LABMENTIX

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BATCH: 01 JUNE INTERNSHIP (6 MONTHS)

PROJECT: PHONEPE TRANSACTION INSIGHTS

PHONEPE DATA INSIGHTS

INTRODUCTION

PhonePe is a leading Indian digital payments and financial services company headquartered in Bengaluru, Karnataka. Founded in December 2015 by Sameer Nigam, Rahul Chari, and Burzin Engineer, it has rapidly grown to become one of India's most widely used platforms for digital transactions.

At its core, PhonePe leverages the Unified Payments Interface (UPI), a government-backed real-time payment system developed by the National Payments Corporation of India (NPCI). This allows users to link their bank accounts directly to the app and make instant, secure, bank-to-bank money transfers using just a mobile number or a Virtual Payment Address (VPA), eliminating the need for traditional bank details like IFSC codes.

Beyond basic UPI payments, PhonePe has diversified its offerings significantly. Users can perform a wide range of financial activities, including:

- Mobile and DTH recharges
- Utility bill payments (electricity, water, gas, broadband, credit card bills, etc.)
- Online and offline merchant payments via QR codes and other methods
- Investments in mutual funds, digital gold, and even stock broking (through its subsidiary Share.Market)
- Insurance (health, life, vehicle, travel, etc.)
- Lending (personal loans)
- Managing multiple bank accounts within a single app

PhonePe's success is attributed to its user-friendly interface, robust security measures, and its strategic integration with the UPI ecosystem, which gained significant traction, especially after India's demonetization in 2016. It aims to make digital payments and financial services accessible and convenient for every Indian, playing a crucial role in the country's journey towards a cashless economy. As of mid-2025, PhonePe continues to expand its reach and service portfolio, solidifying its position as a major player in India's fintech landscape.

PROBLEM STATEMENT

With the increasing reliance on digital payment systems like PhonePe, understanding the dynamics of transactions, user engagement, and insurance-related data is crucial for improving services and targeting users effectively. This project aims to analyze and visualize aggregated values of payment categories,

create maps for total values at state and district levels, and identify top-performing states, districts, and pin codes.

GRAPHS AND INFERENCE

Where ever year and state is mentioned, the graphs obtained and correspoding inferences are with respect to 2022 and Karnataka (respectively).

DASHBOARD HOME PAGE
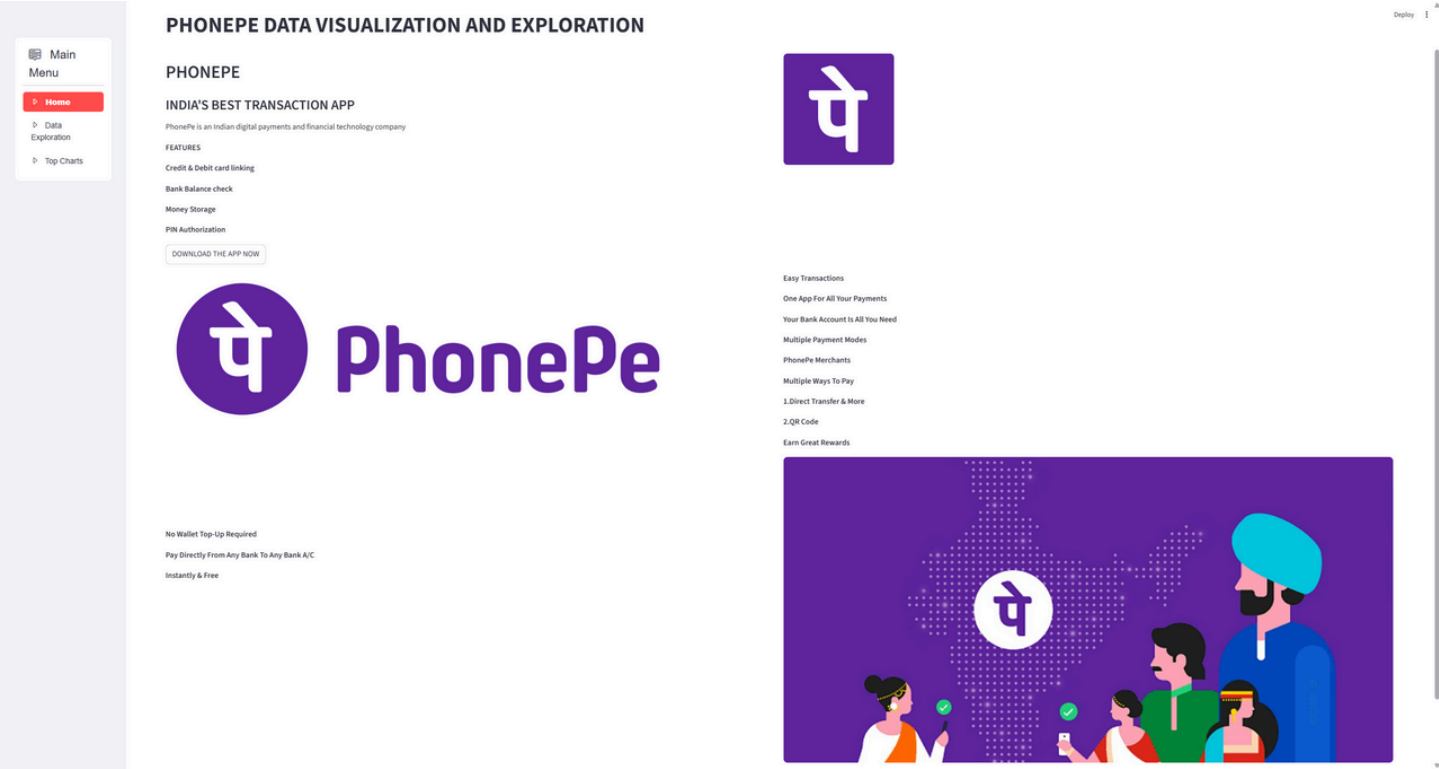
The image is part of a "PhonePe Data Visualization and Exploration" project, suggesting an analytical or demonstrative purpose.

1. AGGREGATED ANALYSIS

PhonePe's aggregated data from 2022 reveals a strong overall presence and significant regional disparities. Transaction and insurance activity are heavily concentrated in southern and western states, particularly **Karnataka and Maharashtra**, which consistently lead in both transaction amount and count. The platform's user base is predominantly **Android**, with **Xiaomi, Vivo, and Samsung** devices accounting for the vast majority of transactions. Within transaction types, **peer-to-peer and merchant payments** are the dominant use cases, significantly outpacing recharges, bill payments, and financial services. While annual trends show clear leaders, quarterly breakdowns allow for more granular insights, generally reinforcing the consistent dominance of the top-performing states and mobile brands.

1.1. INSURANCE ANALYSIS
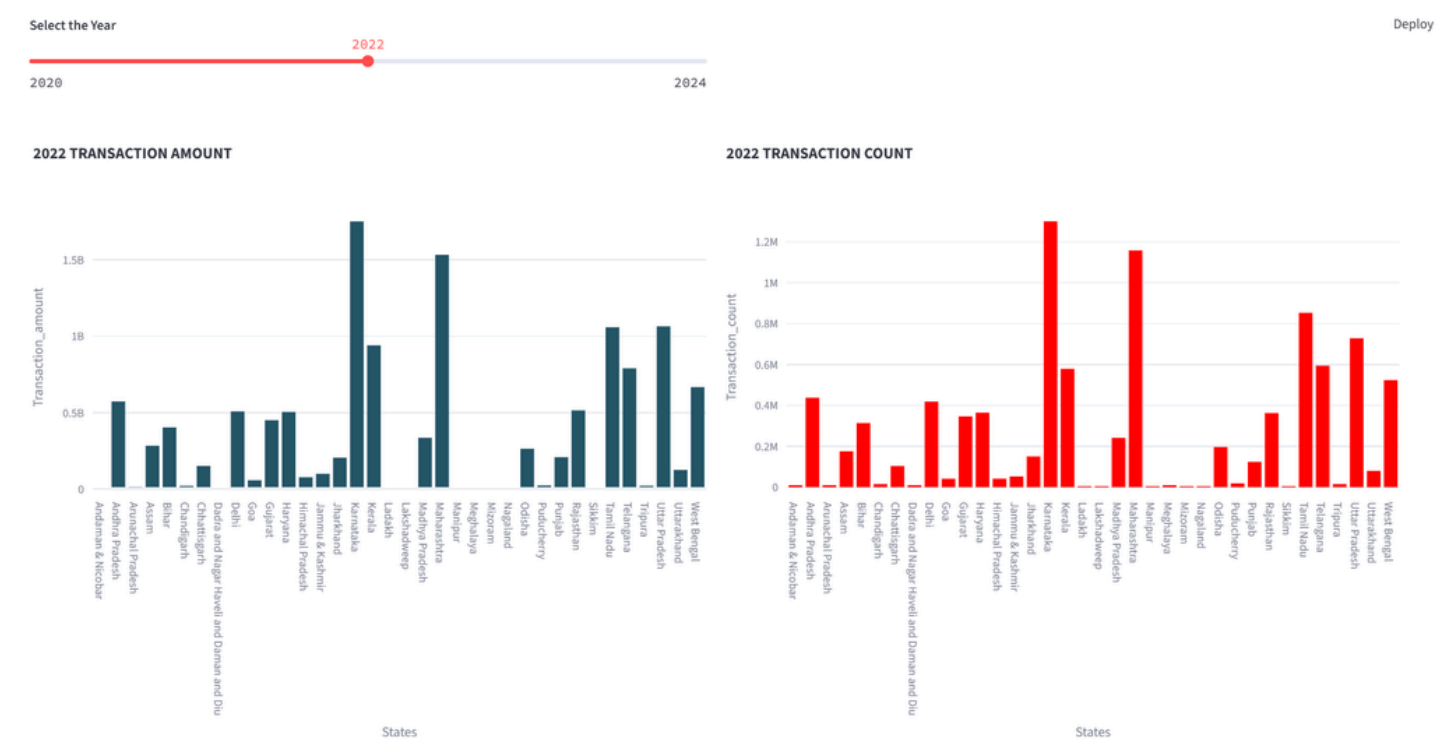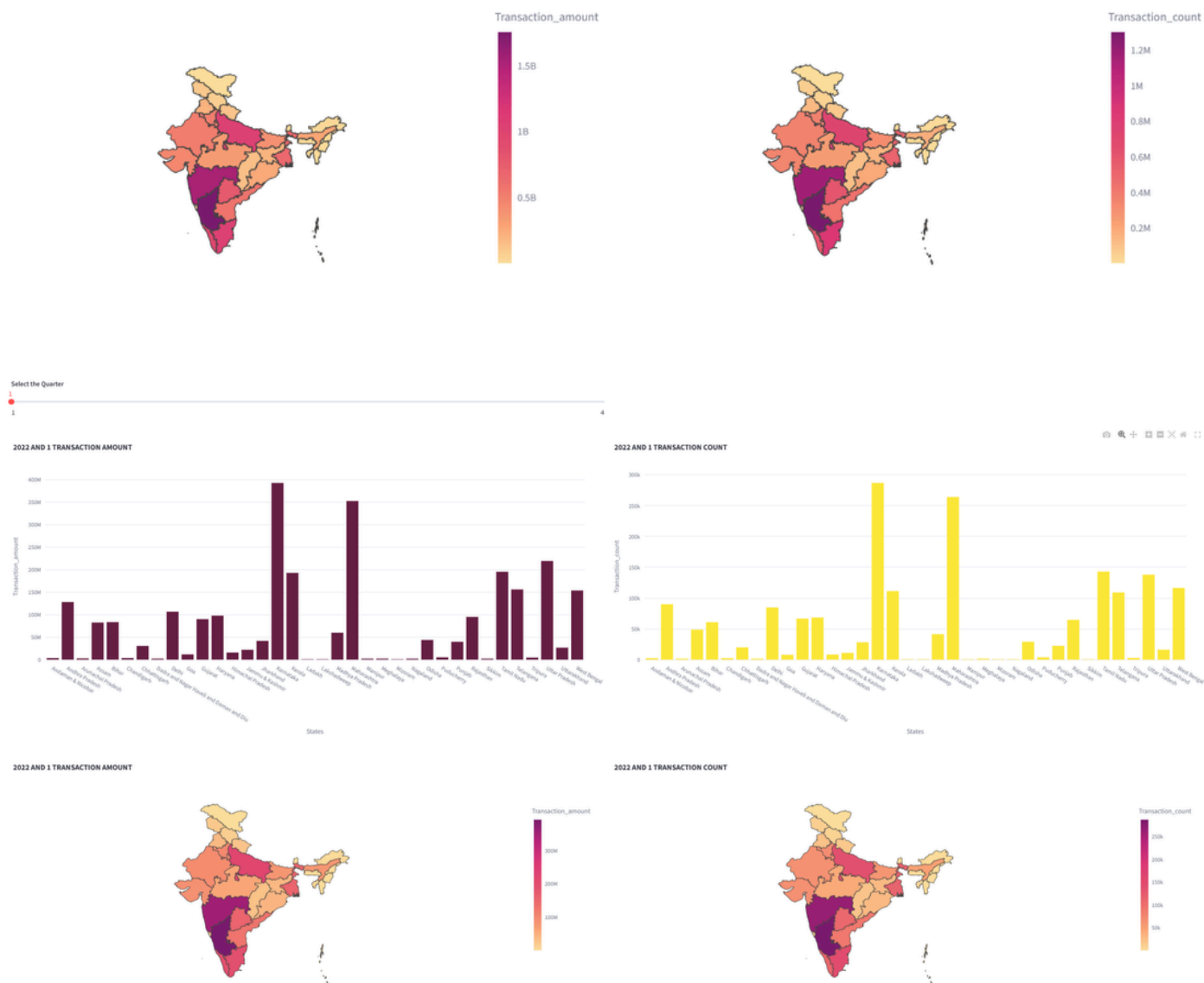
- **Dominant Southern States:** Southern Indian states (especially Karnataka, Maharashtra, Tamil Nadu, Andhra Pradesh, and Telangana) show consistently high transaction amounts and counts. This is evident in both the choropleth maps (darker shades) and the bar charts (tallest bars).
- **High Value vs. High Count:** States with high transaction amounts generally also have high transaction counts, indicating a strong correlation between the volume and value of insurance transactions.
- **Significant Outliers:** Karnataka and Maharashtra appear to be the leading states in both transaction amount and count for the year 2022.
- **Regional Disparities:** There are clear regional disparities, with some states showing very low insurance activity compared to the top performers.
- **Year Selector:** The presence of a "Select the Year" slider (currently on 2022) implies the dataset allows for year-over-year analysis.
- **Quarterly Breakdown:** The data can be filtered by quarter, providing more granular insights into transaction patterns.

