

MAPPING MGNREGA

Report on the state-level analysis of
one of world's largest Rural
Employment Scheme

PRESENTED BY
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CONTENTS

01. Introduction

02. Problem Statement

03. Data Source

04. Tools Used

05. Key Metrics

06. Analysis & Summary

07. Recommendations

08. Limitations

09. Future Ideas

10. Reference & Appendix

INTRODUCTION

The **Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA)**, formerly known as the **National Rural Employment Guarantee Act (NREGA)**, is an Indian social welfare initiative. It guarantees at least 100 days of wage employment per financial year to rural households where adult members volunteer for unskilled manual work. It aims to alleviate rural poverty, empower women, and promote social inclusion.

This project analyzes NREGA data using **Structured Query Language (SQL)** and **Power BI** to gain insights into its implementation and impact across various Indian states. It also includes recommendations and limitations of the project along with some future steps in the end.



PROBLEM STATEMENT

“ NREGA is a vital initiative to alleviate rural unemployment and poverty. This project seeks to address several key questions and challenges associated with NREGA:

- How effective is NREGA in providing employment opportunities to rural households?
- Are there regional disparities in the implementation and outcomes of the scheme?
- What is the utilization of the allocated budget, and how does it correlate with employment generation?
- What are the key factors contributing to the completion of NREGA works, and are there any roadblocks to its success?
- Can data-driven insights guide policymakers and administrators in optimizing the scheme's impact?

”



DATA SOURCE

The dataset used for this analysis is sourced from official government records and contains information related to NREGA implementation across various states and districts in India.

It contains 28 columns and 741 rows of data encompassing information on job cards, worker details, budget allocation, work completion statistics, expenditure, and more. This dataset offers a comprehensive view of the progress and challenges faced by the NREGA program.



TOOLS USED

01

Microsoft Excel

For Data Cleaning and Transforming

02

Microsoft SQL Server

For Data Analysis

03

Power BI

For Data Visualization and Dashboards

04

Canva

For creating Project Report

05

GitHub

For Documentation

KEY METRICS

01

Average Employment Days per Household

The average number of days of employment provided per rural household.

02

Workforce Participation

The total number of active workers and their distribution across states.

03

Wage Rate

The average wage rate per day per person is a direct measure of the income support provided to the rural poor.

04

SC and ST Worker Participation

The percentage of SC and ST workers among the total active workers measures the inclusivity of the scheme and its impact on marginalized communities.

05

Completion Rates

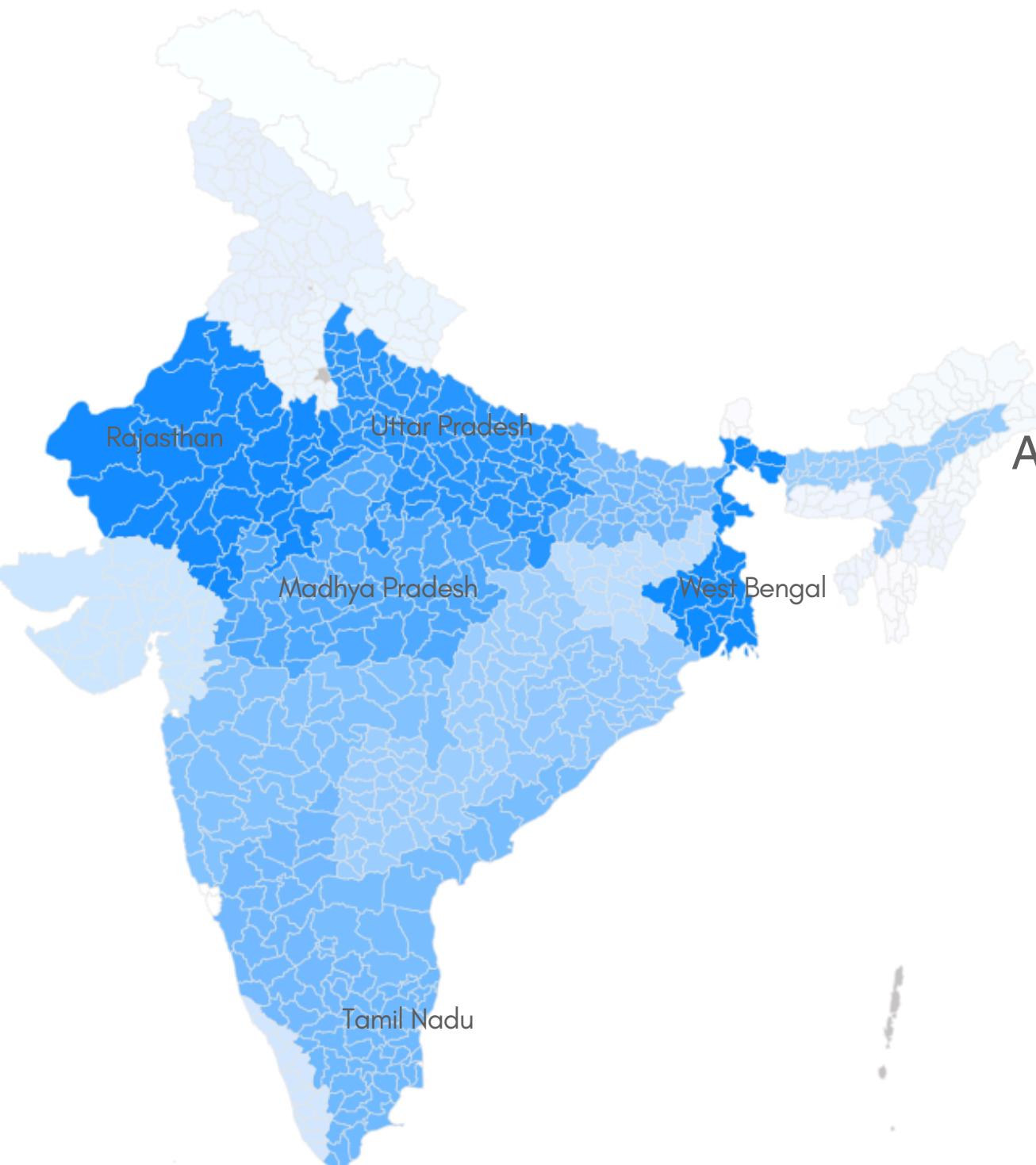
The percentage of households completing the mandated 100 days of employment.



