**PhonePe Transaction Insights**

**📄 Problem Statement: PhonePe Transaction Insights Dashboard**

This project is a \*\*data visualization dashboard\*\* built using \*\*Streamlit, Plotly, and Pandas.It analyzes and visualizes \*\*PhonePe transaction data\*\* across Indian states with interactive charts and maps.The main objective of the project is to provide insights into \*\*transaction trends, distributions, and regional comparisons\*\* through an easy-to-use web application.**`**

**1. Introduction**

Digital payments in India have seen exponential growth, driven by platforms like \*\*PhonePe\*\*, which enable seamless financial transactions. Analyzing these transaction patterns can provide valuable insights into \*\*user behavior, transaction distribution, and market penetration across different states\*\*. However, there is a lack of interactive, visual, and real-time dashboards that allow stakeholders to explore this data effectively.

**2. Problem Definition**

Currently, transaction data is available in raw form but is difficult to interpret due to the following challenges:

\* \*\*Lack of Visualization:\*\* Raw CSV and JSON data do not provide clear insights without proper visualization.

\* \*\*Geographical Complexity:\*\* Understanding state-wise distribution requires geospatial mapping.

\* \*\*Decision-Making Gap:\*\* Businesses, policymakers, and researchers struggle to derive actionable insights without an intuitive interface.

Thus, there is a need to build a \*\*Streamlit-based interactive dashboard\*\* that visualizes PhonePe transaction insights across Indian states using \*\*maps, charts, and filters\*\*.

**3. Objectives**

\* To build a \*\*data visualization dashboard\*\* using Streamlit.

\* To integrate \*\*India GeoJSON maps\*\* for state-level transaction analysis.

\* To provide \*\*interactive filters\*\* (Year, State) for customized insights.

\* To represent insights through \*\*metrics, choropleth maps, bar charts, and pie charts\*\*.

\* To enable \*\*decision-making support\*\* for stakeholders like businesses and analysts.

**4. Scope of the Project**

\* \*\*In-scope\*\*:

\* Visualization of state-wise transaction distribution.

\* Representation of total, average, and comparative transaction amounts.

\* User-friendly interface with Streamlit.

\* \*\*Out-of-scope\*\*:

\* Real-time live API integration from PhonePe (due to restrictions).

\* User authentication and payment gateway functionality.

**5. Expected Outcomes**

\* An \*\*interactive dashboard\*\* where users can explore PhonePe transaction patterns.

\* \*\*Geospatial representation\*\* of transactions on India’s map.

\* \*\*Comparative insights\*\* via bar charts and pie charts.

\* A structured way to analyze \*\*digital payment trends across states\*\*.

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⚡ This document can serve as the \*\*Problem Statement section\*\* in your final year project report.

👉 Do you want me to also prepare a \*\*separate "Project Objectives & Deliverables" section\*\* that you can attach right after this in your report?

**Additionally added the features:**

### **1. Decoding Transaction Dynamics on PhonePe**

The leadership team seeks a deeper understanding of these patterns to drive targeted business strategies.

#### **2. Device Dominance and User Engagement Analysis**

PhonePe aims to enhance user engagement and improve app performance by understanding user preferences across different device brands.

**3. Insurance Penetration and Growth Potential Analysis**

PhonePe has ventured into the insurance domain, providing users with options to secure various policies..

#### **4. Transaction Analysis for Market Expansion**

PhonePe operates in a highly competitive market, and understanding transaction dynamics at the state level is crucial for strategic decision-making.

**5. User Engagement and Growth Strategy**

PhonePe seeks to enhance its market position by analyzing user engagement across different states and districts.

**Objective for phonepe**

\*\*“PhonePe Transaction Insights Dashboard”\*\* (using Streamlit, Pandas, Plotly, and GeoJSON for India maps), here’s a clear \*\*objective\*\* you can include in your report:

**🎯 Project Objective**

The main objective of this project is to \*\*analyze and visualize PhonePe transaction data\*\* across different states of India, enabling better understanding of digital payment trends. The project aims to:

1. \*\*Provide interactive dashboards\*\* for exploring transaction patterns across Indian states.

2. \*\*Visualize transaction amounts geographically\*\* using choropleth maps for state-level comparisons.

3. \*\*Offer statistical insights\*\* such as total transactions, average transaction per state, and number of states involved.

4. \*\*Enable state-wise and year-wise filtering\*\* of data for customized analysis.