- **Consistent Leadership (Q1):** Karnataka and Maharashtra continue to lead in both transaction amount and count even in Q1 2022, reinforcing their overall dominance.
- **Similar Geographic Trends:** The Q1 choropleth maps also show higher activity in the southern and western regions.
- **Fluctuations Possible:** While the top states remain consistent, the quarterly view allows for identifying potential seasonal or short-term trends in other states.
- **Scales Differ:** Note that the transaction amounts and counts in Q1 are significantly lower than the annual figures, as expected (e.g., $400M vs $1.5B for amount, $350K vs $1.2M for count).

1.2. TRANSACTION ANALYSIS
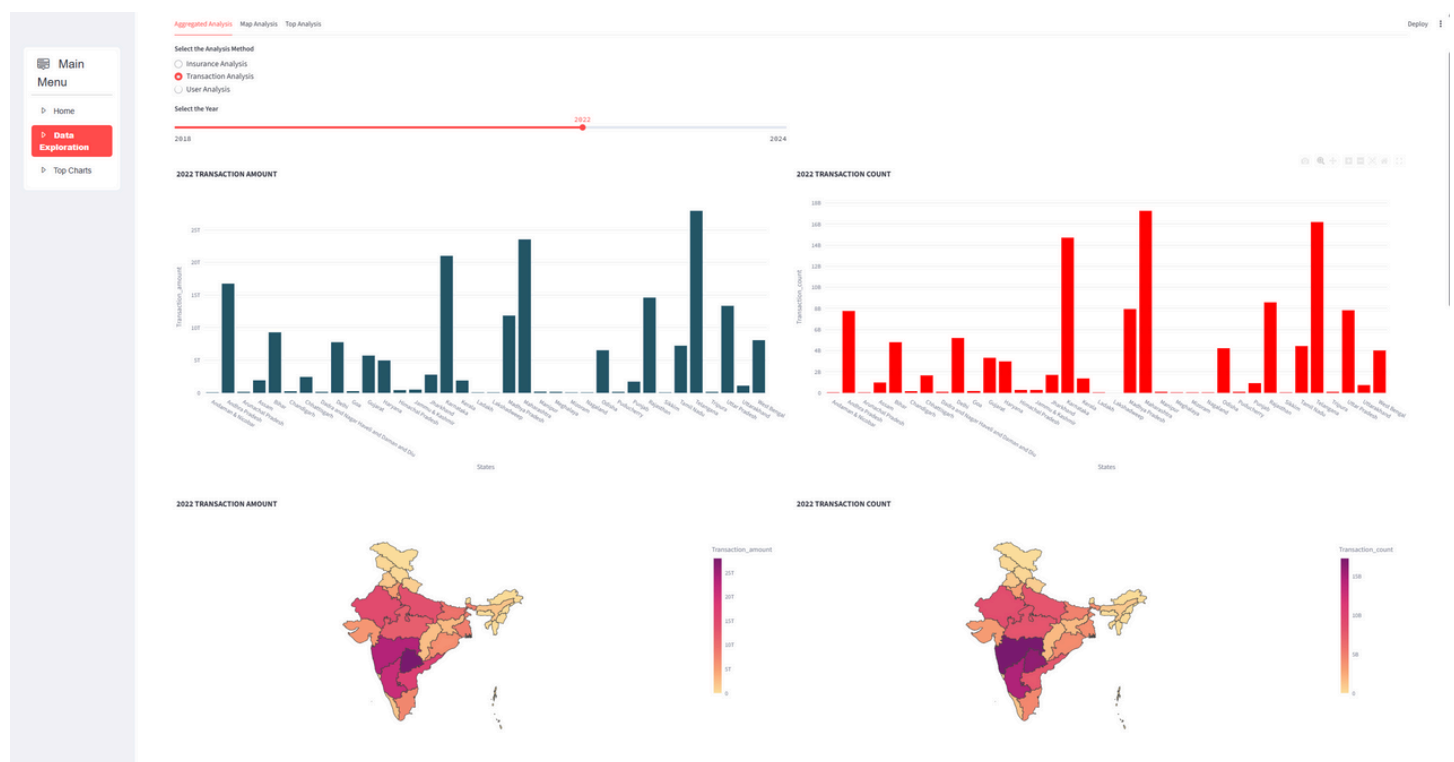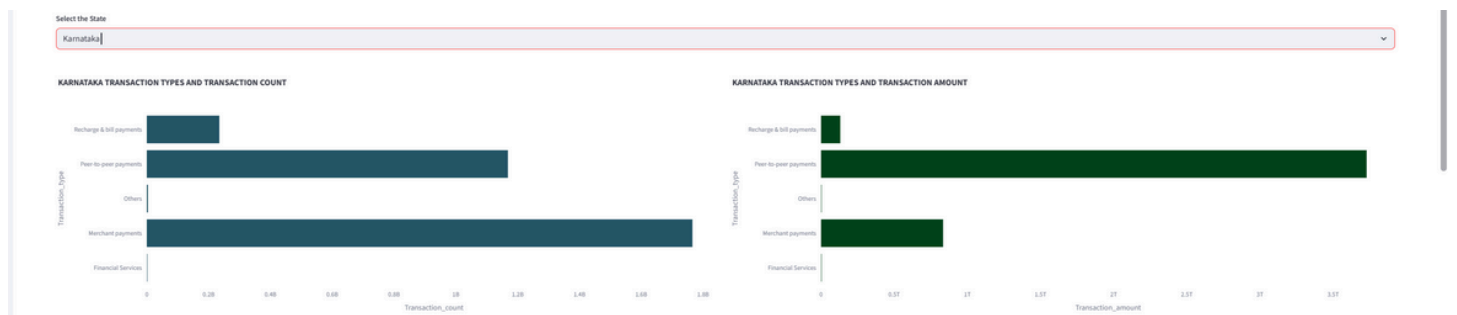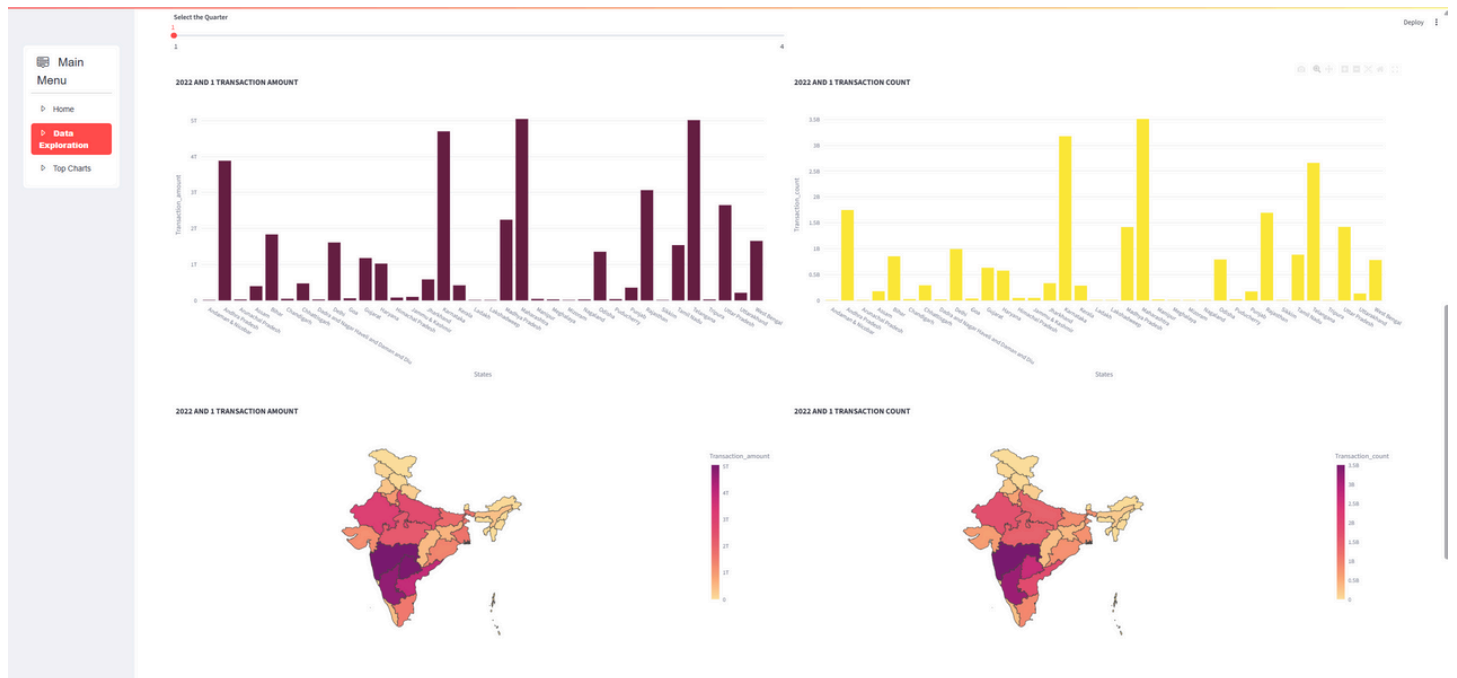
- **Dominant Southern/Western States:** Karnataka, Maharashtra, and other southern states (Tamil Nadu, Andhra Pradesh, Telangana) show significantly higher transaction amounts and counts for the year 2022.
- **Correlation:** States with high transaction amounts generally correspond to states with high transaction counts, indicating robust and frequent digital payment activity.
- **Regional Disparity:** A clear regional imbalance in digital transaction adoption/usage is visible, with some states showing minimal activity.
- **Yearly Overview:** The initial view provides a high-level annual summary of transaction activity across India.
- **Peer-to-Peer & Merchant Dominance:** In Karnataka, "Peer-to-peer payments" and "Merchant payments" are the overwhelming categories for both transaction count and amount. This suggests these are the primary use cases for PhonePe in the state.
- **Merchant Payments High Value:** While "Merchant payments" have the highest count, "Peer-to-peer payments" appear to have a slightly higher average transaction amount, or a comparable high value given their high count.
- **Lesser Usage for Recharges & Others:** "Recharges & Bill payments" and "Others" constitute a much smaller portion of both the transaction count and amount in Karnataka.
- **Financial Services Minimal:** "Financial Services" seem to be a very small category in terms of both count and amount in Karnataka, at least in the general transaction context.

- **Quarterly Granularity:** The data can be viewed by quarter, providing insights into short-term trends.
- **Consistent State Leadership:** Karnataka and Maharashtra (and other southern states) maintain their lead in transaction amounts and counts even when filtered for Q1 2022.
- **Seasonal/Quarterly Patterns:** Analyzing quarterly data allows for identifying if transaction activity fluctuates significantly throughout the year or remains consistently high/low in certain states.
- **Proportionality:** Q1 figures are proportionally lower than the annual totals, as expected, but the relative ranking of states generally holds.

