Import Section

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```
import pandas as pd
import matplotlib.pyplot as plt

# Load the CSV data
url = "https://raw.githubusercontent.com/xscientisttech/detaset/main/india-state-wise-data-analysis.csv"
data = pd.read_csv(url)

# Display the first few rows of the dataframe
data.head()
```

	State & District	Population	Male	Female	Literate	Male_Literate	Female_Litera
0	district_code:1, state_name:JAMMU AND KASHMIR,...	870354	474190	396164	439654	282823	1568
1	district_code:2, state_name:JAMMU AND KASHMIR,...	753745	398041	355704	335649	207741	1279
2	district_code:3, state_name:JAMMU AND KASHMIR,...	133487	78971	54516	93770	62834	309
3	district_code:4, state_name:JAMMU AND KASHMIR,...	140802	77785	63017	86236	56301	299
4	district_code:5, state_name:JAMMU AND KASHMIR,...	476835	251899	224936	261724	163333	983

5 rows × 51 columns

Data Preperation

```
from tables.table import Column
# Preprocess data
def preprocess_data(df):
    # Split combined data in the 'state & district' column
    #df[['district_code','state_name', 'district_name']] = df['State & District'].str.split(",", expand=True)
    lst = df['State & District'].str.split(",", expand=True)
    #print("List: ", lst)
    df.drop(columns=['State & District'], inplace=True)

    df.insert(0,column = "District_Code", value= lst[0].str.replace("district_code:",""))
    df.insert(1,column = "State_Name", value= lst[1].str.replace("state_name:",""))
    df.insert(2,column = "District_Name", value= lst[2].str.replace("district_name:",""))

    return df

# Preprocess the data
preprocessed_set= preprocess_data(data.copy())

# Displaying preprocessed data
print("Preprocessed Data is:")
preprocessed_set.head()
```

```
Preprocessed Data is:
```

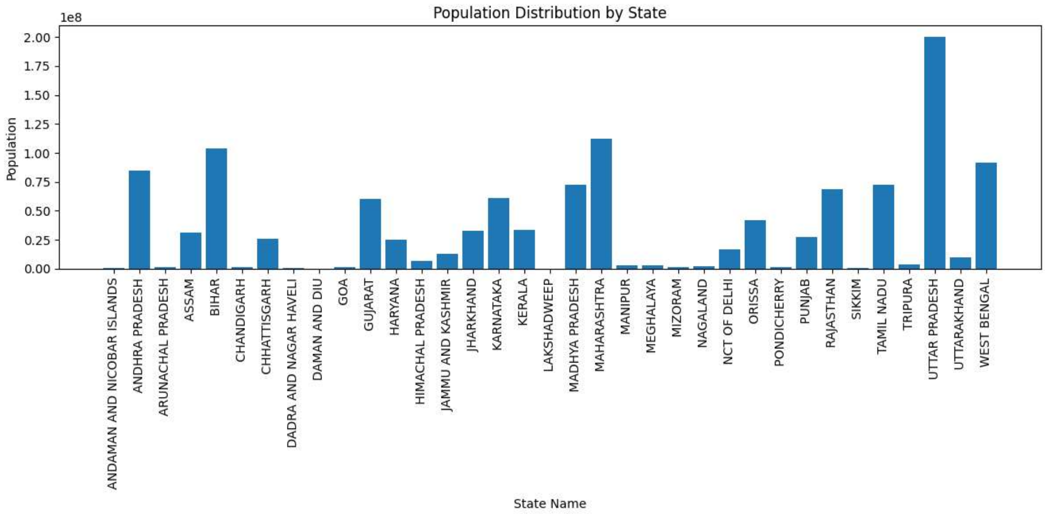
	District_Code	State_Name	District_Name	Population	Male	Female	Literate	Male_Literate	Femal
0	1	JAMMU AND KASHMIR	Kupwara	870354	474190	396164	439654	282823	
1	2	JAMMU AND KASHMIR	Badgam	753745	398041	355704	335649	207741	
2	3	JAMMU AND KASHMIR	Leh(Ladakh)	133487	78971	54516	93770	62834	
3	4	JAMMU AND	Kargil	140802	77785	63017	86236	56301	