5. \*\*Compare states through charts\*\* (bar chart, pie chart) to highlight distribution and growth trends.

6. \*\*Present raw data tables\*\* for detailed examination of underlying records.

**🎯 Advantages of phonepe Project**

**1.Interactive Dashboard**

\* Built using \*\*Streamlit\*\*, so it’s easy to use and doesn’t require advanced coding to interact with.

\* Sidebar filters let users explore by state and year dynamically.

**2. Clear Visualizations**

\* Choropleth Map: Shows transaction amounts across India with geographical context.

\* Bar Chart\*\*: Compares state-wise totals for quick ranking.

\* Pie Chart\*\*: Displays distribution of transactions, highlighting major contributors.

**3. Data Insights at a Glance**

\* Displays total transactions, average per state, and number of active states\*\* using `st.metric`.

\* Helps stakeholders quickly understand transaction trends without digging into raw data.

**4. Real-time & Scalable**

\* Fetches data dynamically from an online CSV and GeoJSON — so it can easily be updated with live PhonePe datasets.

\* Works well for larger datasets if needed.

**5.Educational Value**

\* Demonstrates integration of multiple Python libraries:

\* Streamlit\*\* (dashboard/UI)

\* Pandas\*\* (data manipulation)

\*Plotly\*\* (interactive visualizations)

\* Requests/JSON\*\* (handling GeoJSON data)

**6. Practical Use Case**

\* Can be used by financial analysts, businesses, or policymakers to understand digital payment adoption\*\* across regions.

\* Useful for market expansion strategies (which states have low/high adoption).

**7. User-Friendly & Lightweight**

\* Runs in a browser, no complex setup needed.

\* Provides both \*\*visual + raw table preview\*\*, making it useful for both analysts and general users.

**Technologies Used**

\* \*\*Python 3.9+\*\*

\* \*\*Streamlit\*\* – for building the dashboard interface

\* \*\*Pandas\*\* – for data manipulation

\* \*\*Plotly Express\*\* – for creating interactive charts and maps

\* \*\*Requests & JSON\*\* – for fetching and processing geojson/state boundary data

\* \*\*PyArrow\*\* (used internally by Streamlit for dataframes)

**Features Implemented**

🔹 **Data Handling**

1. Fetches transaction data from an online \*\*CSV dataset\*\*.

2. Preprocesses the data (renaming columns, filtering states, etc.).

3. Loads \*\*GeoJSON\*\* data to enable Indian state-level mapping.

🔹 **Interactive Filters**

1. Sidebar with \*\*multi-select filters\*\* for:

2. State(s) \* Year(s) (if available in dataset)

🔹 **Key Metrics**

1.Total Transaction Amount\*\*

2.Average Transaction Amount per State\*\*

3.Number of States Selected\*\*

🔹 **Visualizations**

1. \*\*Choropleth Map\*\* – Transaction amount by state (color-coded on India map).

2. \*\*Bar Chart\*\* – State-wise transaction totals, sorted in descending order.

3. \*\*Pie Chart\*\* – Distribution of transaction amounts by state.

4. \*\*Data Table\*\* – Interactive preview of the filtered dataset.

**System Workflow**

**1. Data Loading:**

\*CSV dataset is fetched using Pandas.

\* State boundaries are fetched using GeoJSON.

**2. Filtering & Processing**

\* User-selected states and years are applied.

\* Data is aggregated for metrics and plots.

**3. Visualization**

\* Plotly Express generates interactive charts.

\* Streamlit displays them in a clean, interactive UI.

**4. Limitations**

\* Currently uses a \*\*sample dataset\*\* (COVID active cases mapped as transactions).

\* Yearly breakdown only works if dataset has `Year` column.

\* Requires \*\*internet connectivity\*\* to fetch GeoJSON and CSV.

**5. Future Enhancements**

\* Replace demo dataset with \*\*actual PhonePe Pulse data\*\*.

\* Add \*\*district-level analysis\*\*.

\* Implement \*\*trend line charts\*\* (monthly/quarterly).

\* Export insights as \*\*PDF/Excel reports\*\*.

**Conclusion**

This project successfully demonstrates how \*\*Streamlit + Plotly\*\* can be used to create an \*\*interactive dashboard for financial/transaction insights\*\*.

It can easily be extended to real-world PhonePe data, providing businesses and analysts with powerful tools for \*\*decision-making and regional analysis\*\*.