1.3. USER ANALYSIS
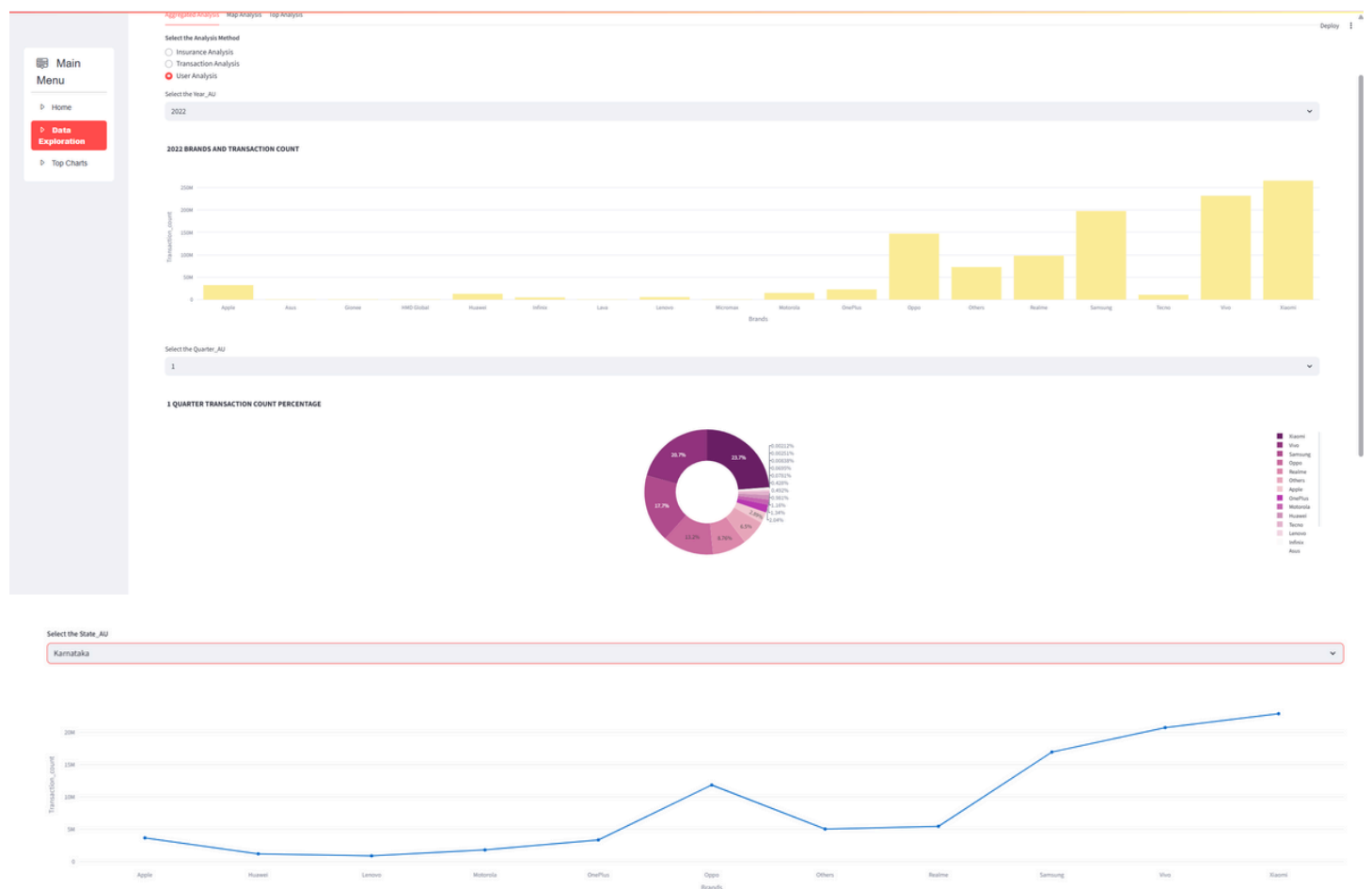
- **Android Dominance:** The top brands by transaction count are overwhelmingly Android manufacturers, especially Xiaomi, Vivo, Samsung, and Oppo.
- **Xiaomi Leads:** Xiaomi shows the highest transaction count among all brands, indicating a very large user base or highly active users on PhonePe.
- **Strong Mid-Range Presence:** Brands like Vivo, Samsung, and Oppo also have very high transaction counts, suggesting a strong user base among mid-range smartphone users.
- **Low Apple Usage:** Apple (iOS) has a comparatively negligible transaction count, implying a much smaller user base for PhonePe on iOS devices, or

perhaps lower transaction frequency per user.
- **"Others" Significant:** The "Others" category represents a notable portion of transactions, indicating activity from various smaller or less common brands.
- **Yearly View:** The "Select the Year: 2022" filter confirms this is an annual aggregated view.
- **Dominant Top 3:** Xiaomi (28.7%), Vivo (26.7%), and Samsung (17.7%) collectively account for a very large majority of transaction counts in Q1.
- **Consistent Leadership:** This reinforces the dominance of these three brands, mirroring the annual trend seen in the bar chart.
- **Oppo's Contribution:** Oppo also has a significant share (11.7%).
- **Long Tail:** The remaining brands contribute much smaller percentages, highlighted by the many small slices in the donut chart.
- **Karnataka Mirrors National Trend:** In Karnataka, Xiaomi still leads in transaction count, followed by Vivo and Samsung, aligning with the overall national pattern seen in the annual chart.
- **Oppo's Strength in Karnataka:** Oppo shows a significant peak in Karnataka, suggesting strong adoption in this state.
- **Lower Apple/Huawei Usage:** Similar to the overall trend, Apple and Huawei show relatively low transaction counts in Karnataka.
- **Linear/Increasing Trend:** The line chart broadly shows an increasing trend in transaction counts from left to right (lower-performing brands to higher-performing brands).
- **State-Specific View:** This chart allows for granular analysis of brand performance within a specific state.

2. MAP ANALYSIS

The map-based analysis of PhonePe data consistently highlights pronounced geographic disparities in usage across India. Southern and Western states, particularly Karnataka and Maharashtra, are undisputed leaders in both transaction volume/value and insurance adoption. Within these states, activity is heavily centralized around major urban hubs like Bengaluru Urban district, which alone accounts for an overwhelming majority of transactions. While Andaman & Nicobar shows a more even distribution among its few districts, this is an exception.

Furthermore, user analysis reveals a significant volume of app opens (engagement) far exceeding the number of registered users, indicating high individual user activity. This engagement, too, is concentrated in the same leading states and districts. In essence, PhonePe's digital footprint is deep and highly active in specific urbanized regions of South and West India, suggesting both successful penetration in these areas and potential for growth in other, less digitally active, parts of the country.

2.1. INSURANCE ANALYSIS
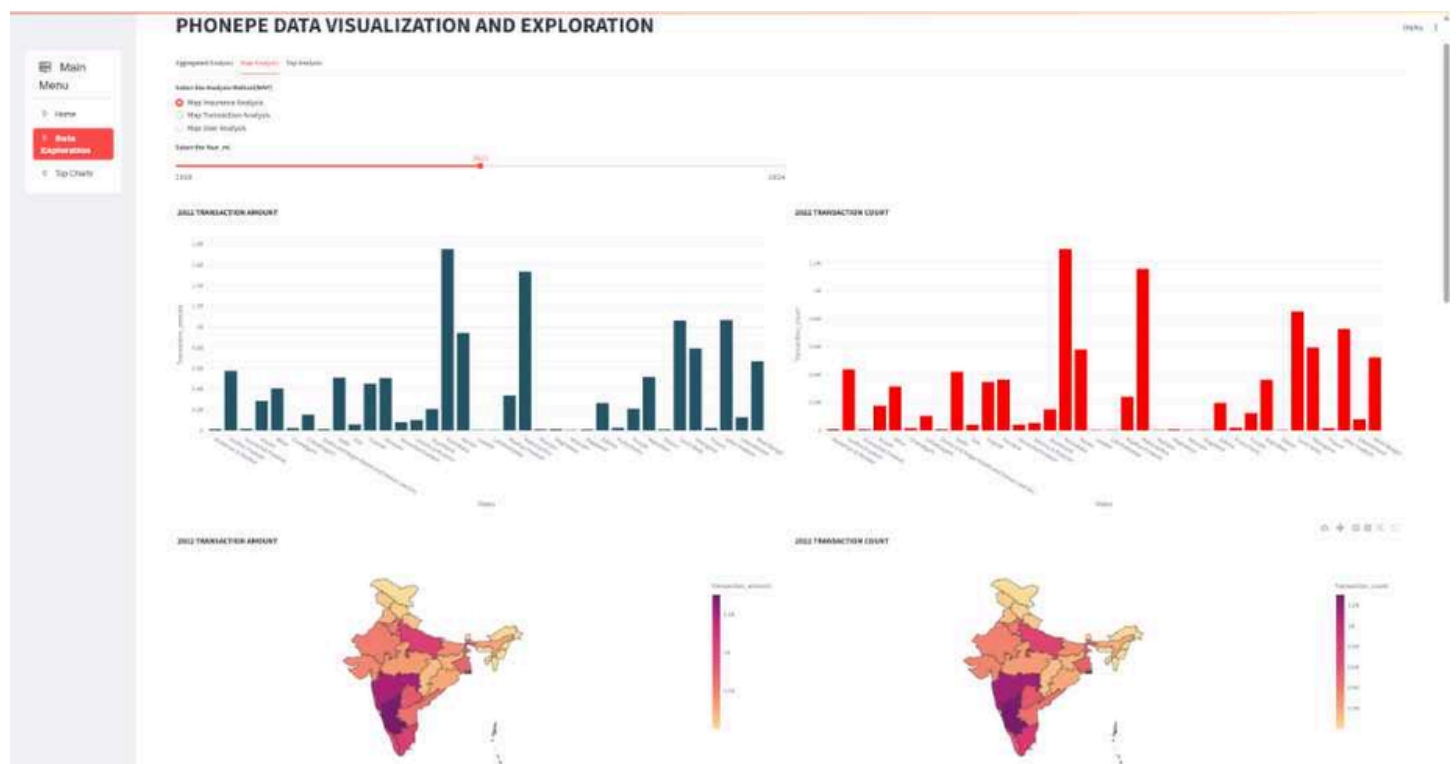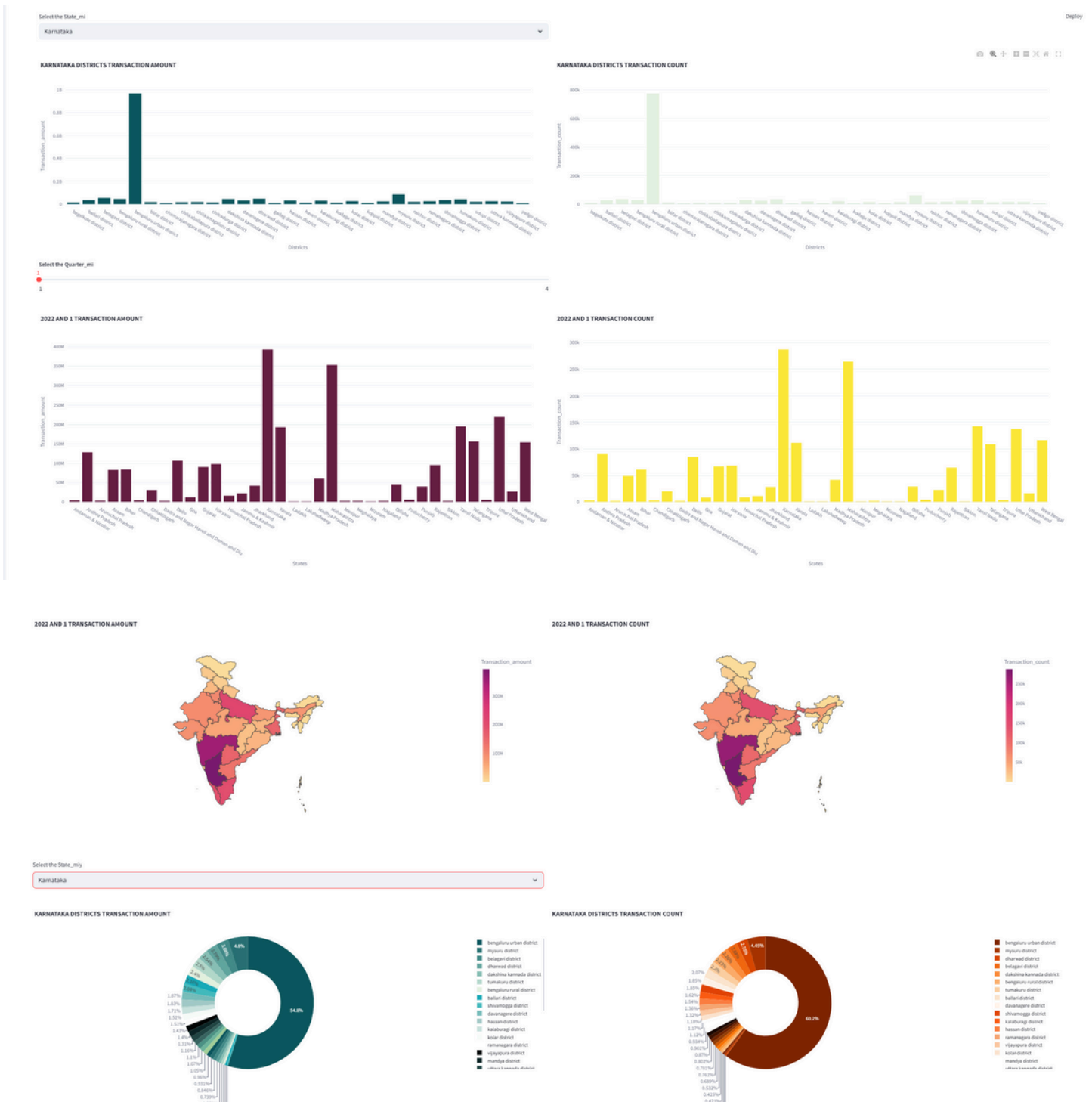
- **Regional Dominance:** Southern states, particularly Karnataka and Maharashtra, continue to show the highest transaction amounts and counts in 2022. This reinforces a consistent trend across different analyses.
- **Strong Correlation:** States with higher transaction amounts generally also have higher transaction counts, indicating active digital payment usage.
- **Nationwide Overview:** The choropleth maps visually confirm the uneven distribution of digital transactions across India.
- **Quarterly Consistency:** The leading states in transaction amount and count (Karnataka, Maharashtra, etc.) maintain their dominance even when focusing on Q1 2022.
- **Granular Insight:** This view allows for identifying specific quarterly performance and short-term trends within the overall annual data.

