PROJECT REPORT

Aadhaar Update Coverage & Biometric Compliance Analysis (2025)

State-wise Analysis of Aadhaar Enrollment, Updates, and Mandatory Biometric Compliance in India

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Tools Used: Power BI, DAX, Excel

Data Source: UIDAI Open Data

1. ABSTRACT

This project presents a comprehensive, state-wise analytical study of **Aadhaar enrolment, demographic updates, and mandatory biometric compliance** across India using **interactive Power BI dashboards**. Aadhaar biometric updates are mandatory at specific age milestones—particularly for children aged **5–17 years (Mandatory Biometric Updates – MBU)**—making timely compliance critical for identity accuracy and service accessibility.

The analysis is based on **UIDAI Open Data**, incorporating key metrics such as **total Aadhaar enrolment, total demographic updates, mandatory biometric updates (5–17 age group), and update intensity**, defined as the number of updates per enrolled resident. Data cleaning, transformation, and modelling were performed using **Power Query**, while **DAX measures** were developed to compute enrolment totals, update volumes, compliance percentages, and update intensity indicators.

Through **geographical maps, comparative bar charts, and Top-N visualizations**, the project identifies significant **regional disparities** in Aadhaar update behaviour. The findings reveal that Aadhaar updates are highly concentrated in a few populous states such as **Uttar Pradesh and Bihar**, while several states exhibit **high update intensity despite relatively lower enrolment volumes**. This indicates that biometric update demand is influenced not only by population size, but also by **administrative reach, demographic mobility, and compliance enforcement mechanisms**.

The study provides actionable insights into **where update compliance is strong, where gaps exist, and which states require targeted administrative intervention**. By transforming raw UIDAI data into meaningful visual insights, this project demonstrates how **data analytics and visualization can support evidence-based decision-making**, improve Aadhaar update coverage, and assist policymakers in enhancing biometric compliance across India.

2. PROBLEM STATEMENT

Aadhaar biometric updates are mandatory at specific age milestones; however, compliance levels vary significantly across Indian states. Understanding where update intensity is high or low relative to enrollment is crucial for identifying

administrative gaps and regional challenges. This project aims to analyze these patterns using data visualization and analytics\

3.**OBJECTIVES**

- To analyze state-wise Aadhaar enrollment and update volumes
- To evaluate mandatory biometric update compliance for age group 5–17
- To calculate update intensity (updates per enrollment) across states
- To identify states with high updates but low enrollment, and vice versa
- To present insights using interactive Power BI dashboards

4. DATA DESCRIPTION

Aspect	**Details**
Data Source	UIDAI Open Data
Geography	India (State-wise)
Time Period	Latest available year
Key Fields	State, Total Enrollment, Total Updates, Mandatory Biometric Updates (5–17)

5. METHODOLOGY

1. Collected Aadhaar enrollment and update data
2. Cleaned and structured data using Power Query
3. Created calculated measures using DAX:
    - Total Updates
    - Update Coverage %
    - Update Intensity (Updates per Enrollment)

4. Designed interactive Power BI dashboards:
    - Cards for KPIs
    - Bar charts for Top States
    - Map visualization for geographic comparison

6. DASHBOARD OVERVIEW

Page 1: Aadhaar Update Coverage Overview

Page 1 provides a high-level overview of Aadhaar update coverage across Indian states. The dashboard includes KPI cards summarising total updates and mandatory biometric compliance, a geographical map visualising enrolment distribution, and a Top 10 states bar chart highlighting update concentration.

- KPI cards display:
    - Total Aadhaar Updates
    - Mandatory Biometric Updates (5–17)
    - Biometric Update Percentage
- India map visualizes enrollment distribution
- Top 10 states bar chart highlights states dominating update volumes
- State slicer enables interactive filtering
- Aadhaar updates are highly concentrated in a few large states, with Uttar Pradesh and Bihar dominating overall update volumes.
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7. DASHBOARD ANALYSIS – PAGE 2

Page 2: State-wise Biometric Update Behaviour Analysis

Page 2 focuses on a detailed behavioural analysis of Aadhaar biometric update patterns across Indian states. This dashboard examines **update intensity**, defined as the number of updates per enrolled resident, to enable fair comparison across states with varying population sizes. By normalizing update activity against enrolment volume, the analysis highlights states exhibiting unusually high or low update frequency.