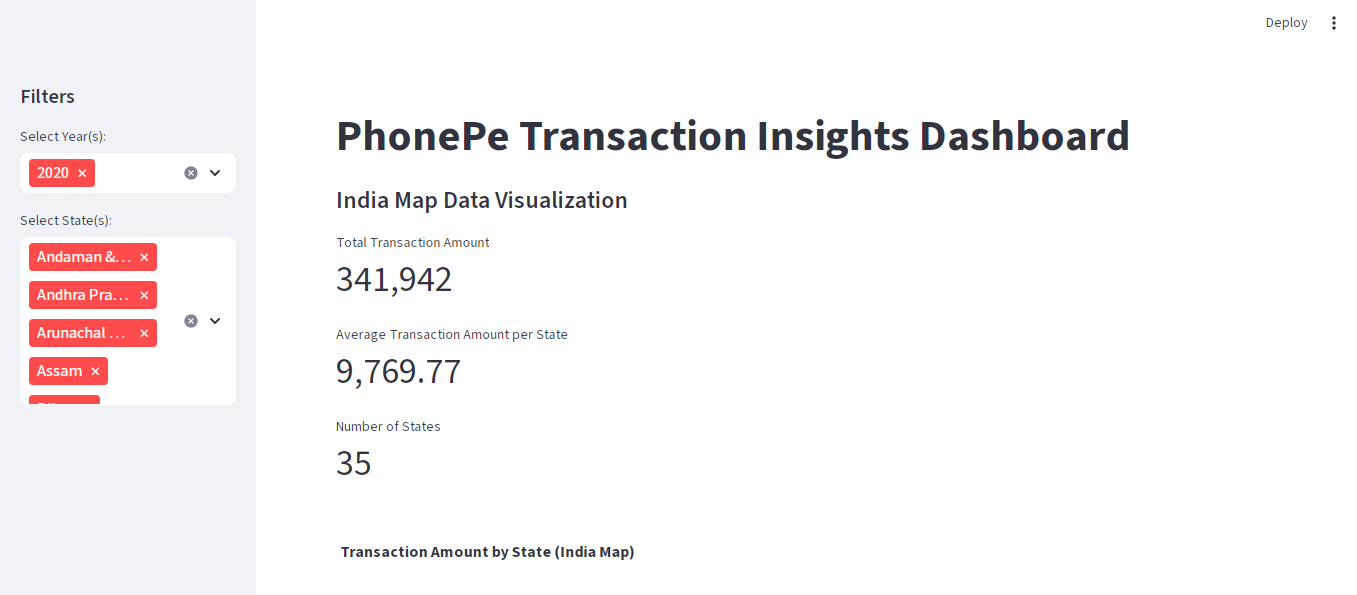
### **▶️ How to Run the PhonePe Transaction Insight Dashboard**

### **Launch the Streamlit Dashboard**

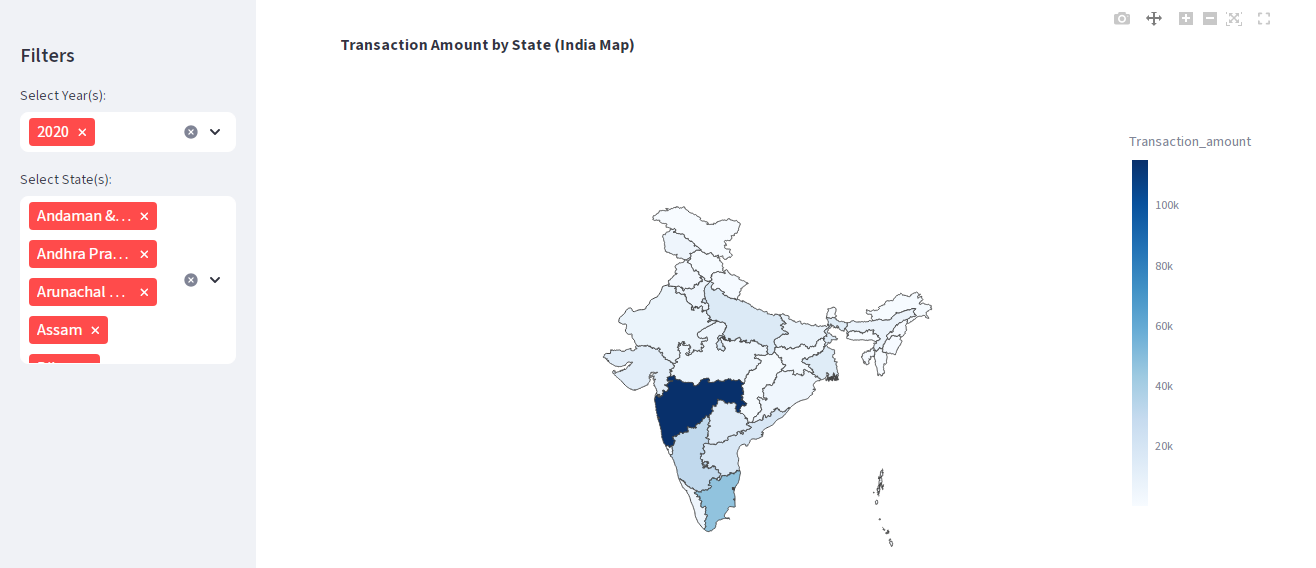
**Run the app using: bash streamlit run pho.py 🌐 Open your browser and go to:** [**http://localhost:8501/**](http://localhost:8501/)