- **Bengaluru Urban Hegemony: Bengaluru Urban district** is an overwhelming outlier, single-handedly dominating both transaction amount and count within Karnataka. It accounts for **94.8% of the transaction amount** and **95.2% of the transaction count** in the state.
- **Highly Centralized Activity:** This indicates an extremely centralized digital transaction ecosystem within Karnataka, with the vast majority of activity occurring in and around Bengaluru.
- **Marginal Contribution from Other Districts:** All other districts in Karnataka contribute very minimally to the total transaction volume and value, highlighting a significant disparity.
- **Continued Southern Leadership:** The pattern of higher transaction amounts and counts in southern states persists into Q3 2022. This suggests sustained high activity in these regions throughout the year.
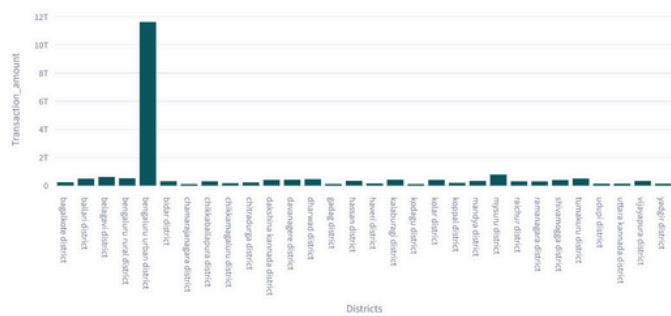
2.2. TRANSACTION ANALYSIS

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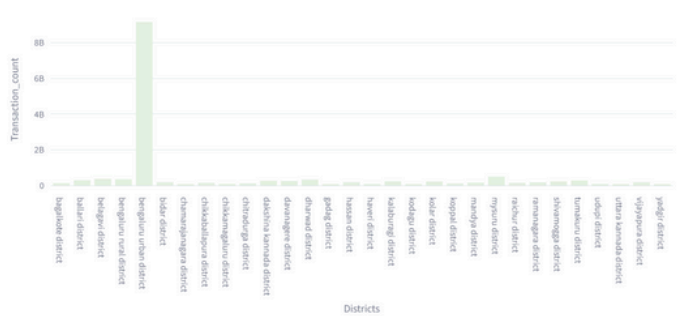

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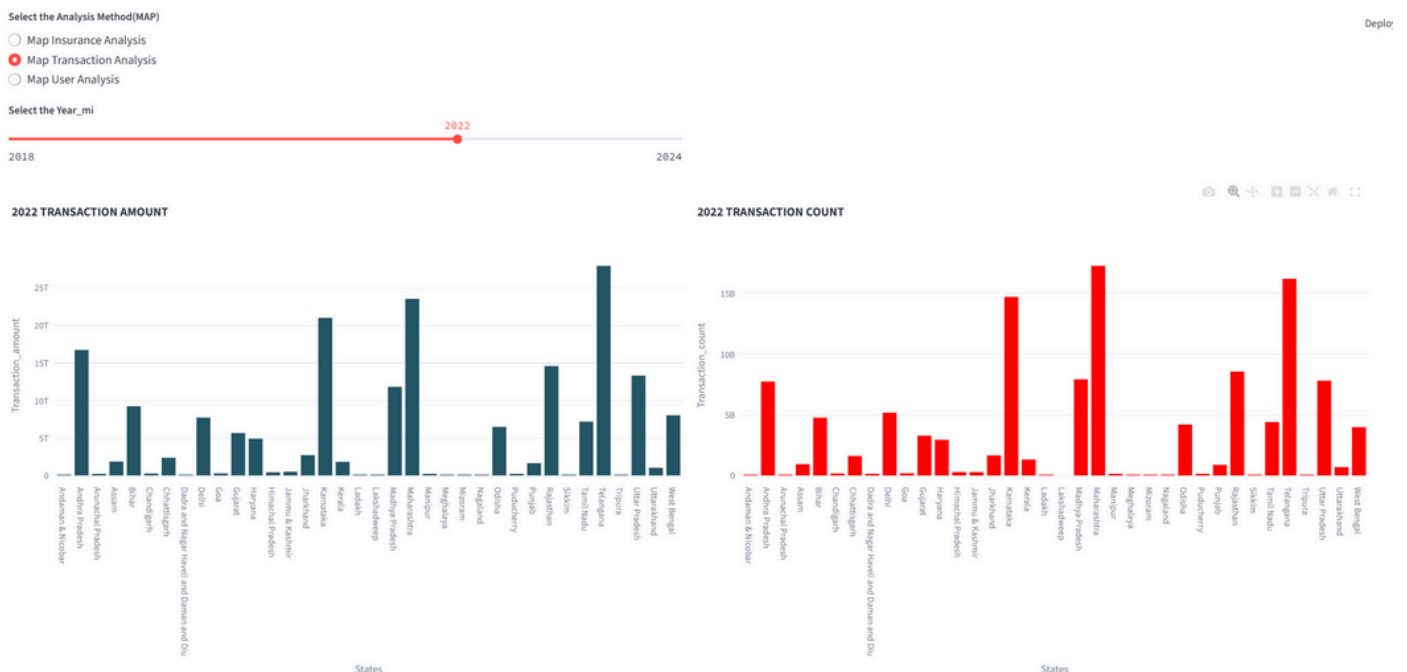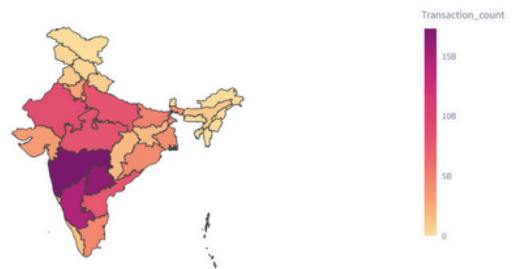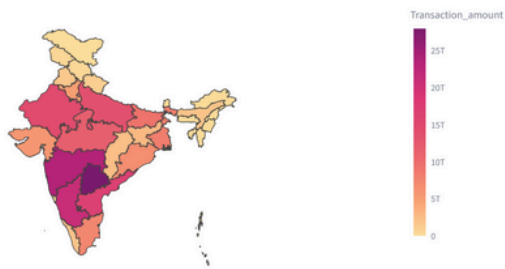
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Karnataka

KARNATAKA DISTRICTS TRANSACTION AMOUNT

KARNATAKA DISTRICTS TRANSACTION COUNT

Select the Quarter_mi

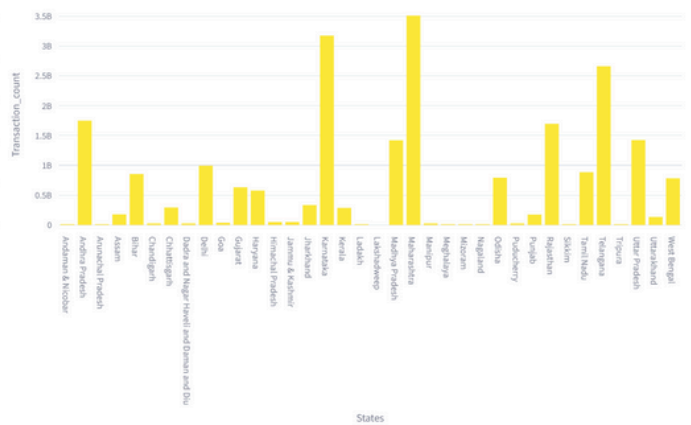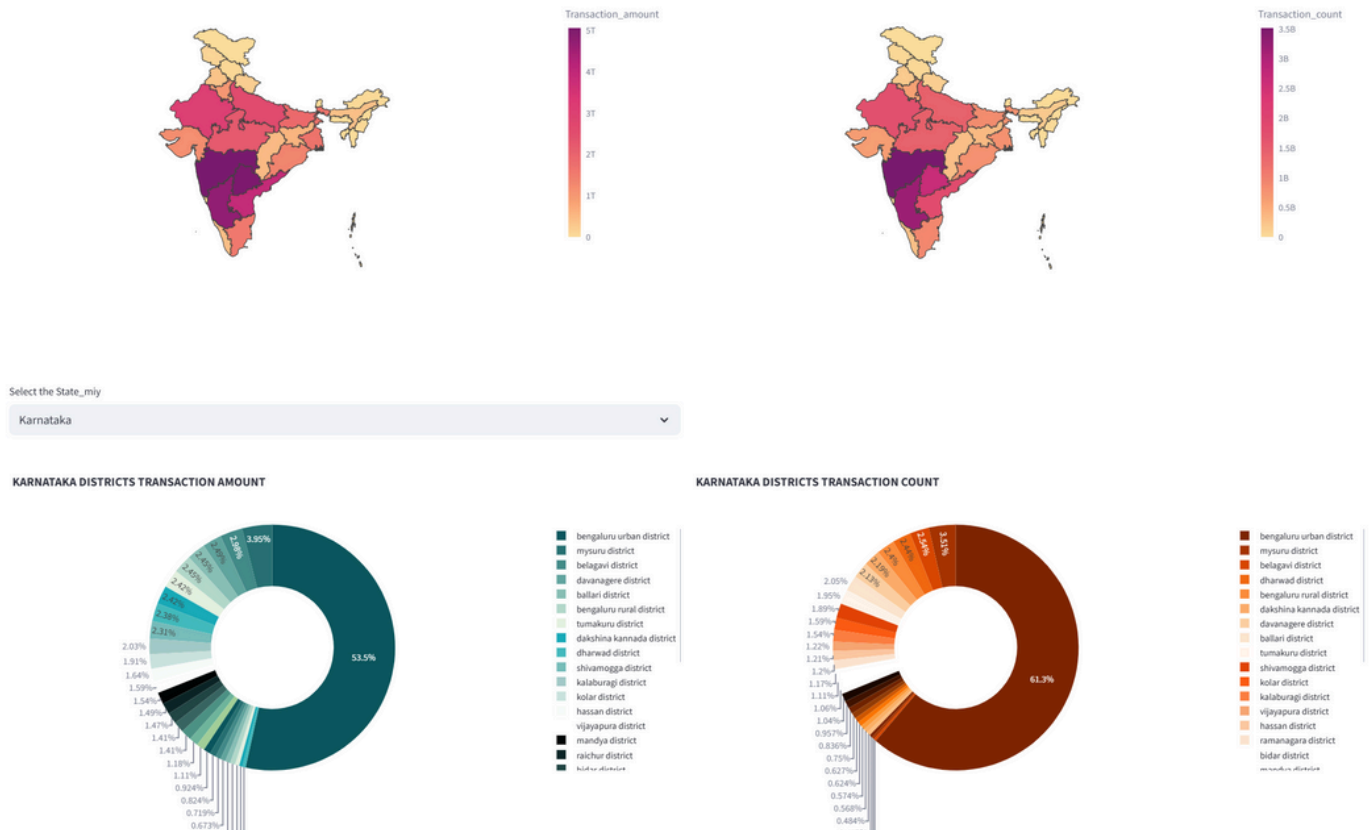1

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2022 AND 1 TRANSACTION AMOUNT