```
# This is formatted as code
```

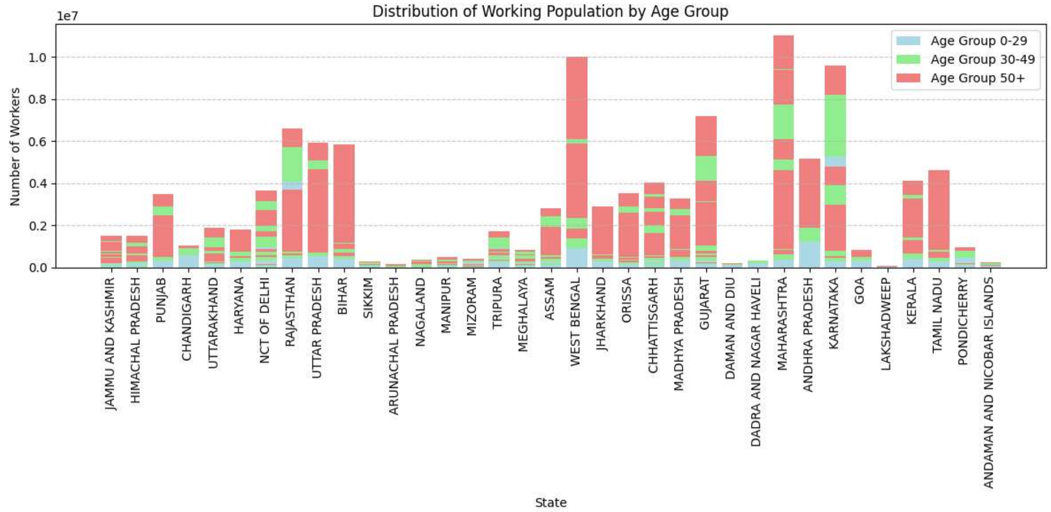
Data Visualization

Double-click (or enter) to edit

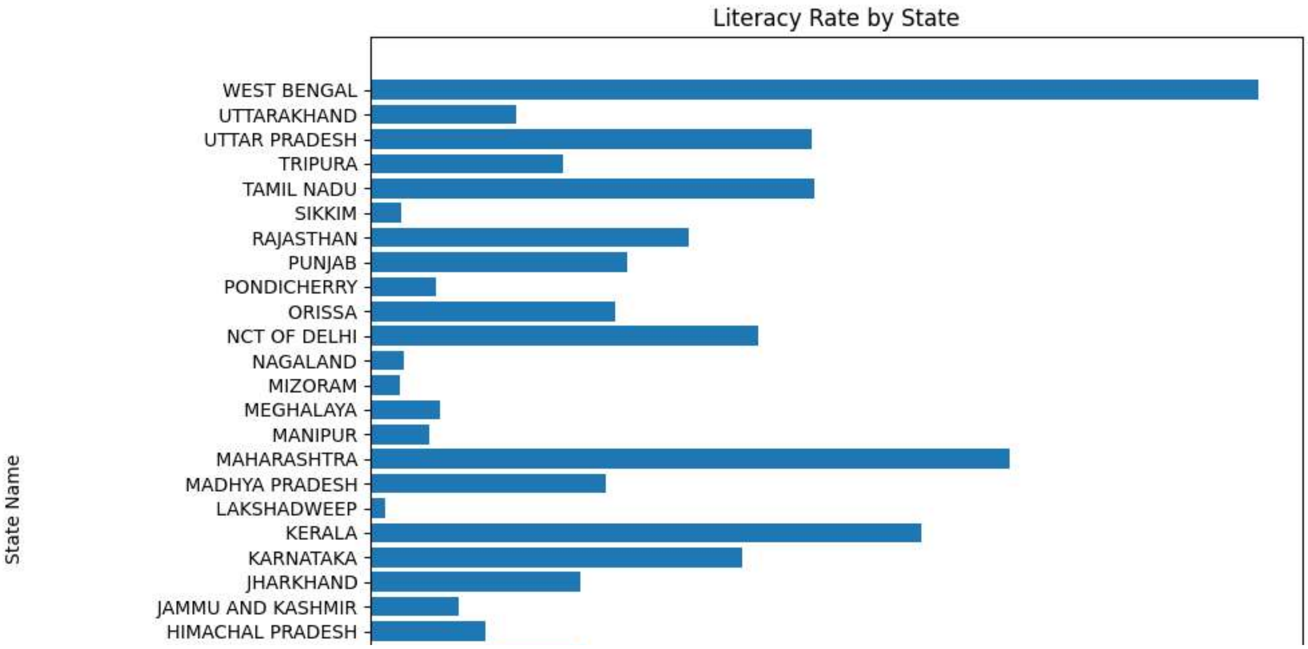
```
# Group the data by state name and calculate the total population for each state

state_population = preprocessed_set.groupby('State_Name')['Population'].sum().reset_index()

