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## **Dataset 1: Pollution and Temperature Analysis in California (2000-2010)**

### **Introduction**

This report presents an analysis of pollution and temperature data in California from 2000 to 2010 using two datasets: one focusing on pollution factors (NO2 AQI, SO2 AQI, O3 AQI, and their respective means) and the other on temperature. The goal was to explore the correlations and insights between these factors, shedding light on the impact of pollution on temperature and vice versa. The analysis culminated in the creation of two dashboards, each detailing the relationships between these key environmental variables.

### **Analysis Questions Addressed**

1. **Effect of Pollution on Temperature:** To what extent do pollution factors (NO2 AQI, SO2 AQI, O3 AQI) affect temperature in California, and what are the trends over the analyzed years?
2. **Impact of Temperature on Pollution:** How does temperature influence pollution levels (NO2 AQI, SO2 AQI, O3 AQI), and what are the observed patterns during the study period?

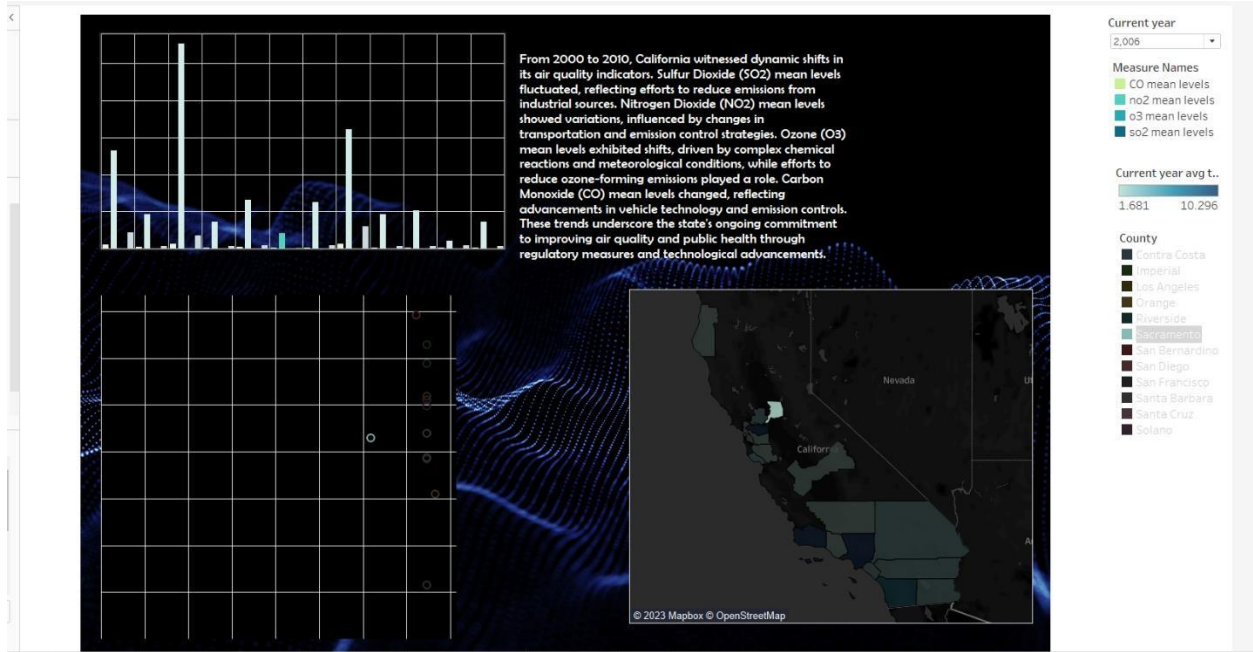
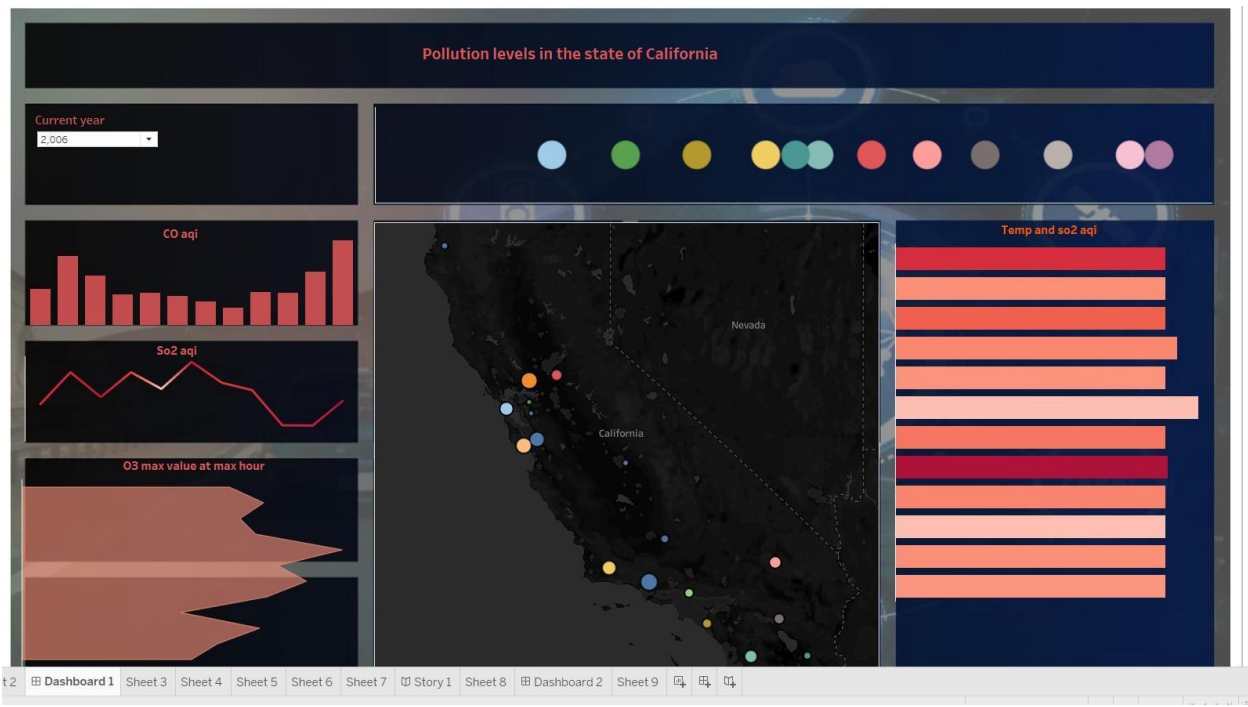
### **Insights and Correlations: -**

