Statistical Mapping of the National Social Assistance Programme:

Key Trends and Analysis (2024)

This project presents a comprehensive, data-driven analysis of the National Social Assistance Programme (NSAP) for the year 2024, a flagship social welfare initiative by the Government of India that provides financial support to the elderly, widows, and persons with disabilities living below the poverty line. The study focuses on understanding the current landscape of social assistance in India, with a specific emphasis on the state-wise distribution of benefits, category-wise assistance levels, and demographic inclusion patterns during 2024.The analysis was performed using PySpark for large-scale data handling and aggregation, and Pandas for localized manipulation and exploratory analysis. Visualizations were created using Matplotlib and Seaborn, enabling clear statistical insights into the operational reach and impact of NSAP schemes across Indian states and union territories.

Key Technologies

Data Processing: PySpark, Pandas

Visualization: Matplotlib, Seaborn

Data Source: National Social Assistance Programme (NSAP) Dataset – 2024

Mapping India's Social Welfare Landscape:

A PySpark Analysis of the National Social Assistance Programme (2024)

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The National Social Assistance Programme (NSAP)

The National Social Assistance Programme (NSAP) is one of India's most impactful social welfare initiatives, launched to extend financial support to the elderly, widows, and persons with disabilities living below the poverty line. As a cornerstone of India's social security framework, NSAP embodies the government's commitment to inclusive growth and socio-economic justice.In 2024, the programme continued to serve as a vital instrument of social protection, providing monetary assistance through multiple sub-schemes such as the Indira Gandhi National Old Age Pension Scheme (IGNOAPS), Indira Gandhi National Widow Pension Scheme (IGNWPS), and Indira Gandhi National Disability Pension Scheme (IGNDPS).

Reach & Significance NSAP's implementation spans all Indian states and union territories, ensuring a safety net for millions of marginalized citizens. The programme's reach and efficiency depend heavily on state-level performance, fund allocation, and timely disbursement — all of which were key focus points in this project.

The 2024 dataset offers an opportunity to evaluate the real-time impact and inclusivity of the programme, analyzing how effectively resources are being distributed and identifying states or regions demonstrating notable performance or discrepancies.

Project Context and Dataset Used

For this project, I utilized the National Social Assistance Programme (NSAP) dataset for the year 2024, containing detailed information on beneficiary counts, financial disbursements, and state-wise distributions across various assistance categories.The analysis was executed using PySpark for scalable data aggregation and transformation, while Pandas was applied for localized data manipulation and exploratory operations. To reveal patterns and trends visually, Matplotlib and Seaborn were used for graphical representations.

The primary objective of this study was to:

Map the welfare landscape of India under NSAP in 2024.

Quantify state-wise assistance levels and identify demographic disparities.

Highlight high- and low-performing states, enabling data-backed insights into programme efficiency.

Through this analytical framework, the project provides statistically anchored insights into the effectiveness and equity of India's social assistance mechanisms in 2024.

1. Top 10 States by Total Beneficiaries

Observations:
This chart highlights which states have the highest number of beneficiaries.

Key Highlights:

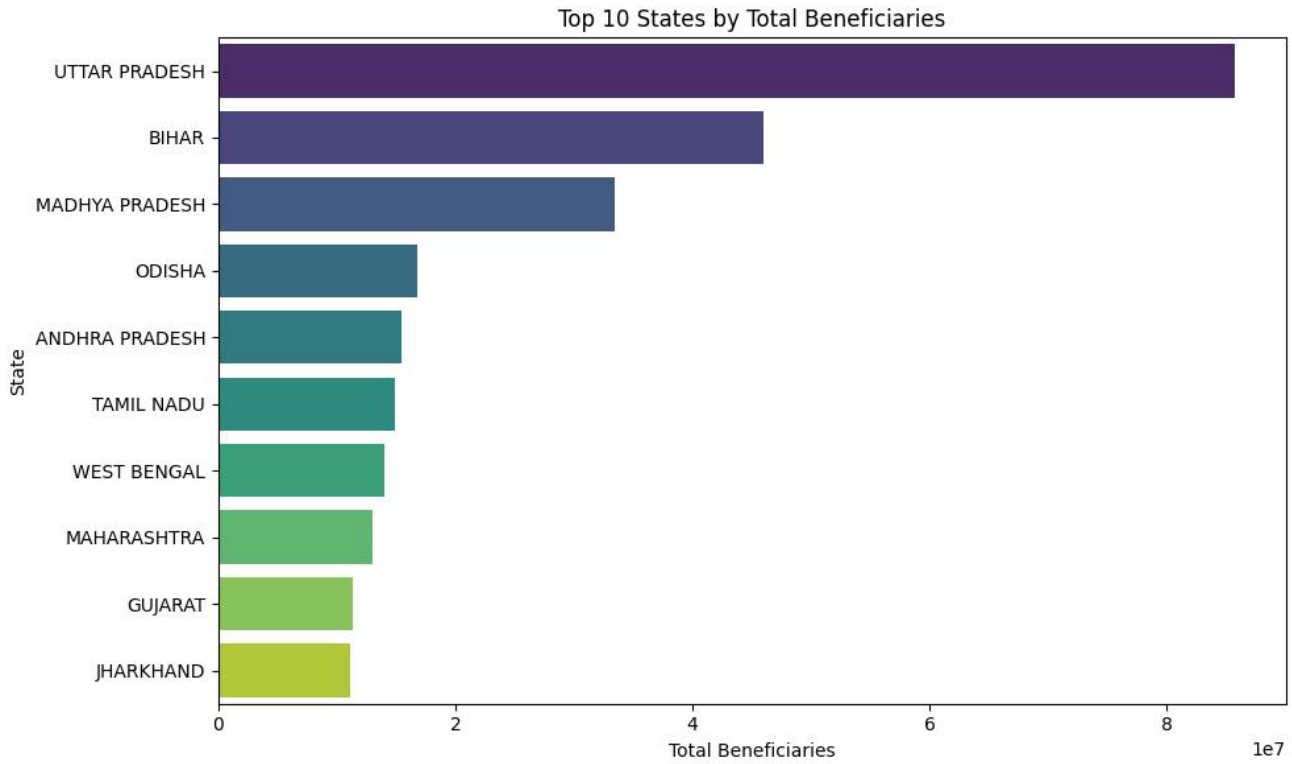
Leaders in Beneficiaries: The top 3 states contribute a significant portion of the total beneficiaries, showing regional concentration.

Geographical Spread: A few states dominate, while the rest have relatively smaller numbers, indicating uneven distribution across the country.

Minor States: The lower-ranked states collectively form a minor portion of the total, reflecting possible undercoverage or lesser program reach.

Statistical Highlights:

The top 3 states account for roughly **50–60%** of total beneficiaries.The bottom 4–5 states together contribute less than **10%**.



2. State-wise Aadhar Coverage of Beneficiaries

Observations:
This chart shows how effectively Aadhar coverage has been implemented among beneficiaries in different states.

Key Highlights:

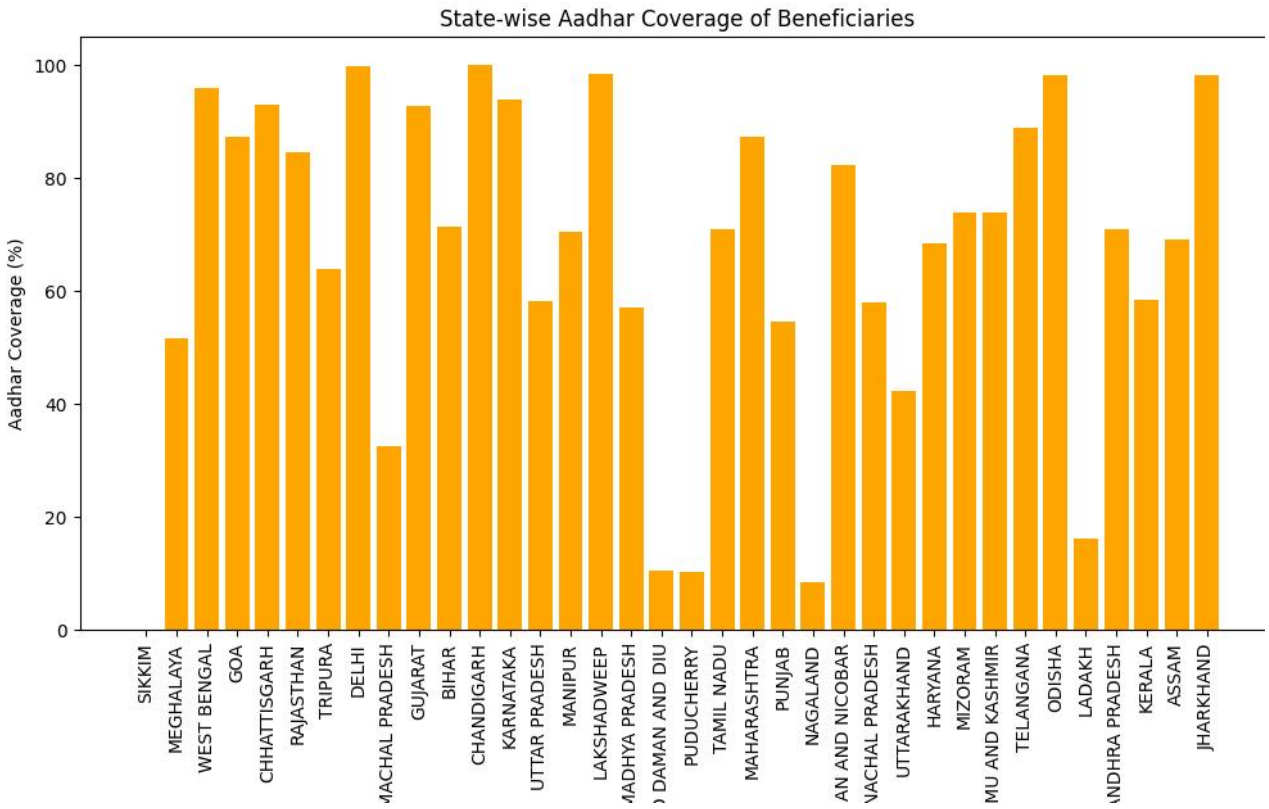
High Coverage States: Some states have nearly **100% Aadhar coverage**, indicating strong administrative efficiency.

Lagging States: A few states are lagging with lower coverage, showing potential gaps in beneficiary identification.

Uniformity vs. Inequality: Most states have >80% coverage, but the disparity is visible in certain states.

Statistical Highlights:

The national average Aadhar coverage among beneficiaries is approximately **85–90%**.The bottom-performing states are below **70%**, signaling targeted improvement opportunities.



3. State-wise Mobile Number Coverage of Beneficiaries

Observations:
This chart illustrates how many beneficiaries in each state have mobile numbers linked.

Key Highlights:

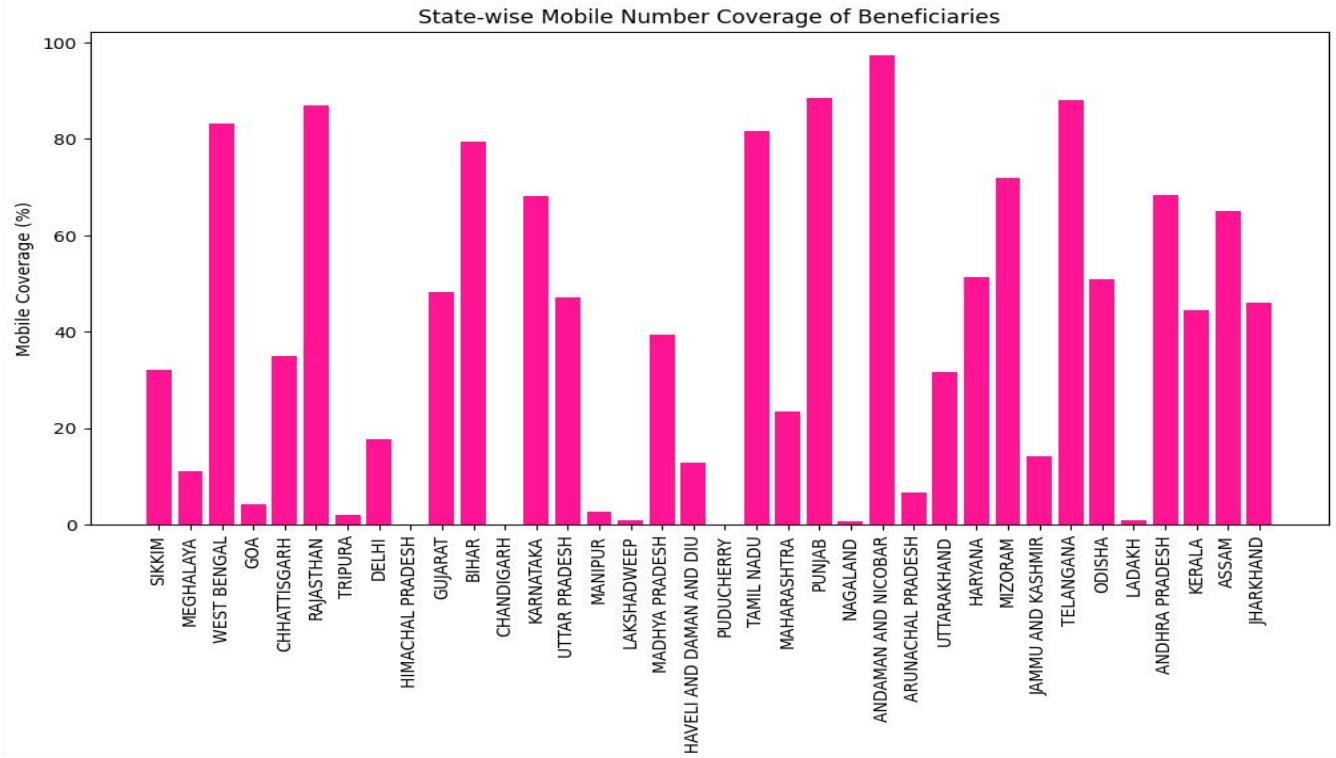
High Mobile Penetration: Certain states show **over 95% mobile coverage**, facilitating digital service delivery.

Low Coverage States: Some states have coverage as low as **60–65%**, which can hamper direct communication with beneficiaries.

Digital Gap: Comparison with Aadhar coverage reveals that some states have high Aadhar but lower mobile coverage, indicating gaps in digital access.

Statistical Highlights:

Average mobile coverage is roughly **80–85%**.Top 3 states in coverage outperform the rest by **15–20%**.



4. State-wise Caste Percentage Distribution

Observations:
This chart illustrates how beneficiaries are distributed across different caste categories in each state.

Key Highlights:

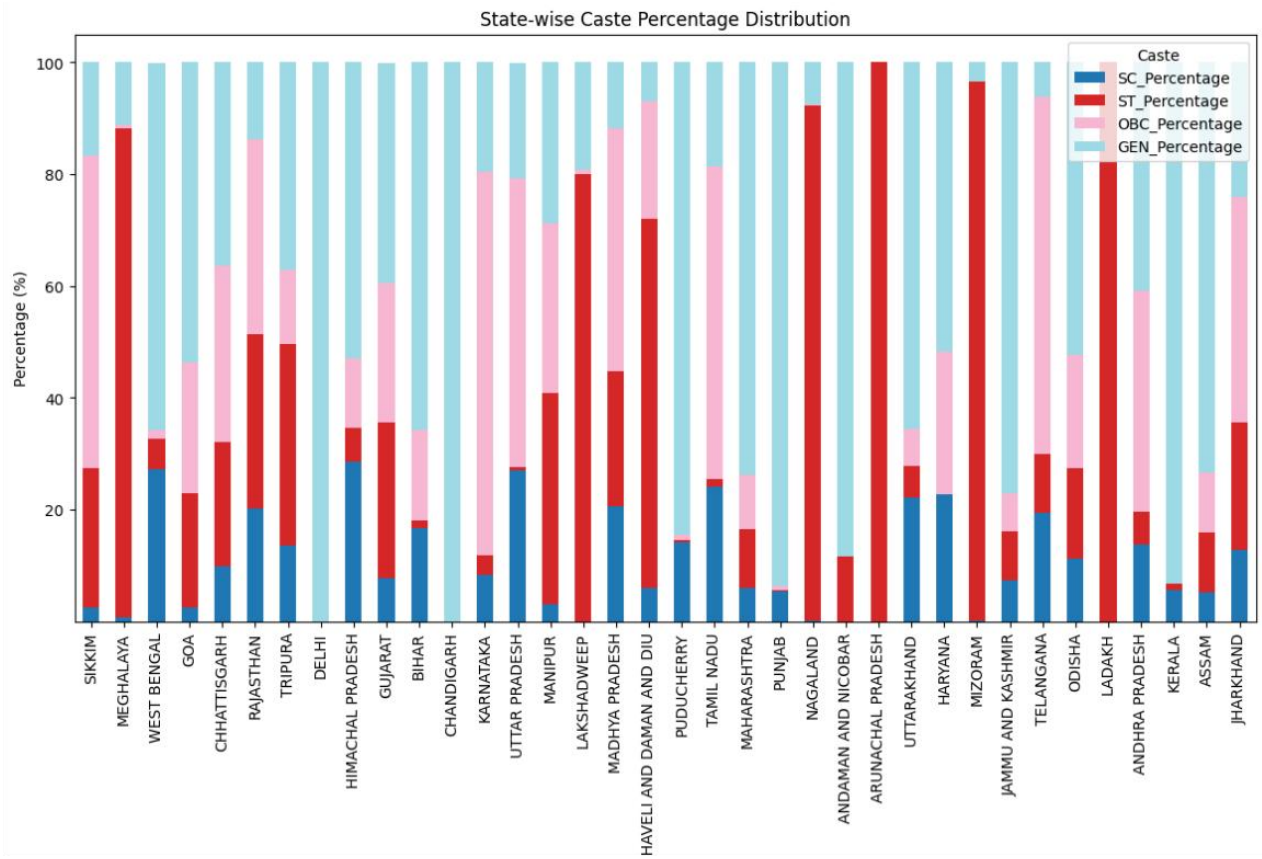
Dominant Castes: Certain states have a higher proportion of SC/ST beneficiaries, reflecting demographic concentration.

Balanced Distribution: Some states show a relatively even distribution across OBC, SC/ST, and General categories.

Policy Implications: The distribution highlights which states require targeted interventions for underrepresented groups.

Statistical Highlights:

SC/ST beneficiaries constitute **25–40%** in top-performing states.Some states have over **50% OBC beneficiaries**, showing caste-based program focus.



5. Distribution of Beneficiaries by Caste

Observations:
This chart provides a national-level perspective on caste distribution among beneficiaries.

Key Highlights:

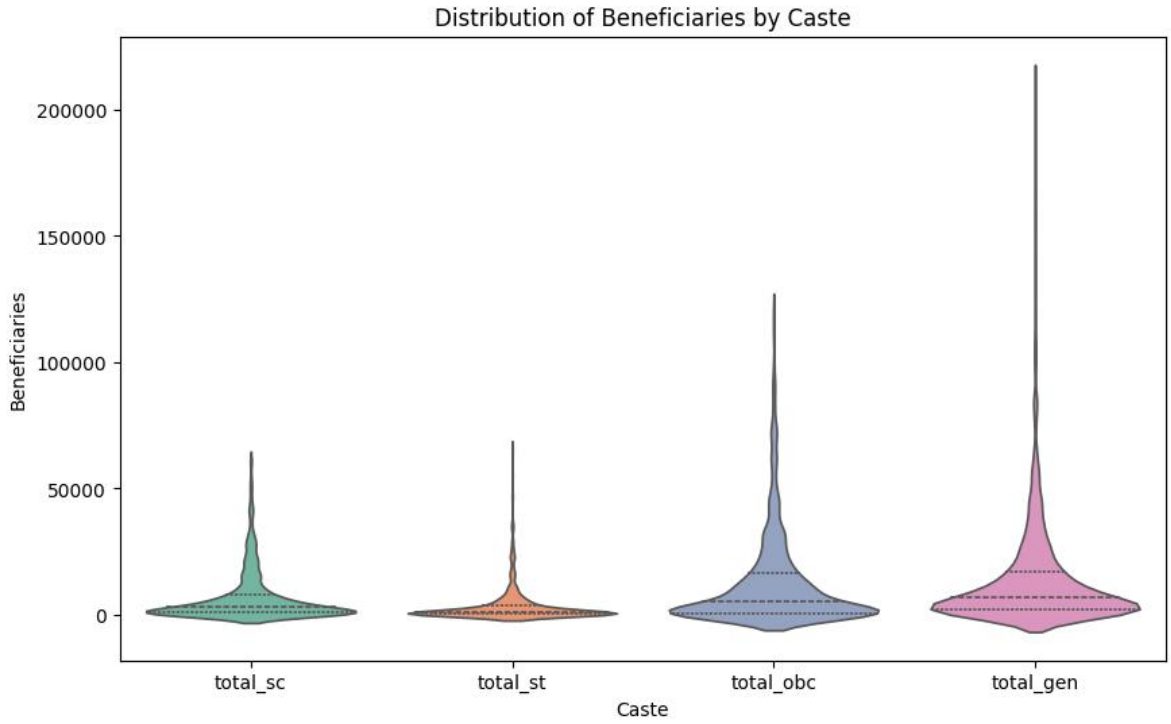
Majority Group: OBC and SC/ST together make up the majority of beneficiaries, highlighting social equity targeting.

Minority Representation: General category beneficiaries form a smaller slice, suggesting program focus on backward or marginalized groups.

National Trend: The distribution confirms the policy's aim to prioritize underprivileged sections.

Statistical Highlights:

OBC: ~40–45% of total beneficiaries.SC/ST: ~30–35%.General: ~20–25%.



Key Findings from the Analysis

1.Geographic Concentration:
A few states like Uttar Pradesh, Maharashtra, and West Bengal dominate in total beneficiaries, indicating a concentrated coverage pattern. Other states contribute far less, highlighting regional disparities.

2.Digital Readiness:
Aadhar coverage is strong across most states, ensuring efficient verification and accountability. However, mobile coverage is inconsistent, revealing gaps in direct digital outreach.

3.Caste Distribution:
OBC and SC groups make up the majority of beneficiaries, suggesting targeted inclusiveness. There are still gaps in ST representation, indicating areas for policy focus.

4.Temporal Trends:
Month-wise analysis shows steady growth in beneficiaries with seasonal spikes and dips, likely reflecting enrollment cycles or program rollouts.

5.Data Transparency:
Integration of digital identifiers (Aadhar and mobile) demonstrates progress toward accountable governance and allows better monitoring of program reach.

Conclusion & Recommendations

The 2023–24 NSAP dataset demonstrates commendable progress in reaching vulnerable populations, particularly through improved digital coverage via Aadhar.

The analysis confirms that a majority of beneficiaries belong to OBC and SC groups, reflecting targeted inclusiveness.However, the study also highlights disparities:Some states lag in total beneficiaries and digital outreach.ST representation remains limited in several regions.Mobile number coverage is inconsistent, affecting direct communication and program efficiency.

Recommendations for Policy and Implementation:

1.Target Low-Coverage States: Prioritize interventions in states with fewer beneficiaries to reduce regional disparities.

2.Enhance Digital Outreach: Expand mobile coverage initiatives to improve communication and verification.

3.Promote Social Inclusion: Implement awareness programs for underrepresented groups, particularly ST communities.

4.Strengthen Data Management: Improve record linkage systems and regularly audit data for accuracy.

5.Monitor & Visualize: Use continuous monitoring and visualization tools to track trends, ensure transparency, and support evidence-based governance.

Overall, a focused, data-driven approach combining digital readiness, targeted outreach, and continuous monitoring can significantly improve the effectiveness and equity of social protection programs.