2022 AND 1 TRANSACTION COUNT

2022 AND 1 TRANSACTION AMOUNT

2022 AND 1 TRANSACTION COUNT

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Karnataka

KARNATAKA DISTRICTS TRANSACTION AMOUNT
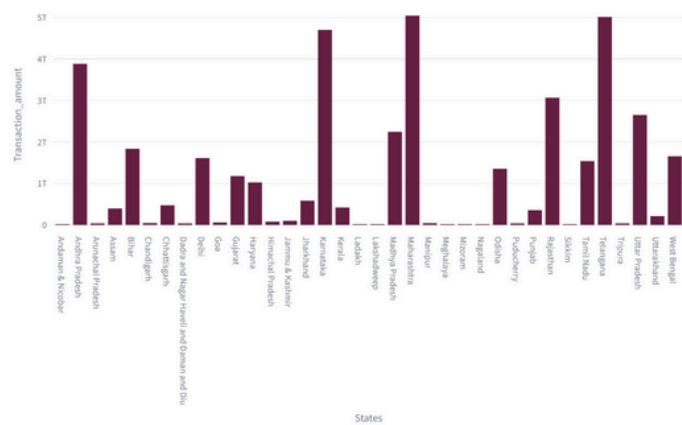
KARNATAKA DISTRICTS TRANSACTION COUNT

- **Southern Dominance Persists:** States like Maharashtra, Karnataka, and Tamil Nadu show the highest transaction amounts and counts in 2022, reinforcing the trend of strong digital payment adoption in South India.
- **Correlation:** A clear positive correlation exists between transaction amount and count across states, indicating high volume often corresponds to high value.
- **Significant Regional Disparities:** Many northern and northeastern states exhibit significantly lower transaction activity compared to the leading southern states.
- **Quarterly Consistency:** The general pattern of high transaction activity in southern states (Maharashtra, Karnataka, Tamil Nadu) remains consistent in Q1 2022.
- **Granular Insights:** The quarterly view allows for tracking seasonal or shorter-term fluctuations in transaction volumes and values across different states.
- **Bar Chart & Map Consistency:** Both the bar charts and choropleth maps for Q1 visually represent similar regional concentrations of transactions.
- **Bengaluru Urban Dominance (Extreme):** Within Karnataka, **Bengaluru Urban district overwhelmingly dominates** both transaction amount (93.3% in Image 1) and count (91.9% in Image 1, also visibly the tallest bar in Image 2).
- **Highly Centralized Activity:** This indicates that the vast majority of digital transactions in Karnataka are concentrated in the Bengaluru urban area, with other districts contributing minimally.
- **Significant Imbalance:** The donut charts clearly illustrate this extreme concentration, showing a tiny slice for all other districts combined.
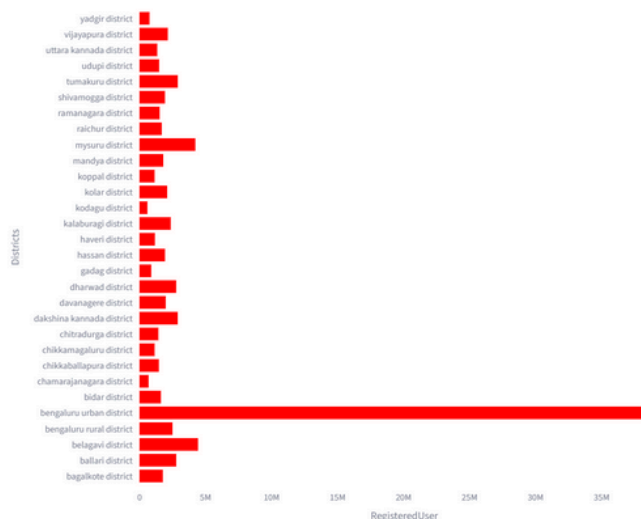
2.3. USER ANALYSIS

2022 REGISTERED USER AND APPOPENS
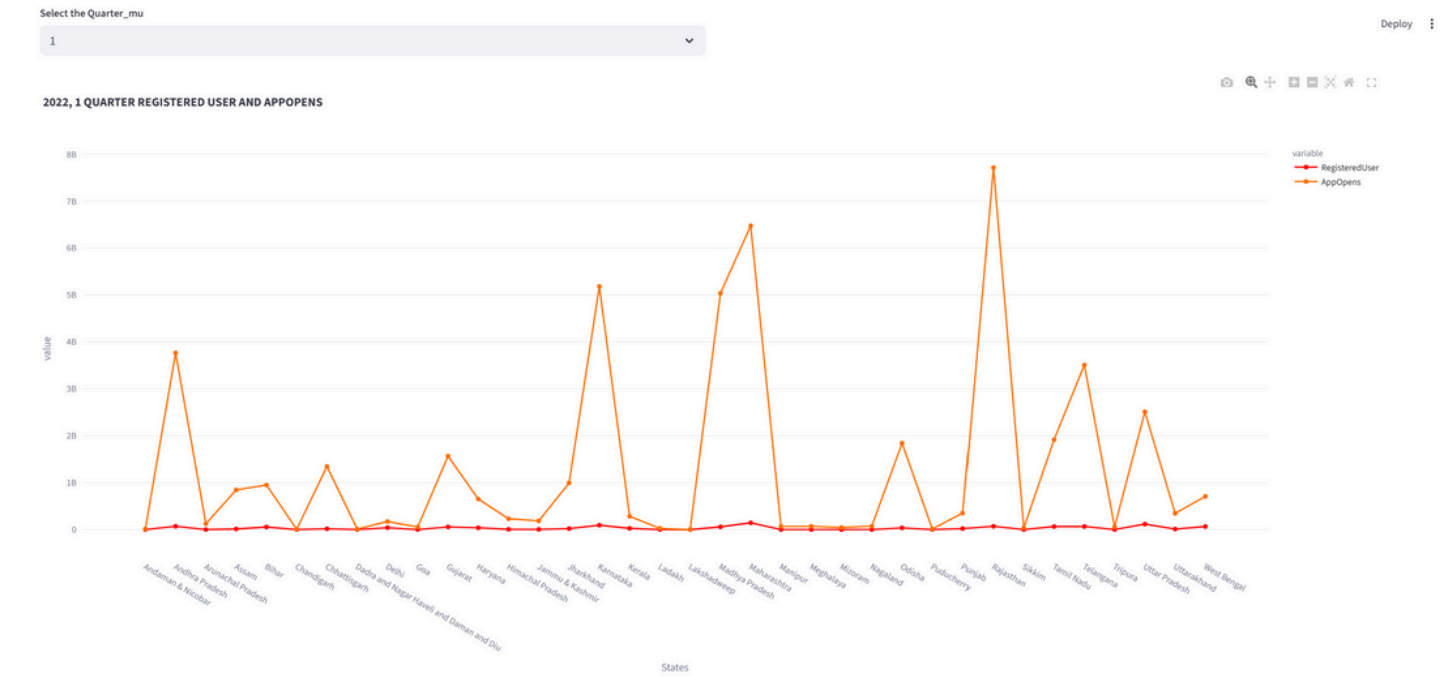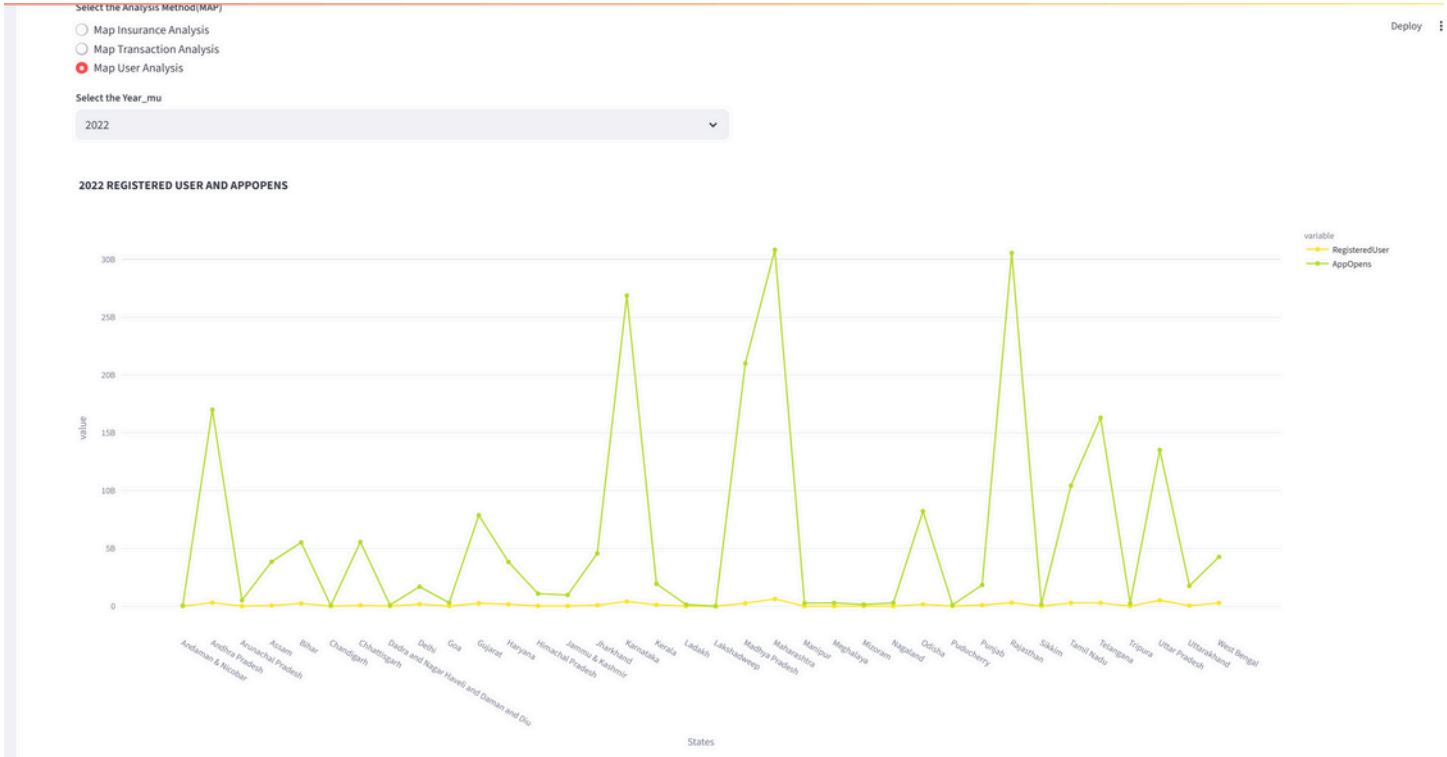
2022, 1 QUARTER REGISTERED USER AND APPOPENS

KARNATAKA REGISTERED USER

KARNATAKA APPOPENS

- **Disparity between Registered Users and App Opens:** There's a significant difference in scale between "RegisteredUser" and "AppOpens." AppOpens are orders of magnitude higher than Registered Users, implying that each registered user opens the app many times.
- **High App Opens in Key States:** Maharashtra, Uttar Pradesh, and Karnataka show exceptionally high "AppOpens" counts, indicating very active user engagement in these states.
- **Low Registered Users Everywhere:** Compared to the high app opens, the actual number of "RegisteredUser" is relatively low across all states, suggesting a large number of app opens per registered user.
- **Correlation:** States with higher registered users generally correlate with higher app opens.
- **Consistent Engagement (Q1):** The states with high "AppOpens" in Q1 2022 (e.g., Maharashtra, Uttar Pradesh, Karnataka) are consistent with the annual trend, suggesting sustained user activity.
- **Seasonal Patterns:** Quarterly analysis allows for identifying if app usage fluctuates throughout the year. The peaks in AppOpens are clearly visible.
- **Bengaluru Urban Dominance in Usage: Bengaluru Urban district** stands out significantly in both "RegisteredUser" and "AppOpens" in Karnataka. While it has a high number of registered users, its "AppOpens" count is exceptionally high, indicating very frequent usage by its user base.
- **High Engagement in Urban Centers:** Districts like Tumakuru and Kalaburagi also show relatively high "AppOpens" despite lower registered users compared to Bengaluru Urban, suggesting concentrated activity in certain urban/semi-urban areas.
- **Mismatch between Users and Opens:** Some districts have a relatively low number of registered users but still show a substantial amount of app opens, reinforcing the idea of high engagement per user.
- **Regional Imbalance within State:** Digital adoption and engagement are not uniform across all districts of Karnataka; they are heavily skewed towards certain areas.