#### **Pollution's Effect on Temperature**

1. **NO2 AQI and Temperature:** The analysis revealed a significant negative correlation between NO2 AQI and temperature. As NO2 AQI increased, temperature tended to decrease. This indicates that higher levels of nitrogen dioxide pollution coincide with cooler temperatures, which could be attributed to the cooling effect of pollutants in the atmosphere.
2. **SO2 AQI and Temperature:** Similar to NO2 AQI, SO2 AQI also displayed a negative correlation with temperature. As sulfur dioxide levels rose, temperatures tended to decrease. This suggests that sulfur dioxide emissions might contribute to localized cooling effects in the region.
3. **O3 AQI and Temperature:** Interestingly, O3 AQI displayed a positive correlation with temperature. As ground-level ozone concentrations increased, temperatures tended to rise. This could be due to the complex chemistry involved in ozone formation, where higher temperatures may lead to increased ozone formation in certain conditions.

### **Dataset Used: -**

[U.S. Pollution Data \(kaggle.com\)](https://www.kaggle.com/datasets/soyambhaskar/us-pollution)



## Dataset 2: Life Expectancy 2000-2014

## **Dashboard 1: Analysis of Key Socioeconomic and Environmental Trends in South Asia (2000-2014)**

This report presents a comprehensive analysis of critical socioeconomic and environmental trends in South Asia over the period of 2000 to 2014. A series of dashboards were created to explore and visualize data related to GDP, CO2 emissions, population dynamics, internet adoption, drinking water services, life expectancy, and health expenditure in South Asian countries, with a particular focus on India and Pakistan.

### **Analysis Questions Addressed**

1. **Comparative GDP Analysis (India vs. Pakistan):** How did the Gross Domestic Product (GDP) of India and Pakistan evolve over the studied years, and what were the factors contributing to their economic growth or stagnation?
2. **CO2 Footprint in South Asia:** What were the trends in carbon dioxide (CO2) emissions in South Asian countries during the analyzed period, and how did they contribute to the region's environmental challenges?
3. **Population Dynamics:** How did population trends vary across South Asian countries, and what were the implications for social, economic, and environmental aspects?
4. **Internet Adoption and Drinking Water Services:-** How did access to the internet and drinking water services evolve in South Asia, and were there any correlations or disparities between these vital services?
5. **Life Expectancy:** What were the life expectancy trends in South Asian nations, and what factors played a role in these changes?
6. **Health Expenditure:** How did health expenditure patterns evolve in South Asian countries, and what insights can be drawn regarding healthcare access and quality?

