Online Hackathon on Data-Driven Innovation for Aadhaar

(UIDAI & NIC)

Data-Driven Analysis of Aadhaar Enrolment and

Demographic Update Patterns in India (2025)

January 15, 2026

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Abstract

This project presents a data-driven analysis of Aadhaar enrolment and demographic update patterns in India using anonymised datasets provided by UIDAI. The objective is to identify regional, demographic, and operational trends that can support better decision-making and service planning. The analysis explores state-wise and district-wise enrolment patterns, age-group distributions, and comparisons between enrolment and update workloads. The results indicate that Aadhaar enrolment is now largely driven by child registrations, while demographic updates form a significant operational workload, especially in large states. The findings can help in infrastructure planning, workload forecasting, and policy formulation.

1. Introduction

Aadhaar is the world's largest biometric identity system and plays a crucial role in public service delivery in India. Understanding enrolment and demographic update trends is important for improving operational efficiency and citizen outreach. This project analyzes anonymised Aadhaar enrolment and demographic update datasets provided by UIDAI to uncover regional, demographic, and operational patterns across India.

2. Objectives

The objectives of this study are:

- To analyze state-wise and district-wise Aadhaar enrolment patterns.

- To study age-group distribution of new enrolments.

- To analyze demographic update trends across regions.

- To compare enrolment and update patterns across major states.

- To derive data-driven insights for policy and operational improvements.

3. Dataset Description

Two datasets provided by UIDAI were used:

1. **Aadhaar Enrolment Dataset** containing enrolment counts by date, state, district, pincode and age groups (0–5, 5–17, 18+).

2. **Aadhaar Demographic Update Dataset** containing update counts for age groups 5–17 and 17+ across the same geographic dimensions.

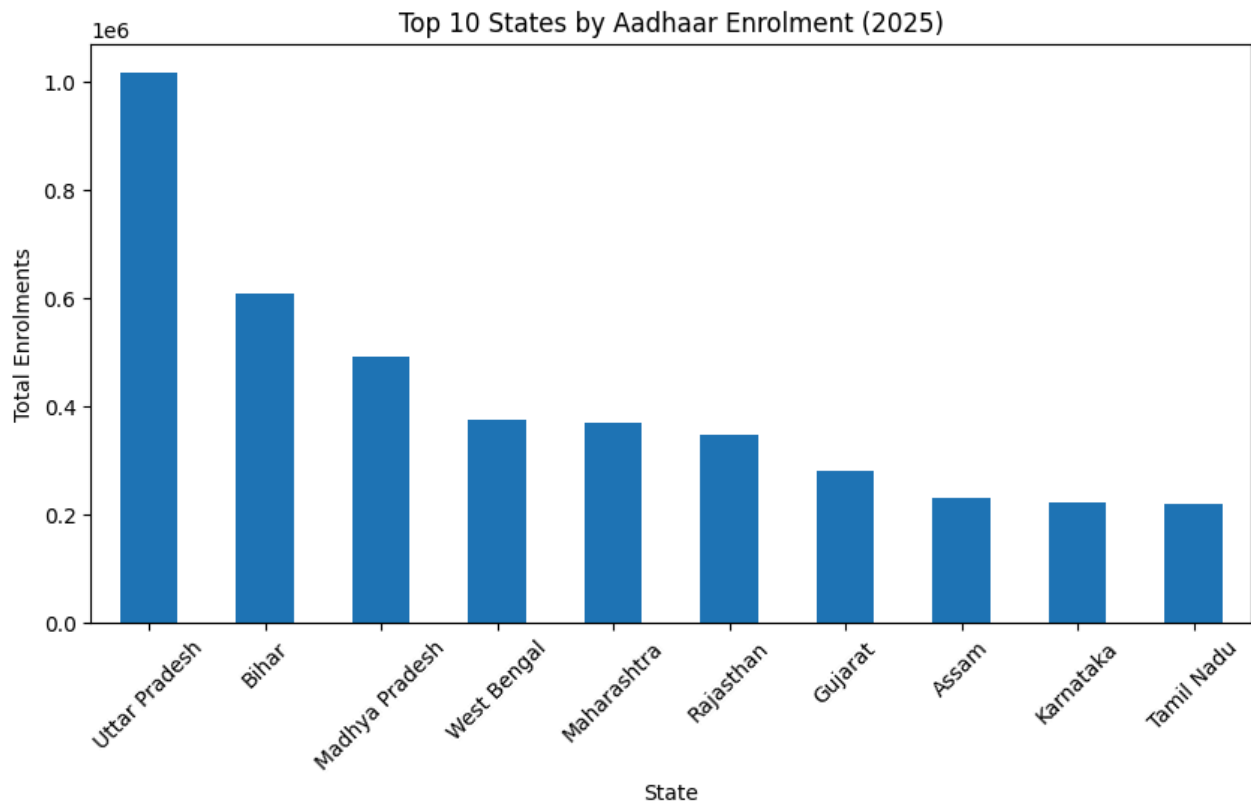The data represents aggregated records up to 31st December 2025.