Analysis

Total Active Workers by states

State Name	Total Active Workers
West Bengal	1,84,30,541
Rajasthan	1,81,26,978
Uttar Pradesh	1,66,30,532
Madhya Pradesh	1,32,93,232
Tamil Nadu	1,10,09,244
Bihar	1,08,18,160
Karnataka	1,06,27,340
Andhra Pradesh	1,04,12,371
Maharashtra	93,99,585
Odisha	83,57,472
Assam	79,34,595
Telangana	75,36,144
Chhattisgarh	74,12,397
Jharkhand	52,80,500
Gujarat	38,03,098
Kerala	33,40,519
Punjab	18,72,687
Himachal Pradesh	18,28,473
Jammu And Kashmir	18,08,452
Uttarakhand	13,62,630
Haryana	12,16,597
Tripura	11,45,657
Meghalaya	11,29,046
Manipur	9,58,123
Nagaland	7,54,297
Arunachal Pradesh	4,64,771
Mizoram	2,31,504
Sikkim	1,23,578
Puducherry	90,891
Ladakh	50,221
Andaman And Nicobar	18,947
Goa	10,091
Lakshadweep	484
Dadra and Nagar Haveli and Daman and Diu	2



1. Comprehensive Employment Analysis

1.1 Workforce Participation

There are total **175,479,159** Active workers in India under MGNREGA Scheme.

