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Air Quality Dashboard Overview

This dashboard is designed to provide users with a visual representation of air quality data, sourced from the OpenAQ API. It allows users to explore how air quality varies across different cities, parameters, and time periods. The primary goal is to make complex air quality data more accessible and understandable, enabling informed observations.

Key Components and Visualizations

1. **Interactive Controls**:
   - **City Selection**: A dropdown menu allows users to select a city of interest (e.g., Los Angeles, New York, London). This selection drives the data displayed in the subsequent visualizations.
   - **Parameter Selection**: Users can choose an air quality parameter from another dropdown (e.g., PM2.5, O3, NO2). This selection filters the data to show the concentration of the chosen pollutant.
   - **Date Range Selection**: Date pickers enable users to specify a start and end date for the data, allowing them to focus on specific timeframes.
2. **Air Quality Line Chart**:
   - This chart displays a time-series of the selected air quality parameter for the chosen city and date range.
   - The x-axis represents time, and the y-axis represents the concentration of the pollutant (e.g., $\mu g/m^3$).
   - The chart helps visualize trends and patterns in air quality over time, such as daily or seasonal variations.
3. **Pie Charts of Top Locations**:
   - Three pie charts are used to show the distribution of air quality measurements across the top 5 locations within the selected city.
   - Each pie chart represents a snapshot of the data, highlighting the relative contribution of each location to the overall air quality.
   - These charts help to understand the spatial variability of air quality within a city, identifying potential hotspots or areas with better or worse air quality.

How to Use the Dashboard

1. **Select a city** using the city dropdown to focus on a specific geographical area.
2. **Choose an air quality parameter** to visualize the concentration of a particular

pollutant.

3. **Specify a date range** to analyze data within a specific timeframe.
4. Observe the **line chart** to understand how the pollutant concentration changes over time.
5. Examine the **pie charts** to see how the pollutant is distributed across different locations within the city.

Interpretation

- By observing the line chart, users can identify periods of high or low pollution, potential trends, and the impact of events (e.g., traffic, weather) on air quality.
- The pie charts provide insights into which locations within the city experience higher or lower concentrations of the selected pollutant. This can help identify pollution sources or areas where air quality is a greater concern.

In summary, this dashboard provides an interactive tool for exploring air quality data, enabling users to gain a better understanding of air pollution patterns and spatial variations.