Tumkur Smart City Data Analysis and Visualization using Power BI

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**Project Overview:** This project involves the analysis of Tumkur city’s smart city data to gain insights into various urban metrics. The dataset, sourced from the Indian government's Open Government Data (OGD) platform (data.gov.in), includes diverse information on demographics, infrastructure, health, cultural heritage, and governance for Tumkur. The data is structured, stored, and queried in SQL, then visualized in Power BI to create a clear and insightful representation of the city's growth, needs, and performance in key areas.

**Project Goals:**

* To collect and centralize smart city data specific to Tumkur.
* To structure and store this data efficiently within a SQL database.
* To run SQL queries to derive specific metrics and create views.
* To develop visual dashboards in Power BI that aid in understanding the data and support data-driven decision-making for urban planning.

**Data Collection:** Data for Tumkur was collected from [data.gov.in](https://data.gov.in/), ensuring the dataset was relevant, complete, and up-to-date. The project focused on key aspects of smart city management, including demographics, governance, infrastructure, health services, and environmental data.

**Database Creation and Querying:** The collected data was organized and imported into SQL Server Management Studio (SSMS), where a relational database was created to efficiently handle the data. SQL queries were written to create views, summarizing data in a format ready for visualization. These queries focused on extracting critical information on population distribution, mortality rates, street lighting, cultural sites, and open spaces.

**Data Deployment and Visualization:** The SQL-generated views were imported into Power BI, where custom visualizations were developed to represent the data clearly and effectively. Key visualizations include:

* **Demographic Distribution**: Pie and donut charts showing population statistics.
* **Mortality and Health Insights**: Trend analyses of mortality rates over the years.
* **Infrastructure Metrics**: Maps and charts detailing number of school, number of buses and citizen facilities.

**Results and Insights:** The visualizations provide a comprehensive picture of Tumkur’s status in areas like health, governance, and infrastructure. For example, analyzing mortality trends can help health officials prioritize areas for improvement, while infrastructure maps can assist in planning expansions for public services like street lighting.

**Conclusion:** This project delivers actionable insights by transforming Tumkur’s raw data into meaningful information, helping city planners, stakeholders, and the general public make informed decisions. The analysis also serves as a model for other smart city initiatives looking to utilize open government data effectively.