4. Methodology

- All CSV files were merged using Python (Pandas).

- Dates were converted to proper datetime format.

- Additional fields such as total enrolments and total updates were computed.

- Aggregations were performed at state and district levels.

- Visual analytics using Matplotlib were used to study age-group distributions, regional patterns, enrolment vs update workload, and district-level hotspots.

The complete analysis code was implemented in Python using Pandas and Matplotlib in a Jupyter Notebook
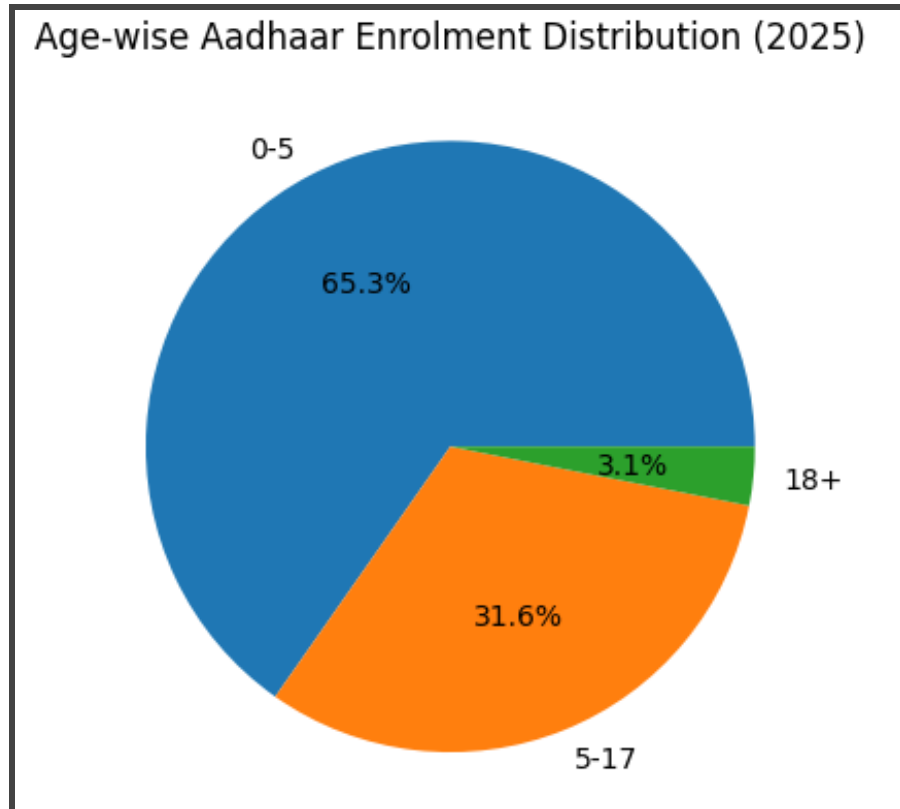
5. Analysis & Key Findings