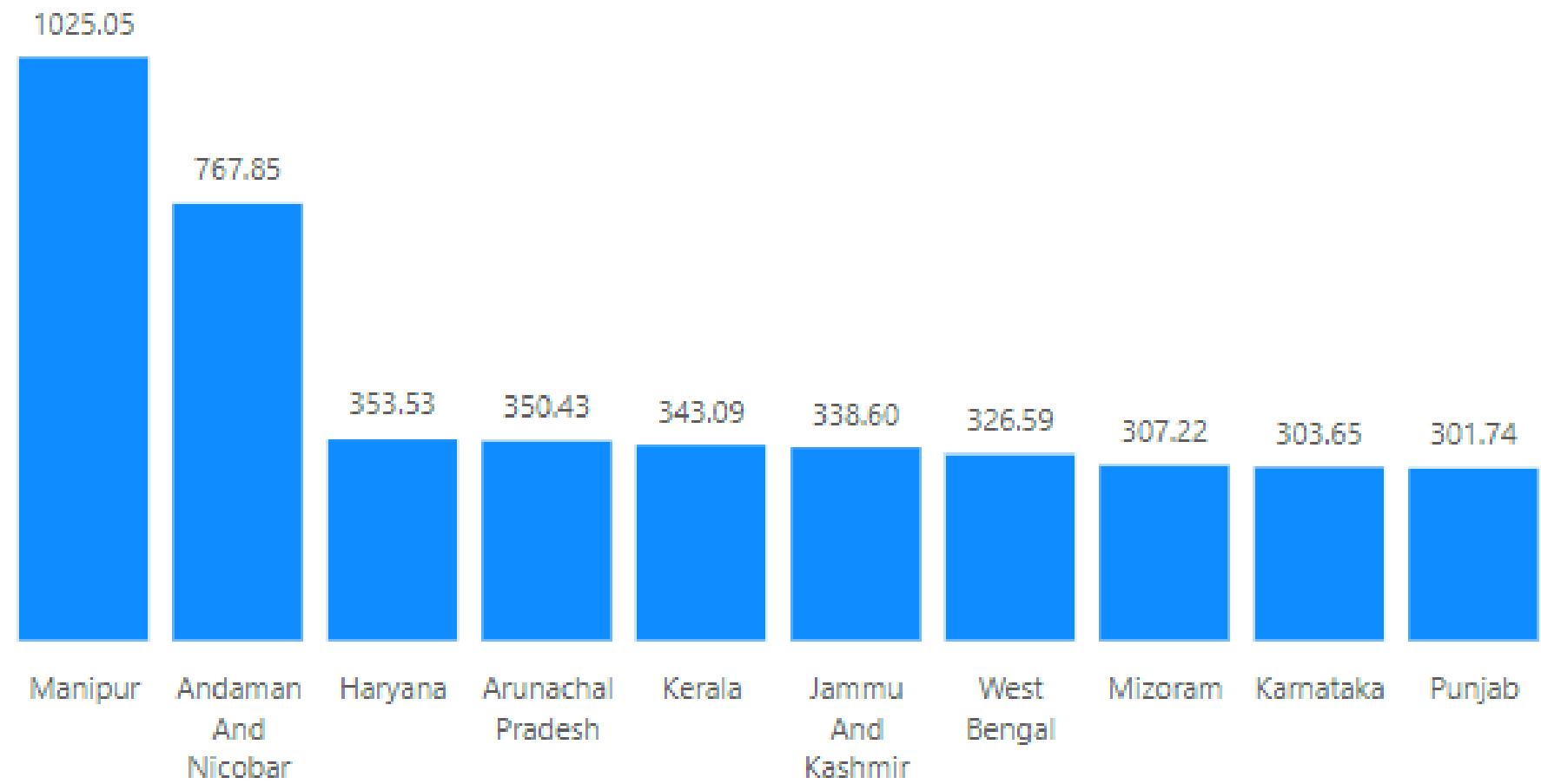
A state wise participation reveals that about 10.5% workers are from **West Bengal**, 10.33% from **Rajasthan**, 9.48% from **Uttar Pradesh**, while the lowest number of workers are from **Goa** (0.01%), **Lakshadweep** and **Dadra and Nagar Haveli and Daman and Diu** (both about 0%).

1. Comprehensive Employment Analysis

Summary Statistics of Average Wage per Day per Person

Average	Minimum	Median	Maximum	Variance	Standard deviation
276.05	0.00	241.27	4729.37	66085.63	257.07

Top 10 States with highest Average Wage per day per person (₹)



