ChatGPT prompt: **I am a data visualization expert and would like to see how Covid spread across different countries. Please create a dashboard that I can use to explore the spread over time and across countries using publicly available data from WHO or other organizations**.

ChatGPT response:

Creating a comprehensive dashboard to visualize the spread of COVID-19 across different countries involves several steps, including data collection, data preprocessing, and creating visualizations. I'll guide you through the process of creating a dashboard using Python with libraries such as Pandas, Plotly, and Dash.

**Step 1: Data Collection**

First, you'll need to get the data. The Johns Hopkins University Center for Systems Science and Engineering (JHU CSSE) provides a well-maintained dataset on COVID-19 cases, which is available on GitHub.

**Step 2: Setting Up the Environment**

You need to have Python installed on your system, along with the necessary libraries. You can install the required libraries using pip:

bash

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pip install pandas plotly dash

**Step 3: Download and Load the Data**

We'll download the data from the JHU CSSE GitHub repository and load it into a Pandas DataFrame.

python

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import pandas as pd

# URLs to the datasets

confirmed\_url = "https://raw.githubusercontent.com/CSSEGISandData/COVID-19/master/csse\_covid\_19\_data/csse\_covid\_19\_time\_series/time\_series\_covid19\_confirmed\_global.csv"

deaths\_url = "https://raw.githubusercontent.com/CSSEGISandData/COVID-19/master/csse\_covid\_19\_data/csse\_covid\_19\_time\_series/time\_series\_covid19\_deaths\_global.csv"

recovered\_url = "https://raw.githubusercontent.com/CSSEGISandData/COVID-19/master/csse\_covid\_19\_data/csse\_covid\_19\_time\_series/time\_series\_covid19\_recovered\_global.csv"

# Load datasets

df\_confirmed = pd.read\_csv(confirmed\_url)

df\_deaths = pd.read\_csv(deaths\_url)

df\_recovered = pd.read\_csv(recovered\_url)

**Step 4: Data Preprocessing**

We need to transform the data into a suitable format for visualization.

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# Function to transform the data

def preprocess\_data(df):

df = df.drop(["Province/State", "Lat", "Long"], axis=1)

df = df.groupby("Country/Region").sum()

df = df.transpose()

df.index = pd.to\_datetime(df.index)

return df

df\_confirmed = preprocess\_data(df\_confirmed)

df\_deaths = preprocess\_data(df\_deaths)

df\_recovered = preprocess\_data(df\_recovered)

**Step 5: Creating the Dashboard**

We'll use Dash to create the dashboard. Dash is a powerful tool for creating interactive web applications with Python.

python

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import dash

from dash import dcc, html

from dash.dependencies import Input, Output

import plotly.graph\_objs as go

# Initialize the app

app = dash.Dash(\_\_name\_\_)

# App layout

app.layout = html.Div([

html.H1("COVID-19 Dashboard"),

dcc.Dropdown(

id='country-dropdown',

options=[{'label': country, 'value': country} for country in df\_confirmed.columns],

value='United States',

multi=True

),

dcc.Graph(id='covid-graph'),

dcc.RadioItems(

id='data-type',

options=[

{'label': 'Confirmed', 'value': 'confirmed'},

{'label': 'Deaths', 'value': 'deaths'},

{'label': 'Recovered', 'value': 'recovered'}

],

value='confirmed',

labelStyle={'display': 'inline-block'}

)

])

# Update the graph based on selected countries and data type

@app.callback(

Output('covid-graph', 'figure'),

[Input('country-dropdown', 'value'),

Input('data-type', 'value')]

)

def update\_graph(selected\_countries, data\_type):

if not isinstance(selected\_countries, list):

selected\_countries = [selected\_countries]

if data\_type == 'confirmed':

df = df\_confirmed

elif data\_type == 'deaths':

df = df\_deaths

else:

df = df\_recovered

traces = []

for country in selected\_countries:

traces.append(go.Scatter(

x=df.index,

y=df[country],

mode='lines+markers',

name=country

))

return {

'data': traces,

'layout': go.Layout(

title=f'COVID-19 {data\_type.capitalize()} Cases Over Time',

xaxis={'title': 'Date'},

yaxis={'title': f'Number of {data\_type.capitalize()} Cases'},

hovermode='closest'

)

}

# Run the app

if \_\_name\_\_ == '\_\_main\_\_':

app.run\_server(debug=True)

**Running the Dashboard**

Save the above code in a Python file (e.g., covid\_dashboard.py) and run it using the command:

bash

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python covid\_dashboard.py

Open your web browser and navigate to http://127.0.0.1:8050/ to view the dashboard. You will see a dropdown menu to select countries and radio buttons to choose the type of data (confirmed, deaths, recovered). The graph will update dynamically based on your selections.

**Conclusion**

This dashboard allows you to explore the spread of COVID-19 across different countries over time. By selecting different countries and data types, you can gain insights into how the pandemic has evolved globally. This interactive tool leverages publicly available data and provides a powerful way to visualize complex datasets.

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