3.TOP ANALYSIS

The "Top Analysis" consistently reveals **Maharashtra, Karnataka, and Tamil Nadu as the leading states** across insurance, general transactions, and user engagement metrics in 2022. These states demonstrate **high transaction amounts and counts**, indicating robust digital payment adoption. The analysis further highlights a **strong correlation between transaction value and volume**, reinforcing their established digital payment ecosystems. In terms of user base, these top states also show a **consistently large number of registered users and high app opens throughout the quarters**, suggesting sustained engagement. Overall, the data points to a concentrated and deeply integrated digital payment and financial services landscape in specific regions of South and West India.
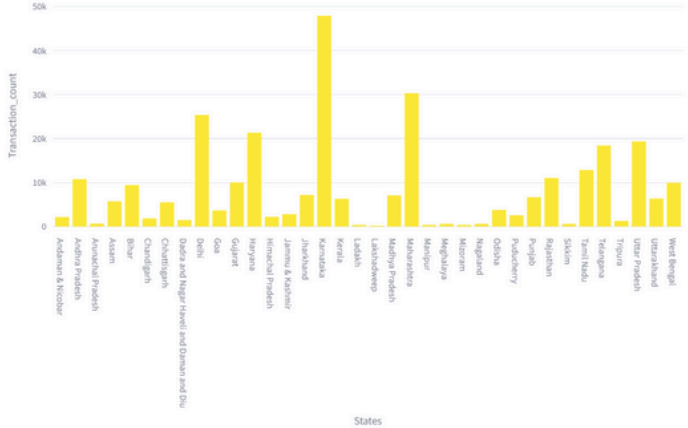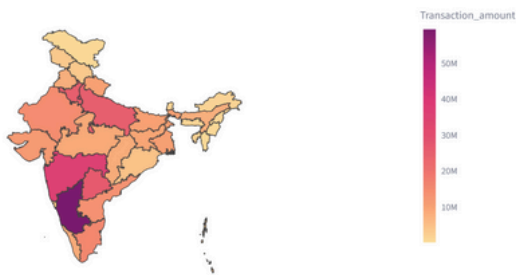
3.1. INSURANCE ANALYSIS
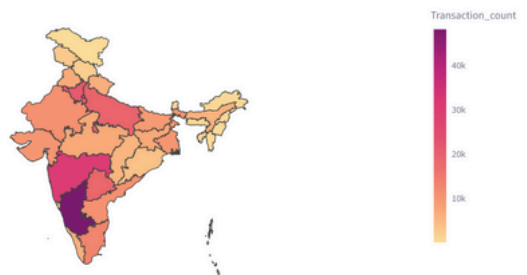
2022 AND 1 TRANSACTION AMOUNT
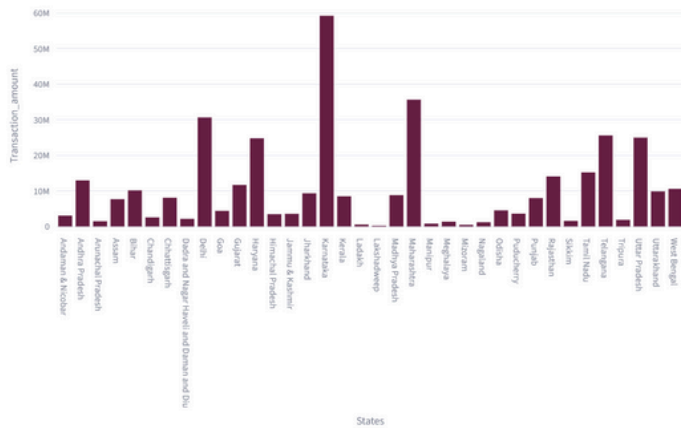
2022 AND 1 TRANSACTION COUNT

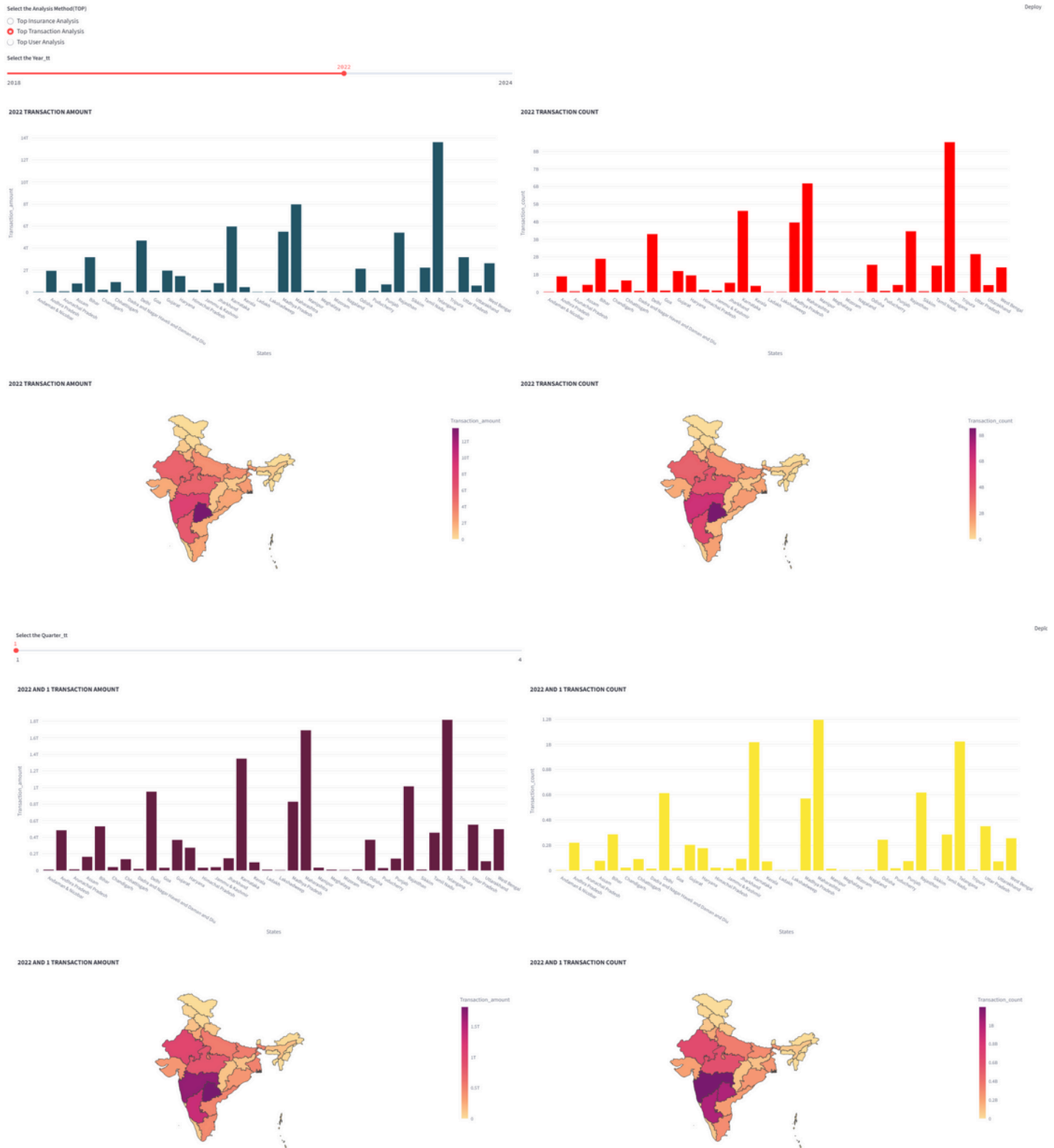**2022 AND 1 TRANSACTION AMOUNT**

2022 AND 1 TRANSACTION COUNT

- **Dominant Southern States:** Maharashtra, Karnataka, Tamil Nadu, and Andhra Pradesh/Telangana consistently show the highest transaction amounts and counts for insurance in 2022. This is clearly visible in both the choropleth maps (darker shades) and the bar charts (tallest bars).
- **Correlation of Amount and Count:** There's a strong positive correlation, meaning states with high insurance transaction values also have a high number of insurance transactions.
- **Significant Regional Disparities:** Many states, particularly in the northern and northeastern regions, have very low insurance transaction activity compared to the top performers.
- **Yearly View:** The "Select the Year: 2022" filter confirms this is an annual overview.
- **Consistent Leadership (Q1):** The top states identified for the full year 2022 (Maharashtra, Karnataka, Tamil Nadu) maintain their leading positions in Q1 for both insurance transaction amount and count.
- **Quarterly Breakdown:** The ability to filter by quarter (currently Q1) provides more granular insight into seasonal or short-term trends in insurance uptake.
- **Proportionality:** The Q1 values are, as expected, smaller than the annual totals, but the relative ranking of states remains largely similar.
- **Madhya Pradesh Spike:** Madhya Pradesh also shows a relatively high transaction count in Q1 compared to its overall annual amount, which might indicate specific quarterly campaigns or regional variations.

3.2. TRANSACTION ANALYSIS

2022 TRANSACTION AMOUNT

2022 TRANSACTION COUNT

2022 TRANSACTION AMOUNT

2022 TRANSACTION COUNT

2022 AND 1 TRANSACTION AMOUNT

2022 AND 1 TRANSACTION COUNT

2022 AND 1 TRANSACTION AMOUNT

2022 AND 1 TRANSACTION COUNT

- **Top States Dominate:** Maharashtra and Karnataka clearly lead in both transaction amount and count for 2022, followed by other southern states like Tamil Nadu and Andhra Pradesh/Telangana.
- **Correlation of Amount and Count:** A strong positive correlation is evident between the total transaction amount and the number of transactions across states.

- **Regional Imbalance:** Significant variations exist across India, with activity heavily concentrated in a few key states, indicating uneven digital payment adoption.
- **Annual Overview:** This view provides a high-level summary of transaction performance by state for the entire year 2022.
- **Consistent Leaders in Q1:** The same leading states (Maharashtra, Karnataka, Tamil Nadu, Andhra Pradesh/Telangana) maintain their dominance in Q1 2022 for both transaction amount and count.
- **Quarterly Granularity:** This allows for a more detailed understanding of transaction patterns within the year, confirming sustained activity in the top regions.
- **Visual Consistency:** Both bar charts and choropleth maps consistently show higher transaction activity in the southern part of India for Q1.
- **Scale Differences:** As expected, Q1 figures are proportionally lower than the annual totals, but the relative state rankings remain similar.

3.3. USER ANALYSIS
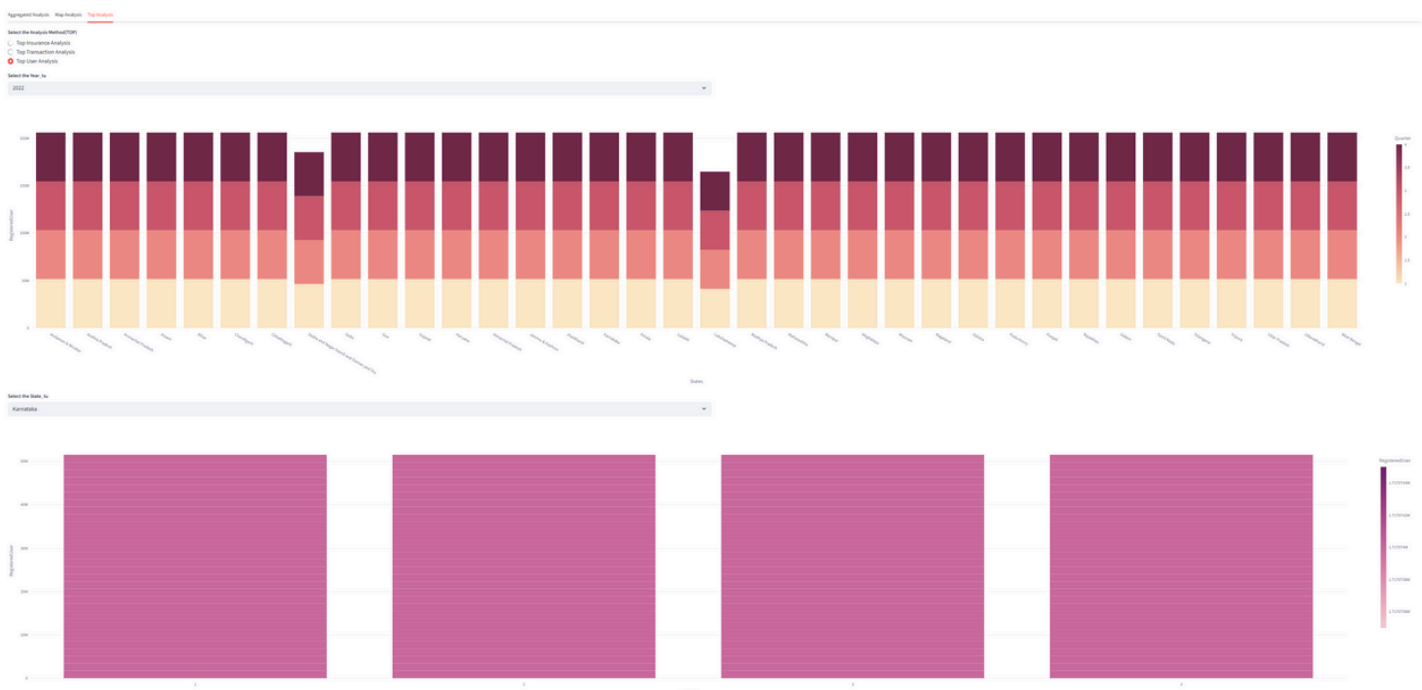
- **Consistent Growth (Likely):** The stacked bar chart, showing "RegisteredUser" broken down by quarter for each state, suggests a generally increasing trend in registered users over the quarters (darker shades on top indicating later quarters).
- **Strong User Base in Key States:** States like Maharashtra, Karnataka, and Uttar Pradesh likely have a large overall user base, as indicated by the total height of their stacked bars.
- **Quarterly Distribution:** The consistent stacking pattern across most states suggests that user registration is spread fairly evenly throughout the year, with perhaps slight variations in different quarters.