**Screenshot:**

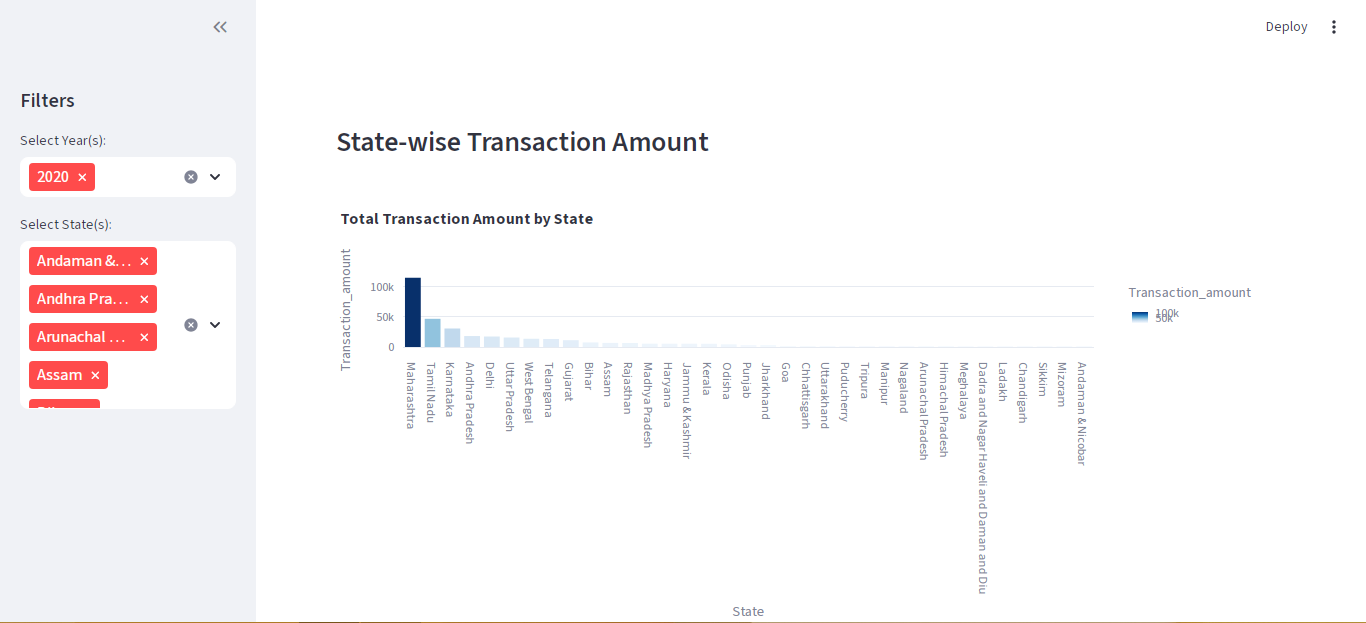
**1.**

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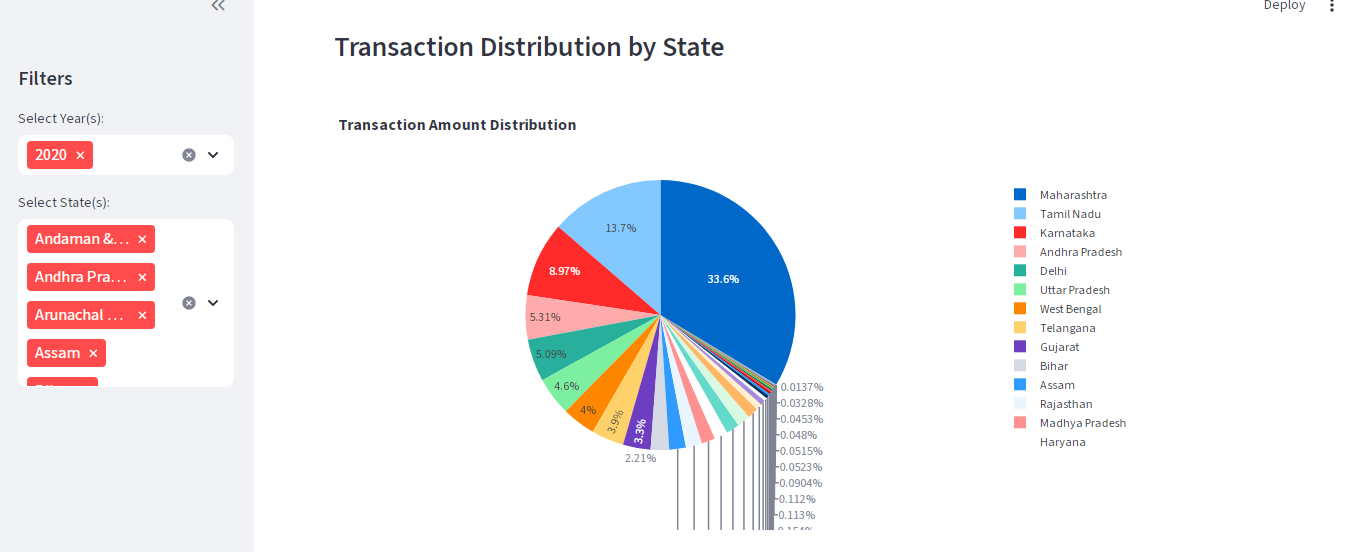
**2. Map Visualization 👍**

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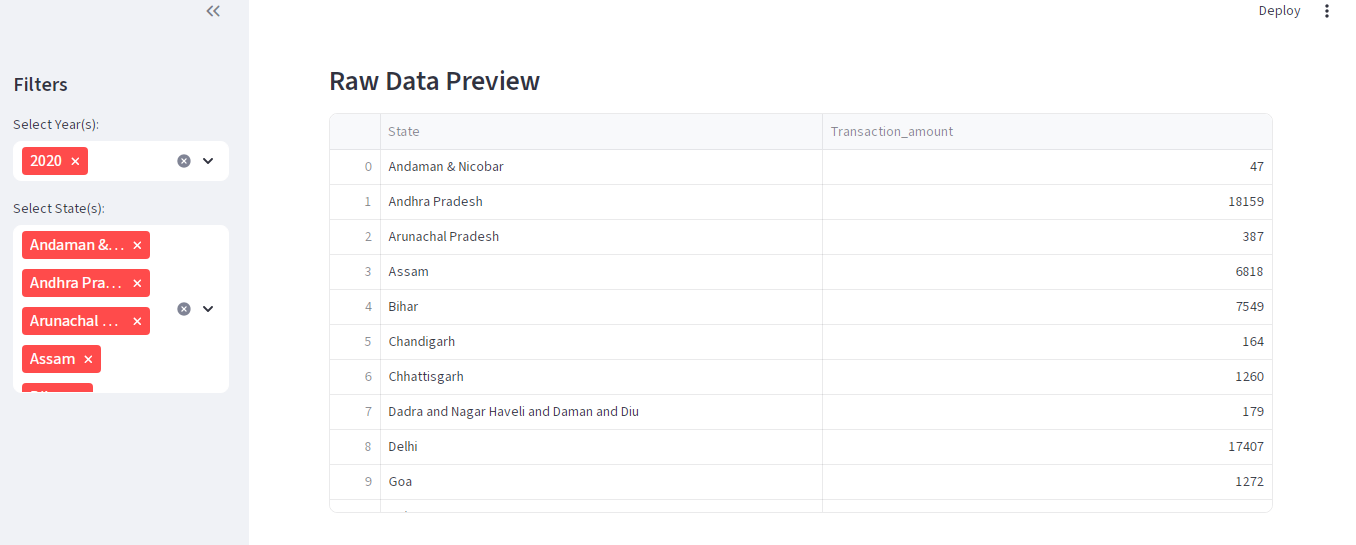
**3.state -wise transaction**

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**4. Transaction distribution:**

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**5.Raw data preview:**

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