# Create a bar graph for population distribution
plt.figure(figsize=(12, 6))
plt.bar(state_population['State_Name'], state_population['Population'])
plt.xticks(rotation=90)
plt.xlabel('State Name')
plt.ylabel('Population')
plt.title('Population Distribution by State')
plt.tight_layout()
plt.show()
```



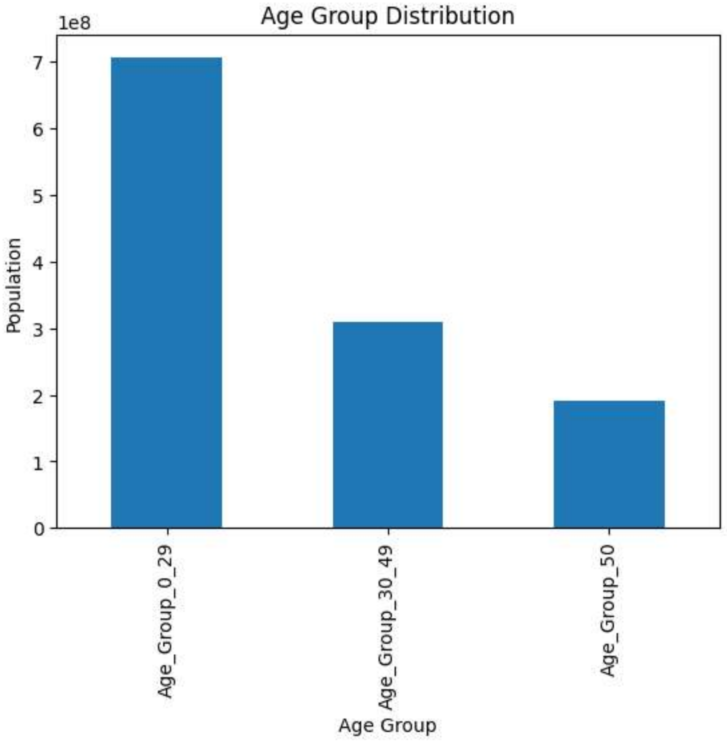
```
# Create a stacked bar chart to visualize the distribution of the working population by age group
plt.figure(figsize=(12, 6))
plt.bar(preprocessed_set['State_Name'], preprocessed_set['Age_Group_0_29'], label='Age Group 0-29', color='lightblue')
plt.bar(preprocessed_set['State_Name'], preprocessed_set['Age_Group_30_49'], label='Age Group 30-49', color='lightgreen', bottom=preprocessec
plt.bar(preprocessed_set['State_Name'], preprocessed_set['Age_Group_50'], label='Age Group 50+', color='lightcoral',
        bottom=preprocessed_set['Age_Group_0_29'] + preprocessed_set['Age_Group_30_49'])
plt.xlabel('State')
plt.ylabel('Number of Workers')
plt.title('Distribution of Working Population by Age Group')
plt.xticks(rotation=90)
plt.legend(loc='upper right')
plt.grid(axis='y', linestyle='--', alpha=0.7)
plt.tight_layout()
plt.show()
```



```
# Group the data by state name and calculate the average literacy rate for each state

state_literacy = preprocessed_set.groupby('State_Name')['Literate'].mean().reset_index()