- **Year Selector:** The "Select the Year: 2022" confirms this analysis is for the current year.
- **Steady Growth/Stable Base in Karnataka:** For Karnataka specifically, the four bars representing quarters 1 through 4 show a very similar height. This indicates either a relatively consistent rate of new user registrations each quarter, or a stable and high base of registered users throughout the year, with less dramatic quarter-on-quarter growth compared to what might be seen in nascent markets.
- **High User Count:** The y-axis scale (up to 200M) for Karnataka's registered users indicates a very large existing user base in this state.
- **Uniformity:** The visual uniformity across quarters for Karnataka suggests that user acquisition or retention in this state is stable and less prone to large quarterly fluctuations, at least in terms of total registered users.
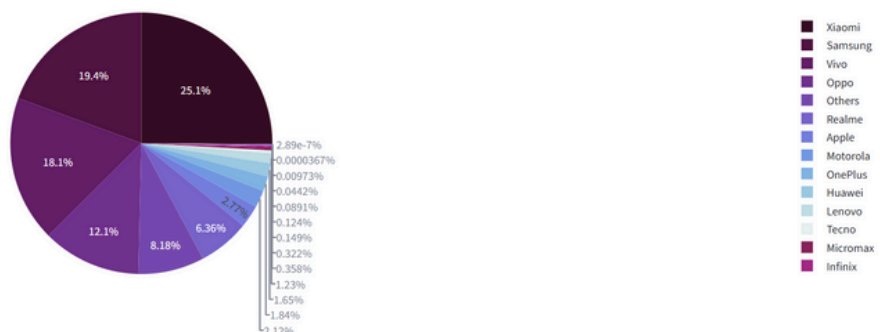
CASE STUDIES (TOP CHARTS)

## 1) TOP BRANDS OF MOBILES USED

- **Dominance of Top 3:** Xiaomi (25.1%), Samsung (19.4%), and Vivo (18.1%) collectively account for a significant majority (over 62%) of all transactions, indicating their immense popularity among PhonePe users.
- **Strong Android Ecosystem:** The top contributing brands are almost exclusively Android manufacturers, reinforcing the pervasive presence of Android devices in the PhonePe user base.
- **Oppo's Significant Share:** Oppo also holds a substantial share at 12.1%, making it another key player.
- **Long Tail of Minor Brands:** A large number of other brands (Realme, Apple, Motorola, OnePlus, Huawei, Lenovo, Tecno, Micromax, Infinix, and "Others") contribute much smaller percentages, often in the single digits or even fractions of a percent.
- **Limited Apple Presence:** Apple's share is remarkably small (2.77%), suggesting a very low adoption rate of PhonePe among iPhone users compared to Android users.
- **"Others" Category is Notable:** The "Others" category at 8.18% indicates that a diverse range of less common or niche brands collectively hold a meaningful portion of transactions.

2) STATES WITH LOWEST TRANSACTION AMOUNT

LOWEST TRANSACTION AMOUNT and STATES
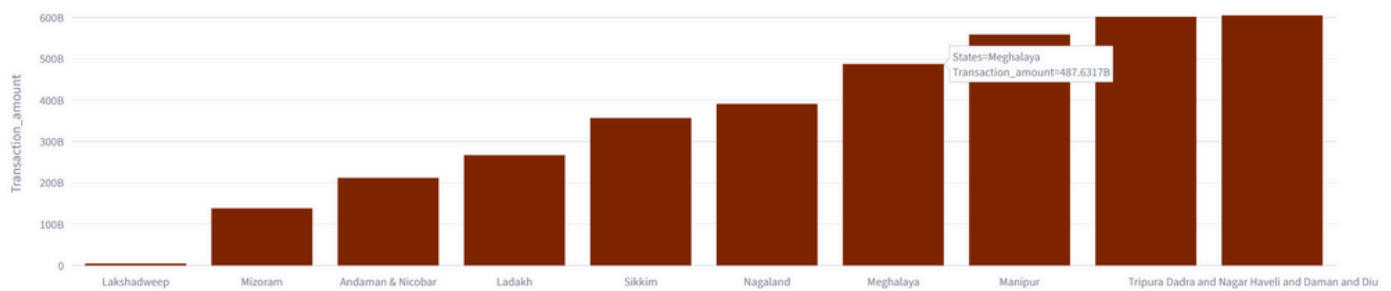
- **Lowest Performers:** Lakshadweep has the absolute lowest transaction amount, followed by Mizoram, Andaman & Nicobar, and Ladakh.
- **North-East/UT Concentration:** The majority of states/UTs with the lowest transaction amounts are from the Northeastern region (Meghalaya, Manipur, Nagaland, Sikkim) or are Union Territories (Lakshadweep, Andaman & Nicobar, Ladakh, Tripura Dadra and Nagar Haveli and Daman and Diu).
- **Significant Disparity:** The transaction amounts for these lowest-performing states are dramatically lower than the high-performing states observed in previous analyses (e.g., hundreds of millions/billions vs. hundreds of thousands/tens of millions).
- **Scale of "Lowest":** Even among the lowest, there's a range; for example, Meghalaya's transaction amount is around ₹487 million, while Lakshadweep's is almost negligible in comparison.

3) TOP 10 DISTRICTS OF HIGHEST TRANSACTION AMOUNT

TOP 10 DISTRICTS OF HIGHEST TRANSACTION AMOUNT

- **Bengaluru Urban Dominance:** Bengaluru Urban district is the clear leader, accounting for over a quarter (26.2%) of the transaction amount among the top 10 districts. This reinforces its status as a major digital payment hub.
- **Hyderabad & Pune Significant:** Hyderabad (15.7%) and Pune (12.8%) follow, indicating other strong urban centers for digital transactions.
- **Clustering in Tech Hubs:** The top districts (Bengaluru Urban, Hyderabad, Pune, Jaipur, Rangareddy, Medchal Malkajgiri, Visakhapatnam) are predominantly major cities and IT/business hubs, suggesting a correlation between economic activity/urbanization and digital transaction volume.

- **Long Tail of Top 10:** While the top 3 are strong, the remaining 7 districts contribute much smaller individual percentages (all under 10%), highlighting the concentration of value in the very top districts.
- **Southern/Western Bias (within top districts):** A significant number of these top districts are located in the Southern (Bengaluru, Hyderabad, Visakhapatnam, Guntur, Krishna) and Western (Pune, Jaipur, Rangareddy, Medchal Malkajgiri) regions of India, consistent with earlier state-level observations.
- **Patna as an Outlier:** Patna district is the only one from North India making it into this top 10, indicating some significant digital transaction activity there despite the overall lower state-level performance in the north.

4)TOP 10 DISTRICTS OF LOWEST TRANSACTION AMOUNT

TOP 10 DISTRICTS OF LOWEST TRANSACTION AMOUNT

Legend:
- siaha district
- saitual district
- pherzawl district
- noklak district
- eastern west khasi hills district
- shamator district
- hnahthial district
- khawzawl district
- tseminyu district
- niuland district

Pie chart values: 27.5%, 16.1%, 13.3%, 11.2%, 10.1%, 6.73%, 5.85%, 4.72%, 4.19%, 0.216%

- **Siaha District is Lowest:** Siaha district has the lowest transaction amount, representing 27.5% of the total for these bottom 10 districts.
- **Northeastern Concentration:** All the districts listed in this "Top 10 Districts of Lowest Transaction Amount" are from the Northeastern states (Mizoram, Nagaland, Meghalaya), reinforcing the low digital transaction activity in that region.
- **Even Distribution Among Low Performers:** Unlike the "Top Districts of Highest Transaction Amount" which showed extreme dominance by one district, these lowest-performing districts have a more even, albeit still low, distribution among themselves, with no single district overwhelmingly standing out.
- **Marginal Overall Contribution:** Even combined, the transaction amounts from these districts would be minuscule compared to the high-performing districts like Bengaluru Urban.

5) TOP 10 STATES WITH APPOPENS

Top 10 States With AppOpens
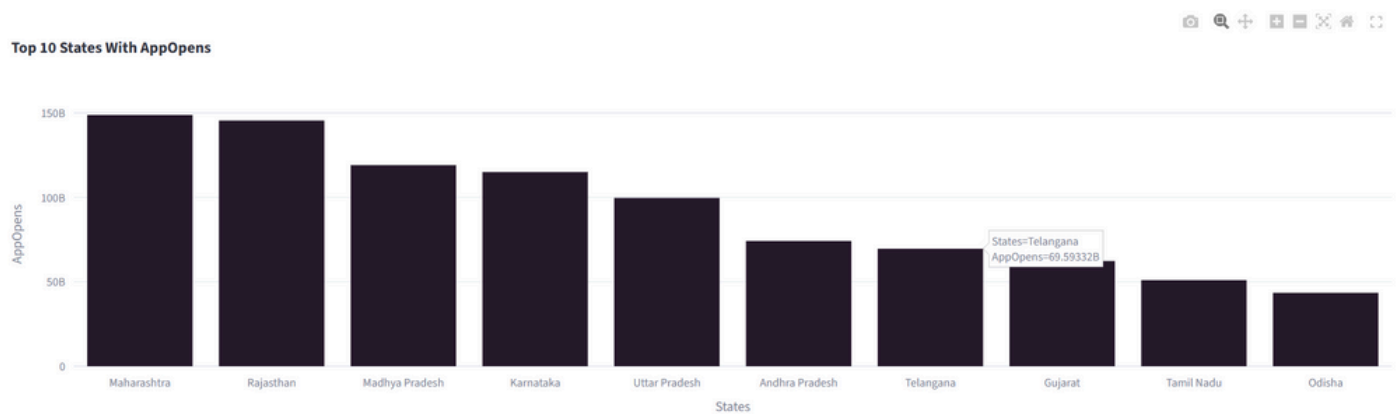
- **High Engagement Leaders:** Maharashtra and Rajasthan lead significantly in AppOpens, indicating a very active user base in these states.
- **Strong Southern & Northern Presence:** Karnataka and Uttar Pradesh also show high AppOpens, showcasing strong user engagement across both southern and northern regions.
- **Top 5 Dominate:** The top five states (Maharashtra, Rajasthan, Madhya Pradesh, Karnataka, Uttar Pradesh) account for a large portion of overall app engagement.
- **Regional Variation in Engagement:** While some states like Telangana have a decent number of app opens (around 69 million), there's a noticeable drop-off from the top 5, showing varied user engagement levels across states.

6) LEAST 10 STATES WITH APPOPENS

lowest 10 States With AppOpens
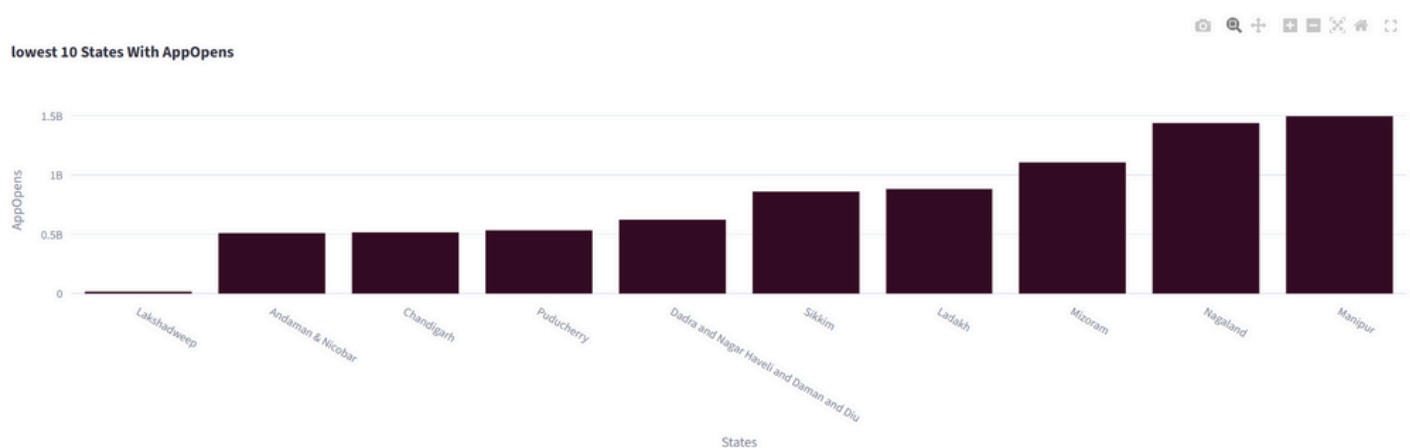
- **Lowest Engagement:** Lakshadweep has the absolute fewest AppOpens, indicating extremely low digital payment activity.
- **UTs and NE Dominate Lows:** The states/UTs with the lowest AppOpens are primarily Union Territories (Lakshadweep, Andaman & Nicobar, Chandigarh, Puducherry, Dadra and Nagar Haveli and Daman and Diu) and Northeastern states (Sikkim, Mizoram, Nagaland, Manipur).
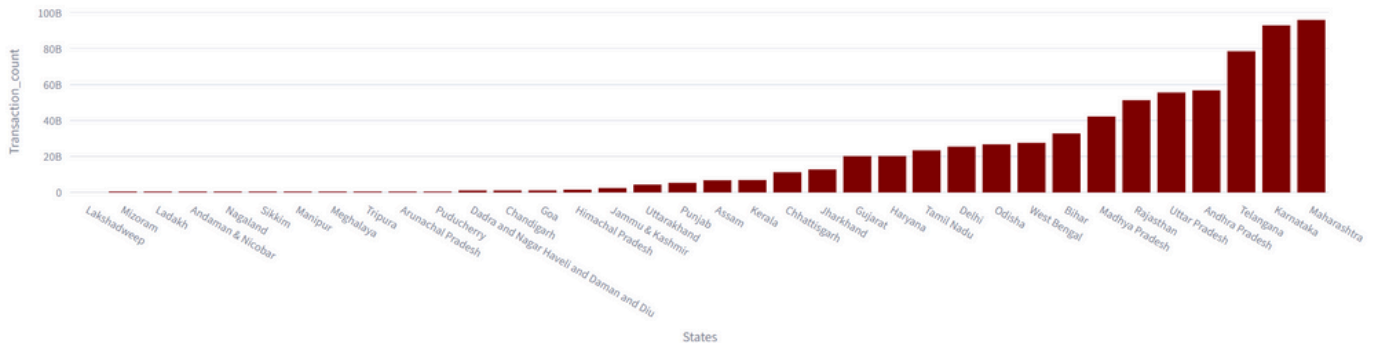
- **Vast Disparity:** The AppOpens in these states are in the hundreds of thousands to low millions, drastically lower than the hundreds of millions seen in the highest-performing states.

