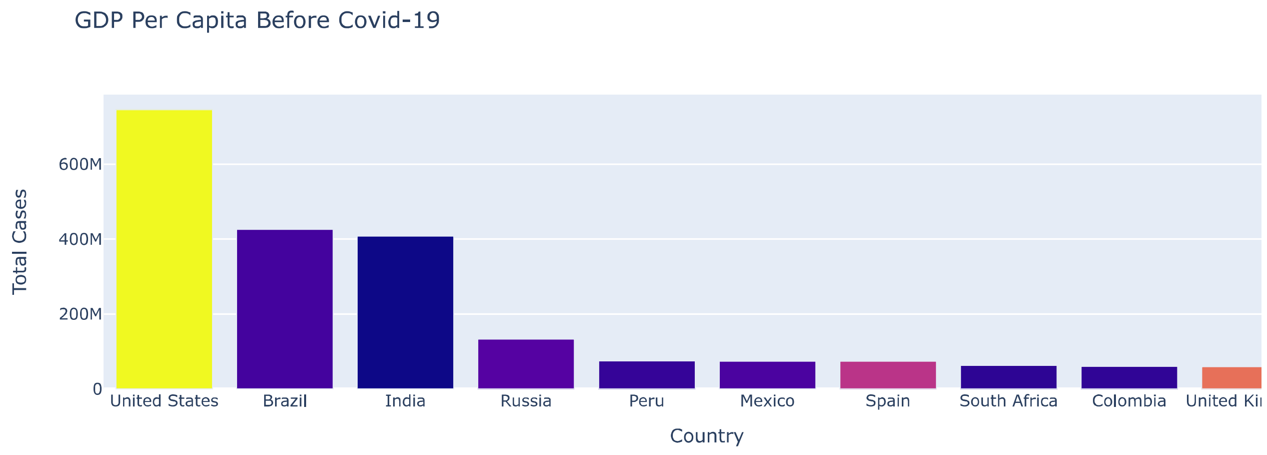
```
death_rate = (data["Total Deaths"].sum() / data["Total Cases"].sum()) * 100
print("Death Rate = ", death_rate)
```

```
     Death Rate =  3.6144212045653767
```

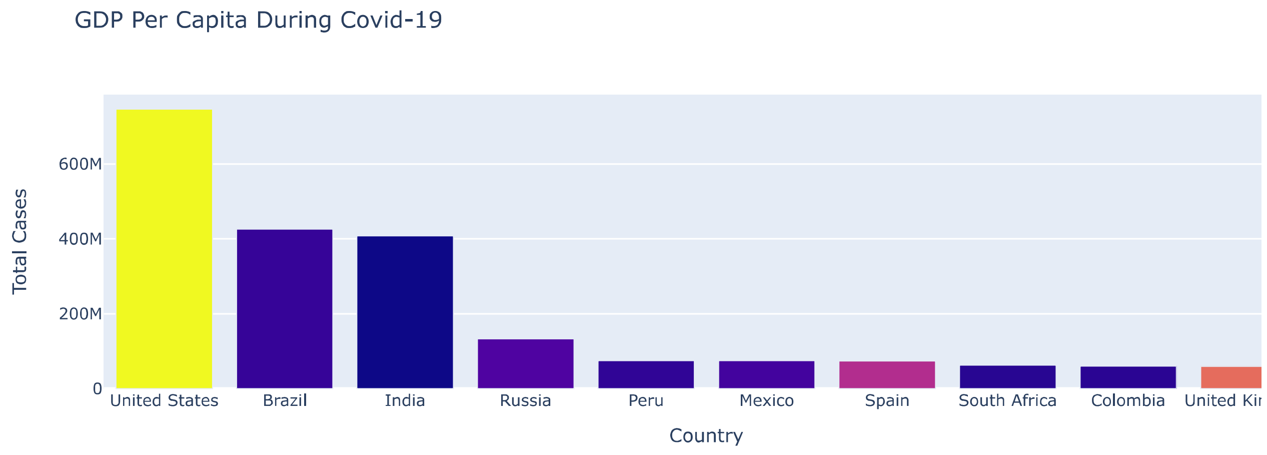
```
fig = px.bar(data, x='Country', y='Total Cases',
             hover_data=['Population', 'Total Deaths'],
             color='Stringency Index', height=400,
             title= "Stringency Index during Covid-19")
fig.show()
```