5.1 State-wise Enrolment Analysis

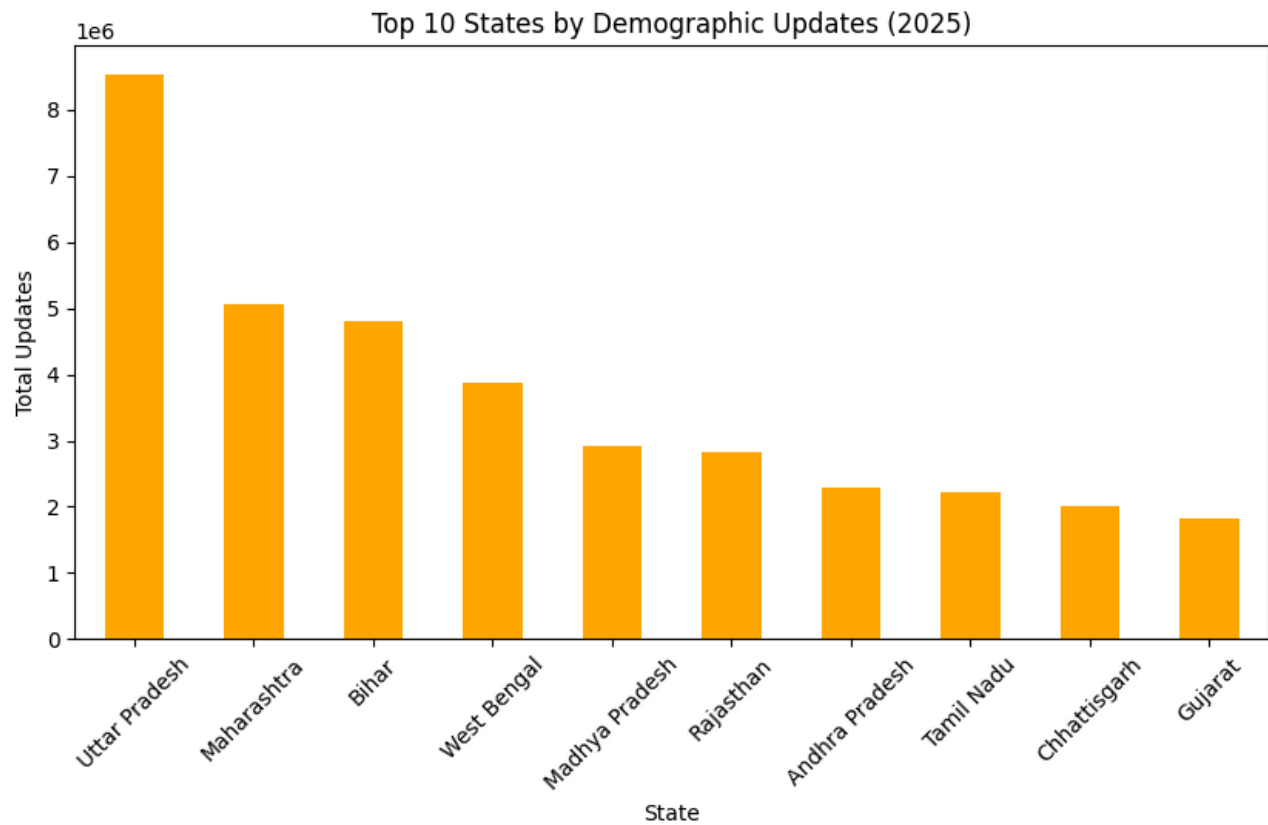Top 10 States by Aadhaar Enrolment (2025)

Uttar Pradesh leads Aadhaar enrolment by a significant margin, followed by Bihar, Madhya Pradesh, and West Bengal. This reflects population-driven enrolment demand and high child registration activity in large states.