## 7) STATES WITH LOWEST TRANSACTION COUNT

- **Lowest Engagement:** Lakshadweep has the fewest AppOpens, significantly lower than any other state/UT.
- **UTs and NE Dominate Lows:** The states/UTs with the least AppOpens are primarily Union Territories (Lakshadweep, Andaman & Nicobar, Chandigarh, Puducherry, Dadra and Nagar Haveli and Daman and Diu) and Northeastern states (Sikkim, Mizoram, Nagaland, Manipur).
- **Vast Disparity:** AppOpens in these states range from almost zero (Lakshadweep) to around 1.5 million (Manipur), representing a massive gap compared to the top states which see hundreds of millions.

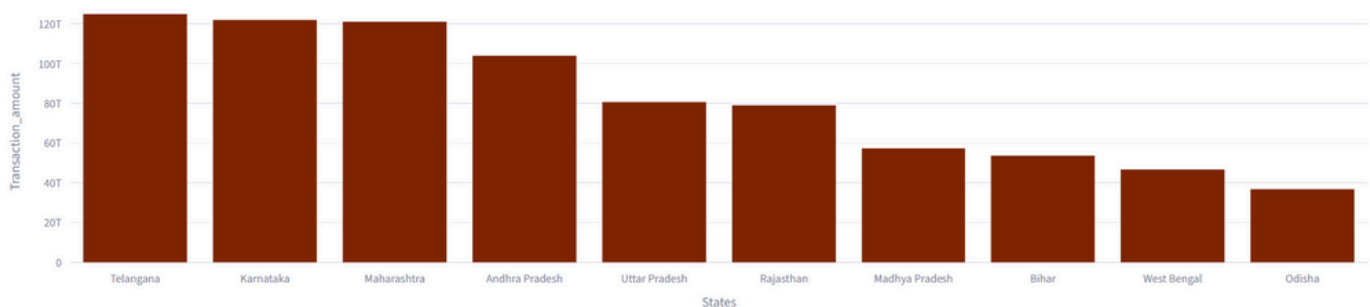## 8) STATES WITH HIGHEST TRANSACTION COUNT
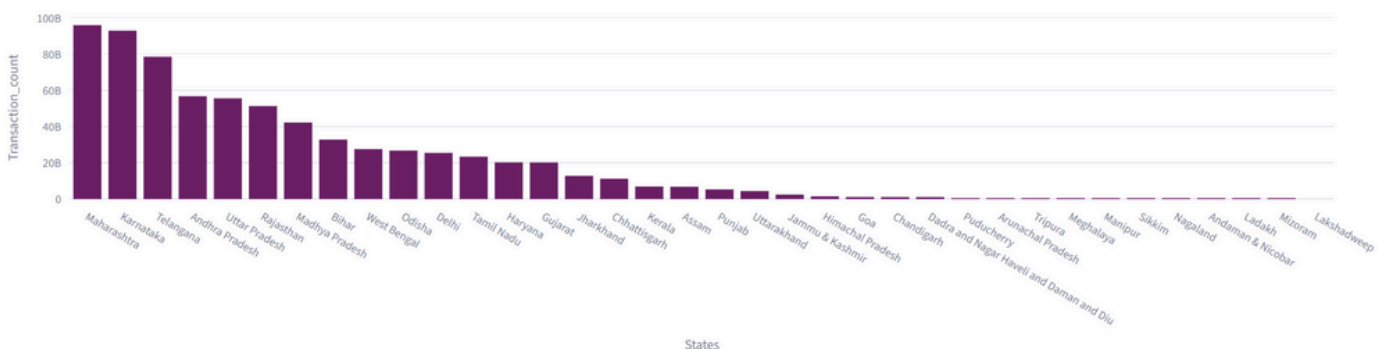
- **Maharashtra and Karnataka Lead:** Maharashtra and Karnataka overwhelmingly dominate in transaction count, indicating the highest volume of digital payments.
- **Southern Cluster Strong:** Telangana, Andhra Pradesh, and Uttar Pradesh also show high transaction counts, reinforcing the strong digital payment adoption in the South and a significant presence in the North.
- **Steep Drop-Off:** There's a sharp decline in transaction counts after the top few states, with many states having comparatively very low volumes.
- **Long Tail:** The chart clearly shows a "long tail" of states with minimal transaction counts, highlighting the concentrated nature of digital payment activity in India.
- **Northeastern & UTs at Bottom:** The states/UTs with the lowest transaction counts (Lakshadweep, Mizoram, Ladakh, etc.) are at the far right of this chart, having almost negligible activity compared to the leaders.
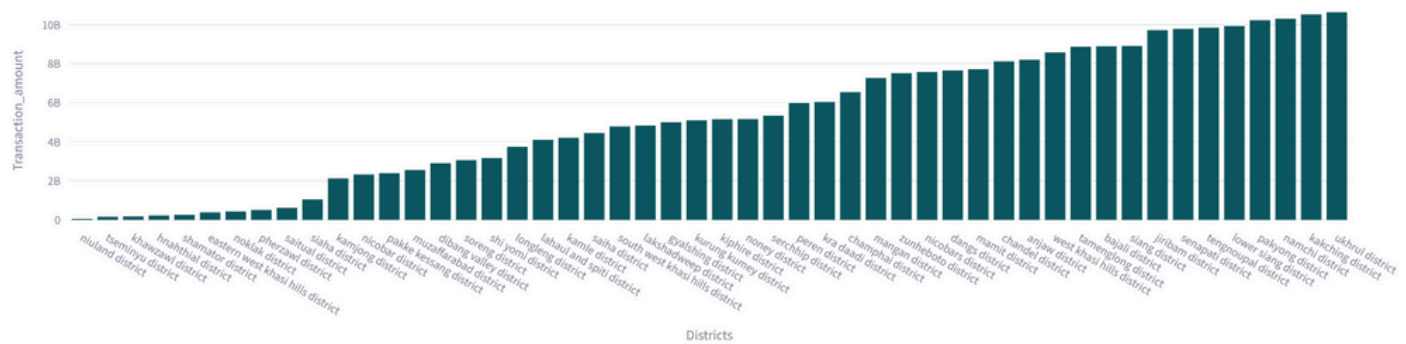
9) STATES WITH HIGHEST TRANSACTION AMOUNT

- **Telangana Leads by Amount:** Telangana surprisingly shows the highest transaction amount, slightly surpassing Karnataka and Maharashtra.
- **Southern Dominance in Value:** The top states by transaction amount are predominantly from the South (Telangana, Karnataka, Andhra Pradesh) and West (Maharashtra).
- **Uttar Pradesh & Rajasthan Notable:** Uttar Pradesh and Rajasthan also exhibit high transaction amounts, indicating significant economic activity or digital adoption in these northern and western states.
- **Gradual Decline:** There's a relatively gradual decline in transaction amount as you move down the top 10 list, with Odisha having the lowest among this group.

10) TOP 50 DISTRICTS WITH LOWEST TRANSACTION AMOUNT

DISTRICTS WITH LOWEST TRANSACTION AMOUNT

- **Extreme Lows in Northeast:** Districts from Northeastern states (like Tseminyu, Niuland, Noklak, Siaha, Pherzawl, etc.) consistently represent the absolute lowest transaction amounts, indicating minimal digital payment adoption in these regions.
- **Gradual Increase Within Lows:** Even among the lowest-performing districts, there's a visible, albeit slight, increase in transaction amounts from left to right, showing a spectrum of digital penetration within the less active areas.
- **Vast Disparity from Highs:** The maximum transaction amount for any district in this "lowest" category (e.g., Ukhrul district at over 10B) is still orders of magnitude lower than the top districts (like Bengaluru Urban, which was in the hundreds of billions or trillions in previous charts).

CONCLUSION

The aggregated data from 2020-2022 paints a clear picture of PhonePe's operations in India:

1. **Concentrated Dominance:** PhonePe's digital payment and financial services activity is heavily concentrated in specific regions, primarily the **Southern and Western states (e.g., Karnataka, Maharashtra, Telangana, Andhra Pradesh, Tamil Nadu)**. These states consistently lead across all metrics: transaction amount, transaction count, insurance adoption, and user engagement (AppOpens).
2. **Urban Hubs Drive Activity:** Within these leading states, major urban centers, especially **Bengaluru Urban, Hyderabad, and Pune, are overwhelmingly the largest contributors** to transaction volume and value. This highlights the critical role of urban, tech-savvy populations in driving digital payments.
3. **Android-Centric Ecosystem:** The user base is significantly skewed towards **Android devices**, with Xiaomi, Samsung, and Vivo dominating transaction counts. Apple's presence is notably minimal.
4. **Core Use Cases:** Peer-to-peer and merchant payments are the primary transaction types, indicating that PhonePe is heavily utilized for everyday financial interactions. Other services like recharges, bill payments, and especially financial services, constitute a much smaller portion of overall transactions.
5. **Vast Regional Disparities:** There's a stark contrast between the high-performing regions and the rest of India. Union Territories and Northeastern states consistently show the lowest activity across all metrics (transactions, AppOpens, insurance), indicating significant untapped potential and/or infrastructural/awareness challenges.
6. **High Engagement per User:** The high ratio of "AppOpens" to "Registered Users" suggests that existing users in active regions are highly engaged and frequently use the platform.

FUTURE WORK AND RECOMMENDATIONS

Based on these insights, here are several recommendations and areas for future work:

1. **Targeted Expansion in Underperforming Regions:**
   - **Market Research:** Conduct in-depth research in Northeastern states and Union Territories to understand barriers to adoption (e.g., internet penetration, smartphone ownership, digital literacy, local payment habits, language barriers).
   - **Localized Strategies:** Develop tailored marketing campaigns, user onboarding processes, and potentially localized features that address the specific needs and challenges of these regions.
   - **Partnerships:** Collaborate with local governments, community leaders, and regional banks to build trust and facilitate digital literacy programs.
   - **Agent Network:** Explore building a strong agent-assisted model in areas with low digital literacy to help users with their first few transactions.
2. **Diversify Service Adoption:**
   - **Promote Financial Services:** Given the low share of "Financial Services" transactions, PhonePe should actively promote and simplify access to products like mutual funds, digital gold, and insurance. This could involve:
     - **Educational Content:** In-app tutorials, short videos, and simplified explanations of financial products.
     - **Incentives:** Offering small incentives for first-time investments or insurance purchases.
     - **Cross-selling:** Leveraging existing transaction data to offer relevant financial products to users.
   - **Increase Bill Payment Penetration:** While present, "Recharges & Bill payments" could see further growth. Campaigns targeting specific utility providers or offering cashback on bill payments could be effective.
3. **Leverage Android Dominance & Explore iOS Growth:**
   - **Optimize Android Experience:** Continue to prioritize and optimize the user experience, features, and performance on dominant Android brands (Xiaomi, Samsung, Vivo, Oppo) to maintain loyalty.
   - **iOS User Acquisition Strategy:** Develop a specific strategy to attract and retain iOS users. This could involve:
     - Targeted marketing on iOS platforms.
     - Highlighting unique benefits for iPhone users (if any).
     - Addressing any potential platform-specific friction points.
4. **Deep Dive into Urban vs. Rural Dynamics:**
   - Further segmenting data by urban, semi-urban, and rural areas within high-performing states can yield more granular insights. This could reveal saturation points in urban areas and identify ripe opportunities in semi-urban and tier-2/3 cities.
5. **Refine Fraud Detection & Security:**
   - As transaction volumes grow, especially in new regions, robust and evolving fraud detection mechanisms are crucial to maintain user trust.

By strategically addressing these areas, PhonePe can build upon its strong foundation in leading regions while unlocking significant growth potential in currently under-served markets, further solidifying its position as a ubiquitous digital financial platform in India.