

1. Primary Hypothesis: Impact on Transaction Growth Trend

This is the core question your project aims to answer using forecasting models like ARIMA and Prophet.

- **Null Hypothesis (H0):** There is **no statistically significant difference** between the actual UPI transaction volume (and/or value) observed during and after the COVID-19 pandemic and the forecasted trend based on pre-pandemic data. This implies the pandemic did not alter the fundamental growth trajectory of UPI adoption.
 - **Alternative Hypothesis (Ha):** There is a **statistically significant difference** between the actual UPI transaction volume (and/or value) and the forecasted trend from pre-pandemic data. This suggests that the pandemic caused an acceleration in UPI adoption, deviating from its historical growth pattern.
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2. Hypothesis on Structural Change

This relates to the objective of detecting "structural shifts or change points."

- **Null Hypothesis (H0):** The time series of UPI transactions **does not have a structural break** corresponding to the onset of the COVID-19 pandemic. The underlying statistical properties of the data (like mean and variance) remained consistent over time.
 - **Alternative Hypothesis (Ha):** The time series of UPI transactions **exhibits a structural break** that coincides with the pandemic period, indicating a fundamental shift in digital payment behavior.
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3. Hypothesis on Average Transactions

This is a simpler test based on the methodology's mention of comparing central tendencies.

- **Null Hypothesis (H0):** There is **no significant difference** in the average monthly UPI transaction volume (and/or value) between the pre-pandemic period and the post-pandemic-onset period.
- **Alternative Hypothesis (Ha):** The average monthly UPI transaction volume (and/or value) is **significantly higher** in the period after the pandemic's onset compared to the pre-pandemic period.