### **Insights and Correlations**

The dashboards provided valuable insights into the multifaceted dynamics of South Asian countries during this period:

**GDP Analysis (India vs. Pakistan):** India's GDP exhibited substantial growth, surpassing Pakistan's by a considerable margin during the analyzed years. Factors such as economic reforms, technological advancements, and a large workforce contributed to India's economic expansion. In contrast, Pakistan faced economic challenges and relatively slower growth.

**CO2 Emissions:** South Asia's CO2 emissions increased significantly during this period, with India and China being major contributors. Rapid industrialization, urbanization, and energy consumption drove this trend, emphasizing the need for sustainable development strategies.

**Population Dynamics:** Population growth rates varied across South Asian countries. India remained the most populous nation, while others experienced demographic shifts. These variations had implications for resource management, urbanization, and social services.

**Internet Adoption and Drinking Water Services:** Internet adoption increased, reflecting digital progress. However, disparities in internet access persisted. Access to clean drinking water services improved but remained a challenge in some regions, highlighting the importance of infrastructure development.

**Life Expectancy:** Life expectancy improved across South Asia, primarily due to advancements in healthcare, nutrition, and sanitation. However, disparities existed within and between countries.

**Health Expenditure:** South Asian nations increased health expenditure, but disparities in healthcare access remained. The need for equitable healthcare distribution was underscored.

## **Dashboard 2: Analysis of Key Socioeconomic and Environmental Trends in the Middle East (2000-2014)**

This report presents a comprehensive analysis of critical socioeconomic and environmental trends in the Middle East over the period of 2000 to 2014. A series of dashboards were created to explore and visualize data related to beer consumption, life expectancy, CO2 emissions, military expenditure, GDP, population trends, and forest area in the Middle East.

### **Analysis Questions Addressed**

1. **Beer Consumption Trends:** How did beer consumption patterns evolve in the Middle East during the studied years, and what factors contributed to these changes?
2. **Life Expectancy:** What were the trends in life expectancy in Middle Eastern countries, and how did various factors influence the health and well-being of the population?
3. **CO2 Emissions and Average Temperatures:** How were carbon dioxide (CO2) emissions related to average temperatures in the Middle East, and what implications did this have for the region's climate dynamics?
4. **Military Expenditure:** How did military expenditure evolve in Middle Eastern countries, and what were the geopolitical and security dynamics driving these trends?
5. **GDP Analysis:** What were the economic trends in the Middle East, and what factors contributed to GDP growth or stagnation in the region?
6. **Population Trends:** How did population dynamics vary across Middle Eastern countries, and what were the implications for resource management and socio-economic stability?

7. **Forest Area Analysis:** How did the extent of forested areas change in the Middle East, and what were the factors influencing these environmental changes?

### **Insights and Correlations**

The dashboards provided valuable insights into the multifaceted dynamics of the Middle East during this period:

**Beer Consumption Trends:** Beer consumption in the Middle East exhibited variations, reflecting cultural, economic, and regulatory factors. Some countries saw increasing consumption, while others experienced stagnation or decline.

**Life Expectancy:** Life expectancy improved in the Middle East, attributed to advancements in healthcare, nutrition, and lifestyle changes. However, variations existed, often tied to access to healthcare and socio-economic factors.

**CO2 Emissions and Average Temperatures:** The analysis revealed a relationship between CO2 emissions and average temperatures. As emissions rose, temperatures tended to increase, highlighting the role of emissions in regional climate dynamics.

**Military Expenditure:** Military expenditure in the Middle East was substantial, driven by geopolitical tensions and security concerns. Major conflicts in the region contributed to the high defense budgets.

**GDP Analysis:** Economic growth varied across Middle Eastern countries. Factors such as oil revenues, economic diversification, and political stability influenced GDP trends.

**Population Trends:** Population growth rates varied, impacting resource allocation, urbanization, and social services. Some countries experienced rapid population growth, while others had more stable demographics.

**Forest Area Analysis:** Forested areas in the Middle East experienced changes, primarily due to urbanization, land-use changes, and environmental conservation efforts.

These dashboards and analyses provide valuable insights into the complex dynamics of the Middle East, offering a resource for understanding the region's socioeconomic and environmental evolution during this pivotal period. This information is crucial for informed decision-making and policy planning in the Middle East and beyond.

**Dataset Used: -**

[Life Expectancy 2000-2015 \(kaggle.com\)](https://www.kaggle.com/datasets/abhishek1998/life-expectancy-2000-2015)