5.2 Age-wise Enrolment Distribution

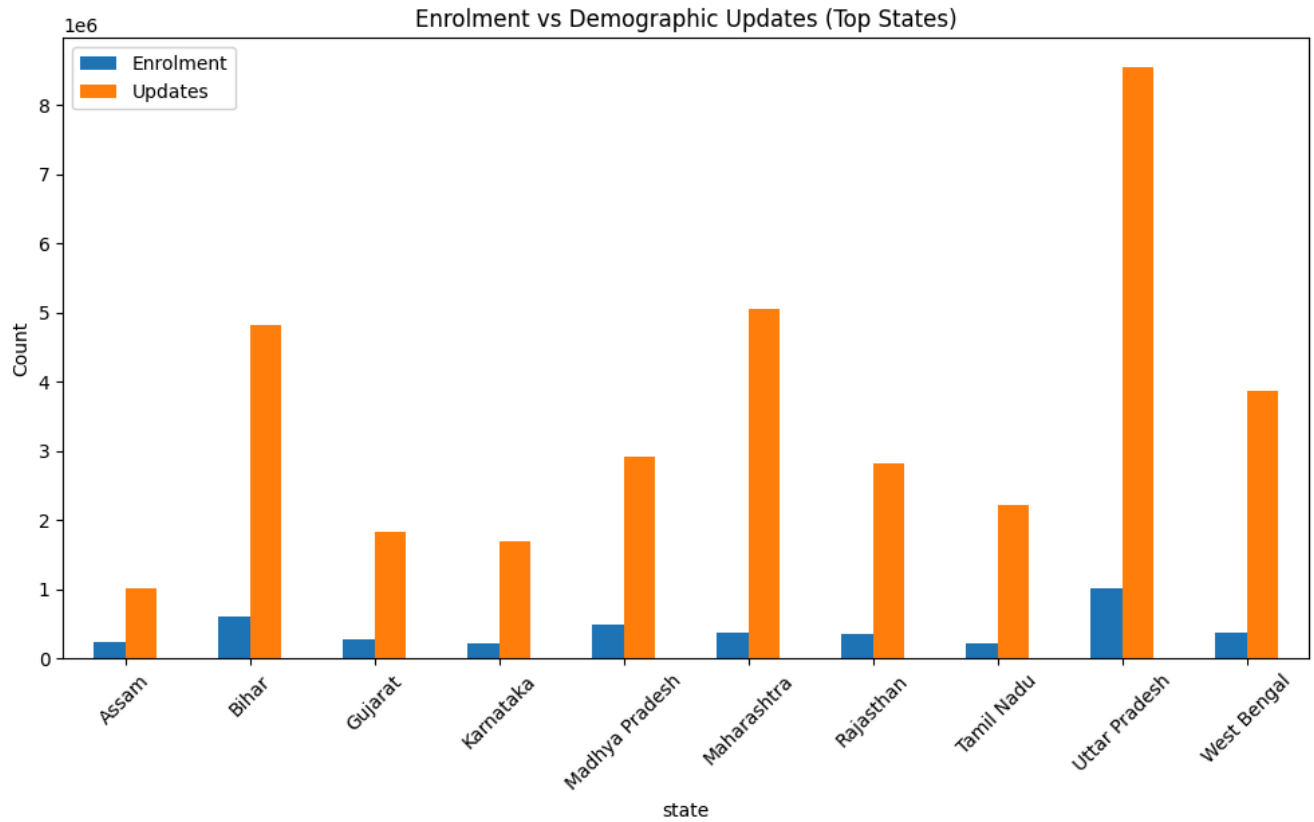Age-wise Aadhaar Enrolment Distribution (2025)

 More than 65% of new enrolments belong to the 0–5 age group, around 32% to 5–17, and only about 3% to 18+. This indicates that Aadhaar is now primarily driven by child registration.