# Create a horizontal bar graph for literacy rate distribution
plt.figure(figsize=(10, 8))
plt.barh(state_literacy['State_Name'], state_literacy['Literate'])
plt.xlabel('Literacy Rate')
plt.ylabel('State Name')
plt.title('Literacy Rate by State')
plt.tight_layout()
plt.show()
```

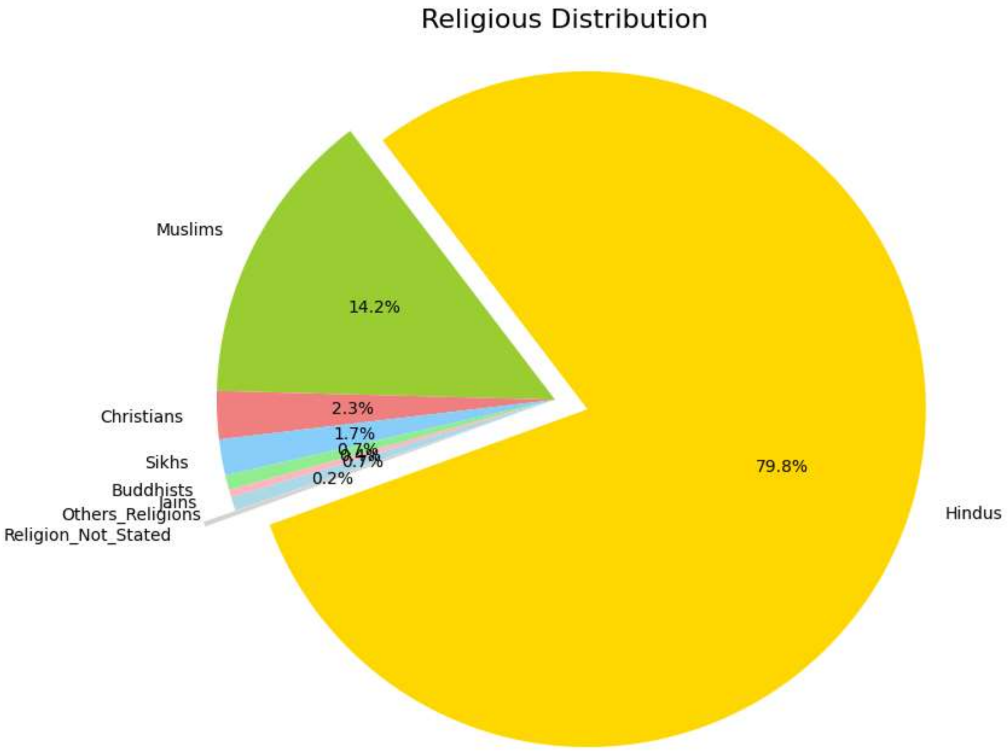


```
 # Age Group Distribution (assuming you have columns for age groups)
age_groups = ['Age_Group_0_29', 'Age_Group_30_49', 'Age_Group_50']
age_group_distribution = data[age_groups].sum()
age_group_distribution.plot(kind='bar')
plt.xlabel('Age Group')
plt.ylabel('Population')
plt.title('Age Group Distribution')
plt.show()
```



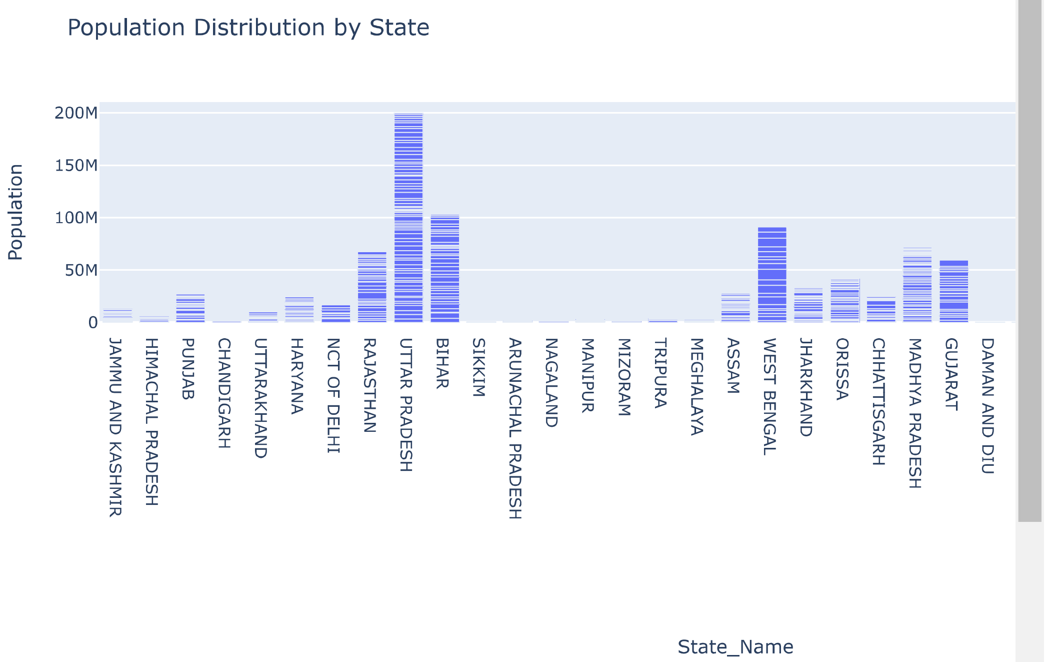
```
# Define the religions and their corresponding columns
religions = ['Hindus', 'Muslims', 'Christians', 'Sikhs', 'Buddhists', 'Jains', 'Others_Religions', 'Religion_Not_Stated']