In addition, the dashboard compares **Mandatory Biometric Updates (MBU) for the 5–17 age group** against total enrolment, providing insights into compliance with UIDAI's age-based biometric update requirements. The comparative visualisations reveal that states with high enrolment do not always demonstrate proportionally high update intensity, indicating the influence of factors such as administrative reach, demographic mobility, and awareness levels.

A supporting tabular view is included to present exact state-wise values, ensuring transparency and facilitating data validation. Overall, this page helps identify states that may require targeted administrative intervention, infrastructure enhancement, or awareness initiatives to improve biometric update compliance.

8. KEY FINDINGS

- Northern and eastern states contribute significantly to Aadhaar updates
- High enrollment does not always mean high update intensity
- Smaller states sometimes show better biometric compliance efficiency
- Mandatory biometric updates require targeted administrative focus

9. CONCLUSION

This project demonstrates how data analytics and visualization can uncover hidden patterns in Aadhaar biometric compliance across India. By analyzing update intensity alongside enrollment, the study highlights regional disparities and operational challenges. The dashboard serves as an effective decision-support tool for policymakers and administrators.

10. TOOLS & TECHNOLOGIES

- Power BI

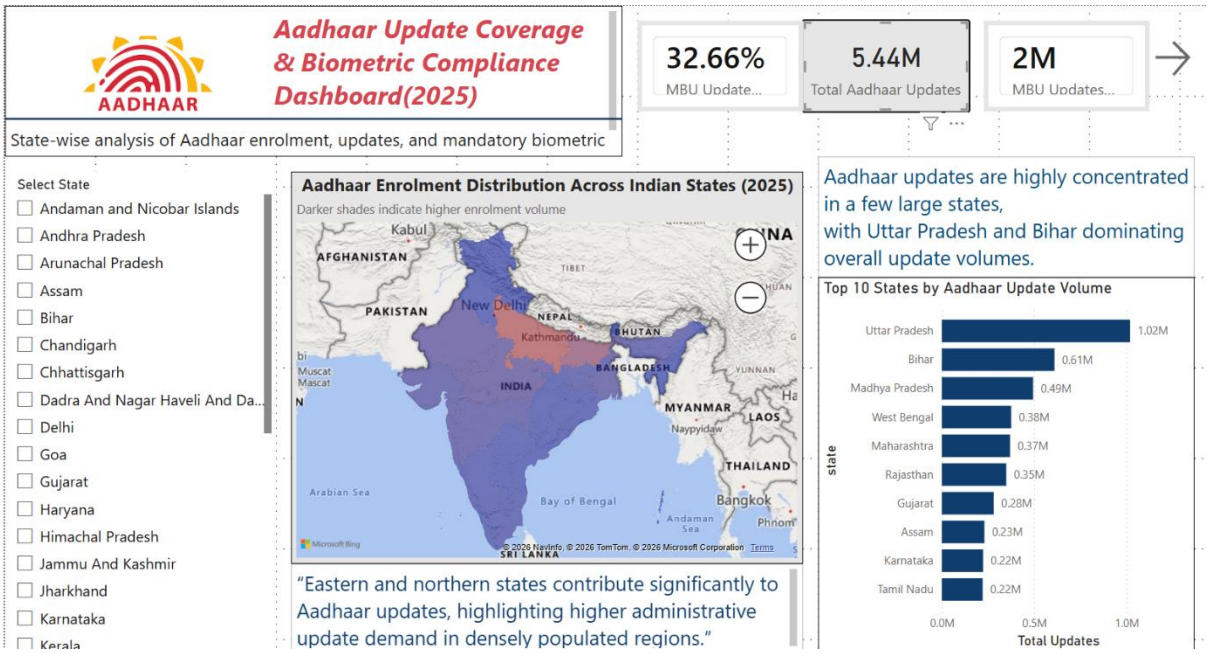
- DAX
- Power Query
- Excel
- UIDAI Open Data