5.3 Demographic Update Trends

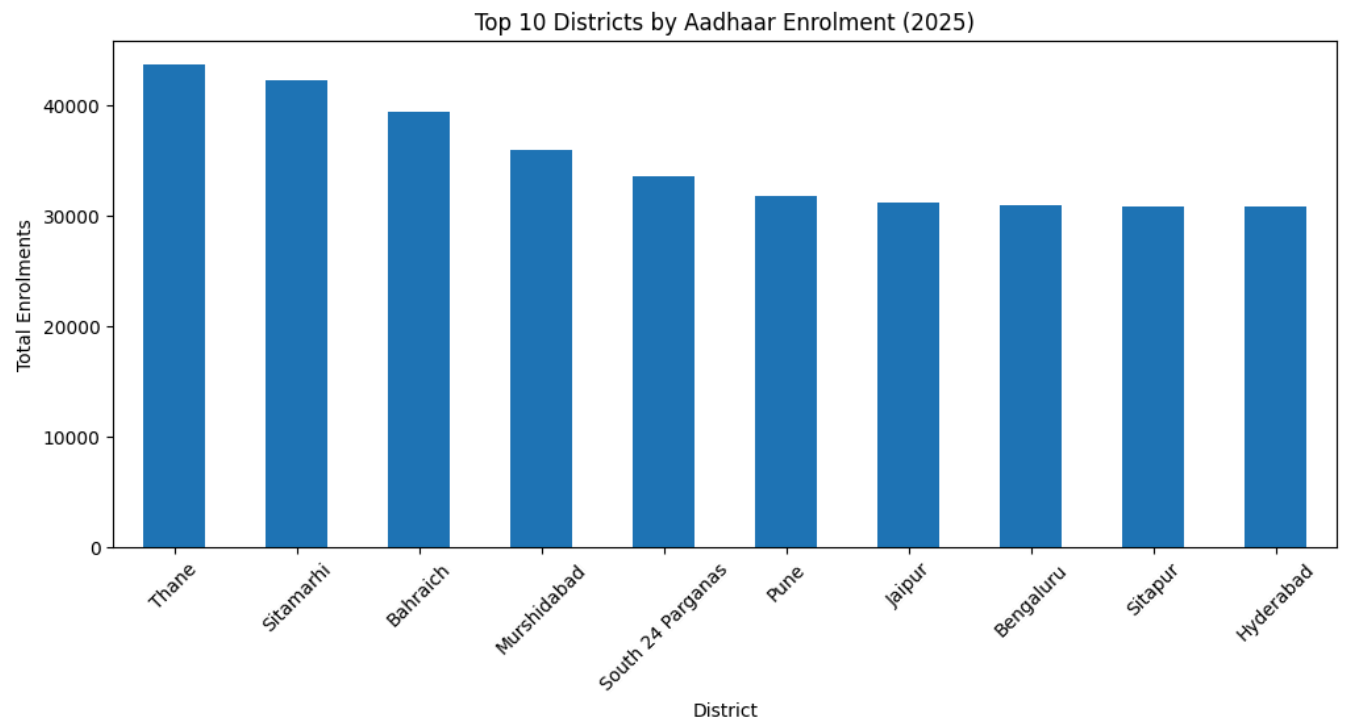Top 10 States by Demographic Updates (2025)

Uttar Pradesh, Maharashtra, Bihar, and West Bengal show the highest update activity, indicating high correction and data maintenance workload in large population centres.