# Calculate the sum of each religion's population
religion_distribution = data[religions].sum()

# Create a list of colors for the pie chart slices
```

```
colors = ['gold', 'yellowgreen', 'lightcoral', 'lightskyblue', 'lightgreen', 'lightpink', 'lightblue', 'lightgray']

# Explode the pie slices (separate some slices from the center)
explode = (0.1, 0, 0, 0, 0, 0, 0, 0.1)

# Create the pie chart with improved settings
plt.figure(figsize=(10, 8))  # Increase the figure size
plt.pie(religion_distribution, labels=religion_distribution.index, autopct='%1.1f%%', colors=colors, startangle=200, explode=explode)

# Increase the label font size
plt.axis('equal')  # Equal aspect ratio ensures that pie is drawn as a circle
plt.title('Religious Distribution', fontsize=16)
plt.show()
```



```
# Generate questions
import plotly.express as px
questions = [
    "What is the population of each state?",
    "How does the literacy rate vary across states?",
    "What is the distribution of workers by gender?",
    "What is the religious composition in the dataset?",
    "What is the education level in different age groups?",
    "How many households have access to the internet?",
    "What is the distribution of religions in urban areas?",
    "How many households use LPG or PNG as fuel?",
    "What is the distribution of agricultural workers by state?",
    "What is the gender distribution in different education levels?"
]

# Visualizations and answers for the questions
for i, question in enumerate(questions):
    print(f"Question {i + 1}: {question}")

    # Create visualizations based on the questions
    if "population" in question.lower():
        # Visualization: Population distribution by state
        fig = px.bar(preprocessed_set, x='State_Name', y='Population', title='Population Distribution by State')
        fig.show()

    elif "literacy rate" in question.lower():
        # Visualization: Literacy rate variation across states
        fig = px.bar(preprocessed_set, x='State_Name', y='Literate', title='Literacy Rate by State')
        fig.show()

    elif "workers" in question.lower():
        # Visualization: Distribution of workers by gender
        df_gender_workers = preprocessed_set[['State_Name', 'Male_Workers', 'Female_Workers']]
        df_gender_workers.set_index('State_Name').plot(kind='bar', stacked=True, title='Distribution of Workers by Gender')
        plt.ylabel('Number of Workers')
        plt.show()

    # Add more conditions for other questions and visualizations

    else:
        print("Visualization not available for this question.")

    # Provide answers if available in the dataset
    if "population" in question.lower():
        # Calculate the total population for each state
        population_by_state = preprocessed_set.groupby('State_Name')['Population'].sum().reset_index()
        print(population_by_state)

    elif "literacy rate" in question.lower():
        # Calculate the average literacy rate
        average_literacy_rate =preprocessed_set['Literate'].mean()
        print(f"Average Literacy Rate: {average_literacy_rate:.2f}")

    elif "workers" in question.lower():
        # Calculate the total number of workers
        total_workers = preprocessed_set[['Male_Workers', 'Female_Workers']].sum().sum()
        print(f"Total Workers: {total_workers}")

    # Add more conditions for other questions and answers
    else:
        print("Answer not available for this question.")
```

```
Question 1: What is the population of each state?
```



```
                  State_Name  Population
0    ANDAMAN AND NICOBAR ISLANDS      380581
1               ANDHRA PRADESH    84580777
2            ARUNACHAL PRADESH     1383727
3                        ASSAM    31205576
4                        BIHAR   104099452
```