Stringency Index during Covid-19

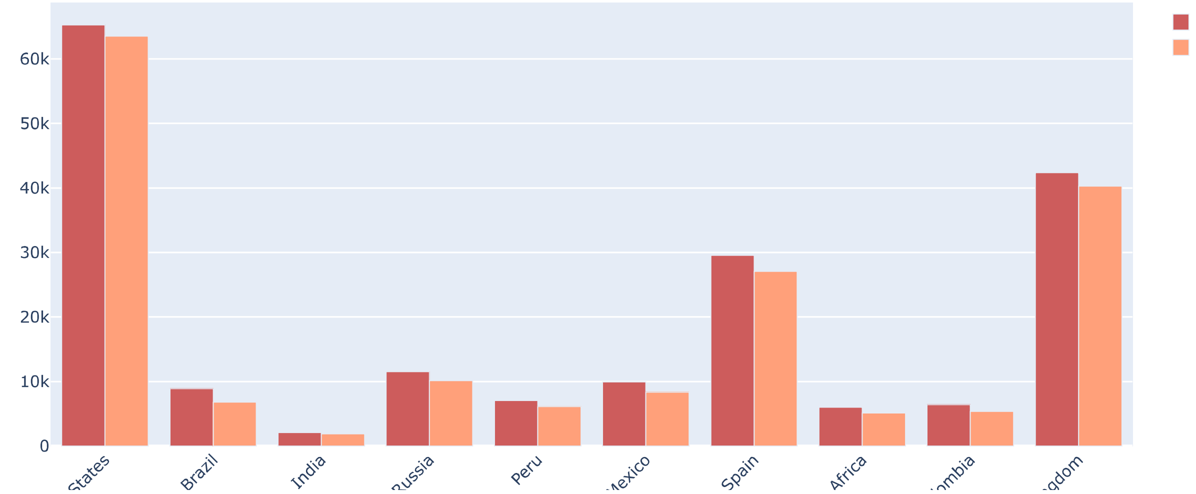
```
fig = px.bar(data, x='Country', y='Total Cases',
             hover_data=['Population', 'Total Deaths'],
             color='GDP Before Covid', height=400,
             title="GDP Per Capita Before Covid-19")
fig.show()
```



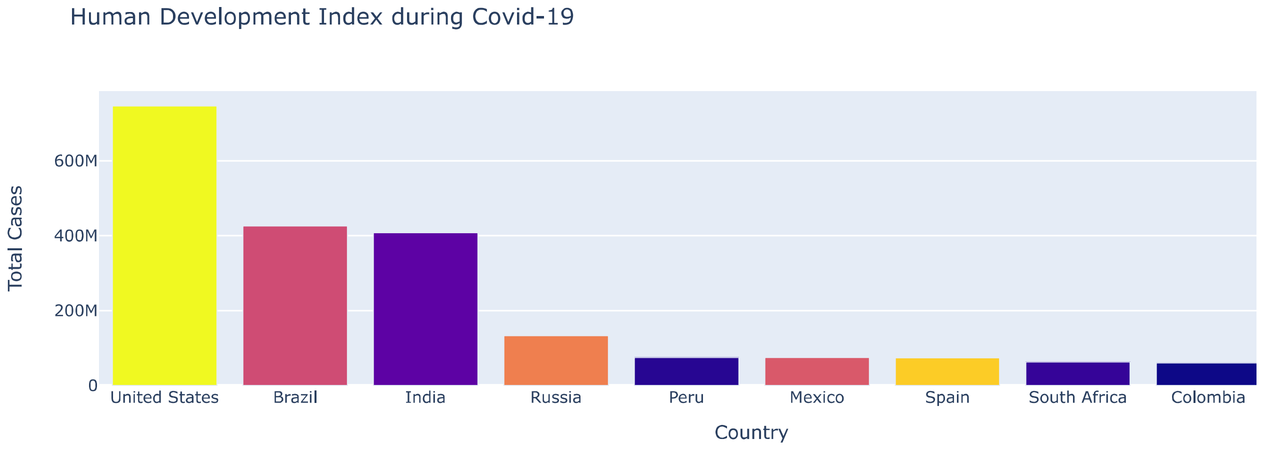
```
fig = px.bar(data, x='Country', y='Total Cases',
             hover_data=['Population', 'Total Deaths'],
             color='GDP During Covid', height=400,
             title="GDP Per Capita During Covid-19")
fig.show()
```



```
 fig.add_trace(go.Bar(
    x=data["Country"],
    y=data["GDP Before Covid"],
    name='GDP Per Capita Before Covid-19',
    marker_color='indianred'
))
fig.add_trace(go.Bar(
    x=data["Country"],
    y=data["GDP During Covid"],
    name='GDP Per Capita During Covid-19',
    marker_color='lightsalmon'
))
fig.update_layout(barmode='group', xaxis_tickangle=-45)
fig.show()
```



```
fig = px.bar(data, x='Country', y='Total Cases',
             hover_data=['Population', 'Total Deaths'],
             color='HDI', height=400,
             title="Human Development Index during Covid-19")
fig.show()
```



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