5.4 Enrolment vs Update Comparison

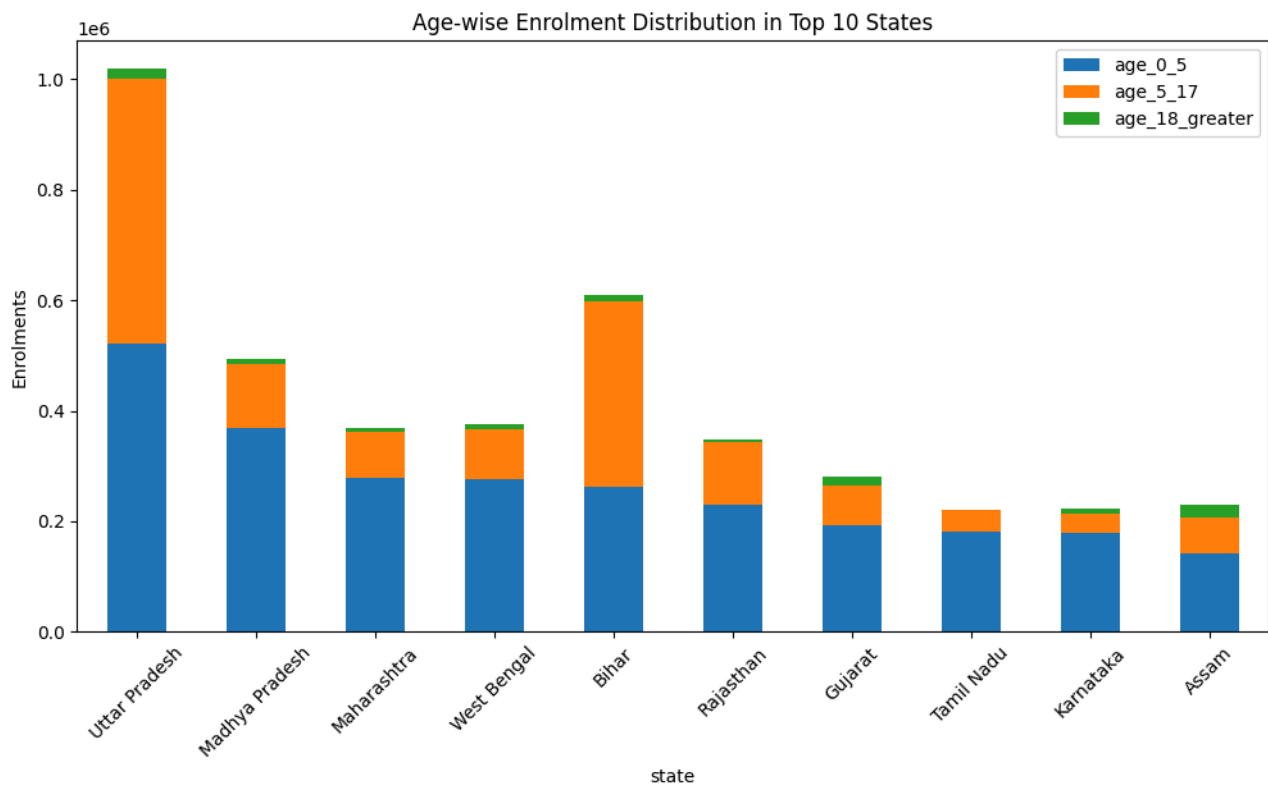Enrolment vs Demographic Updates (Top States)

States with high enrolment also show high update activity, but the update volume is significantly higher, highlighting continuous data maintenance requirements.

5.5 District-level Insights

Top 10 Districts by Aadhaar Enrolment (2025)

Districts such as Thane, Sitamarhi, Balrampur, Murshidabad, and South 24 Parganas show the highest enrolment volumes, indicating localized demand hotspots.

5.6 Age Distribution Across States

Age-wise Enrolment Distribution in Top 10 States

Across all major states, the 0–5 age group dominates new enrolments, confirming a nationwide trend towards early Aadhaar registration.

6. Conclusion

This analysis shows that Aadhaar enrolment in 2025 is primarily driven by child registrations, while demographic updates form a significant operational workload. Large states dominate both enrolments and updates, suggesting the need for region-specific infrastructure and resource planning.

7. Future Scope

- Multi-year trend analysis when historical data becomes available.

- Integration with service delivery datasets to measure Aadhaar usage impact.

- Predictive modeling to forecast enrolment and update demands.

- District-level infrastructure optimization planning.

8. Tools & Technologies

Python, Pandas, Matplotlib, Jupyter Notebook