11. FUTURE SCOPE

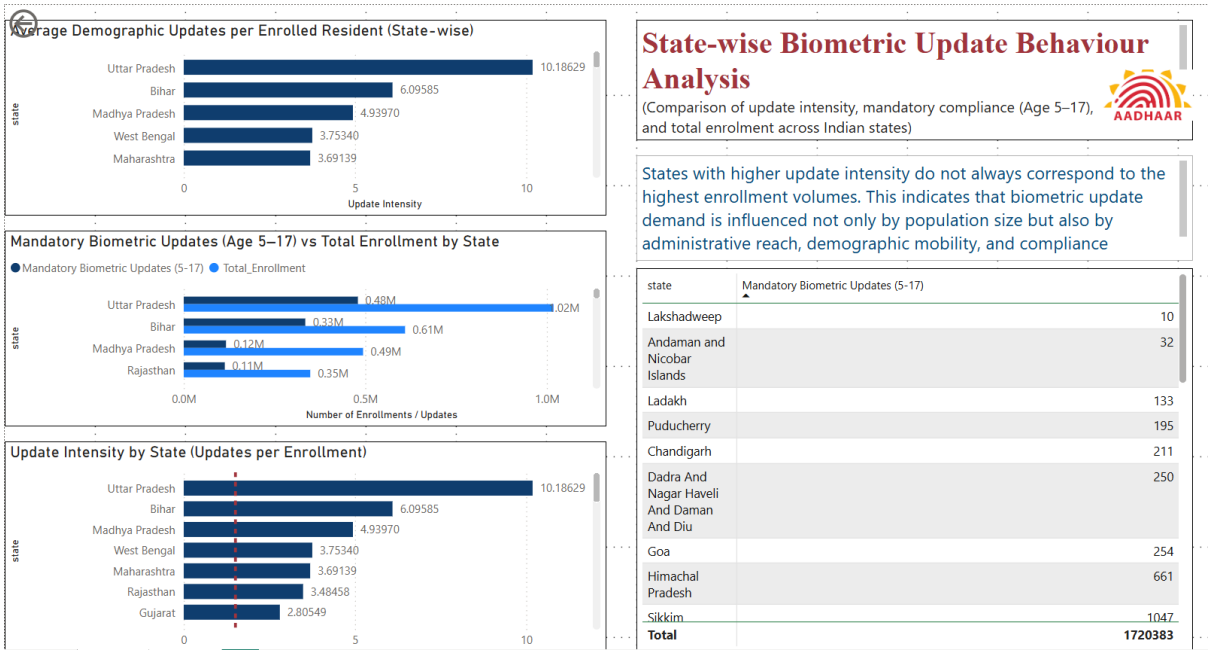
- District-level analysis
- Time-series trend analysis
- Predictive modeling for biometric update demand
- Integration with demographic indicator

12.DASHBOARDS

A.Aadhaar Update Coverage & Compliance – Overview Dashboard



B. State-wise Biometric Update Behaviour Analysis



state	Mandatory Biometric Updates (5-17)
Lakshadweep	10
Andaman and Nicobar Islands	32
Ladakh	133
Puducherry	195
Chandigarh	211
Dadra And Nagar Haveli And Daman And Diu	250
Goa	254
Himachal Pradesh	661
Sikkim	1047
Total	**1720383**

13.Conclusion

This project successfully analysed Aadhaar enrolment, demographic updates, and mandatory biometric compliance across Indian states using interactive Power BI dashboards. The analysis revealed significant regional variations in update volumes and update intensity, indicating that Aadhaar update behaviour is influenced by factors beyond population size, such as administrative reach, demographic mobility, and compliance awareness. By visualising enrolment, update patterns, and mandatory biometric compliance together, the project demonstrates the value of data analytics in identifying gaps and supporting informed decision-making.

Declaration

I hereby declare that this project work is original and has been carried out independently using publicly available UIDAI data