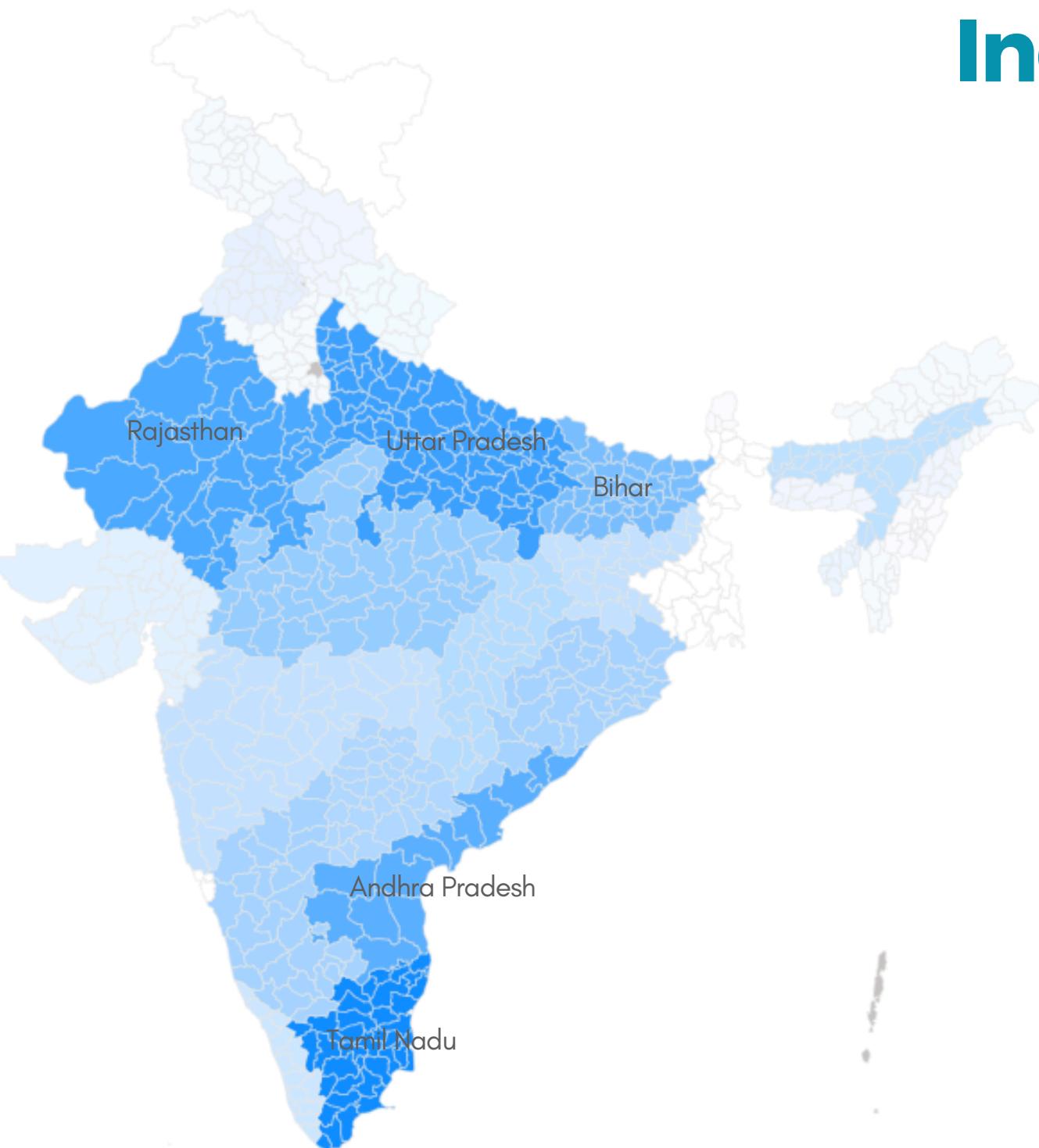
The average wage rate per day per person stands at **₹276.05**.

The wage rate ranges from 0 in **Dadra and Nagar Haveli and Daman and Diu** to ₹4729.36 in **Manipur**.

Among the top 10 states, **Manipur** leads with an average wage rate of ₹1025.05, followed by the **Andaman and Nicobar Islands** at ₹767.85. Most other states fall below ₹400.

Total household by states

State Name	Total Households Worked
Tamil Nadu	64,10,901
Uttar Pradesh	52,35,807
Rajasthan	47,99,497
Andhra Pradesh	43,40,988
Bihar	35,46,734
Madhya Pradesh	28,10,264
Odisha	23,65,621
Karnataka	23,31,709
Telangana	21,43,539
Chhattisgarh	19,62,847
Assam	16,56,334
Jharkhand	16,07,995
Maharashtra	15,19,467
Kerala	12,46,670
Gujarat	7,35,842
Punjab	6,80,929
Tripura	5,39,587
Nagaland	4,03,021
Himachal Pradesh	3,92,033
Meghalaya	3,29,225
Uttarakhand	2,92,655
Haryana	2,58,584
Jammu And Kashmir	2,24,618
Mizoram	2,15,453
Arunachal Pradesh	1,52,384
Manipur	1,40,678
Sikkim	52,496
Puducherry	47,360
Ladakh	12,613
West Bengal	7,592
Andaman And Nicobar	2,036
Goa	1,497
Lakshadweep	54
Dadra and Nagar Haveli and Daman and Diu	1



2. Household and Individual Participation

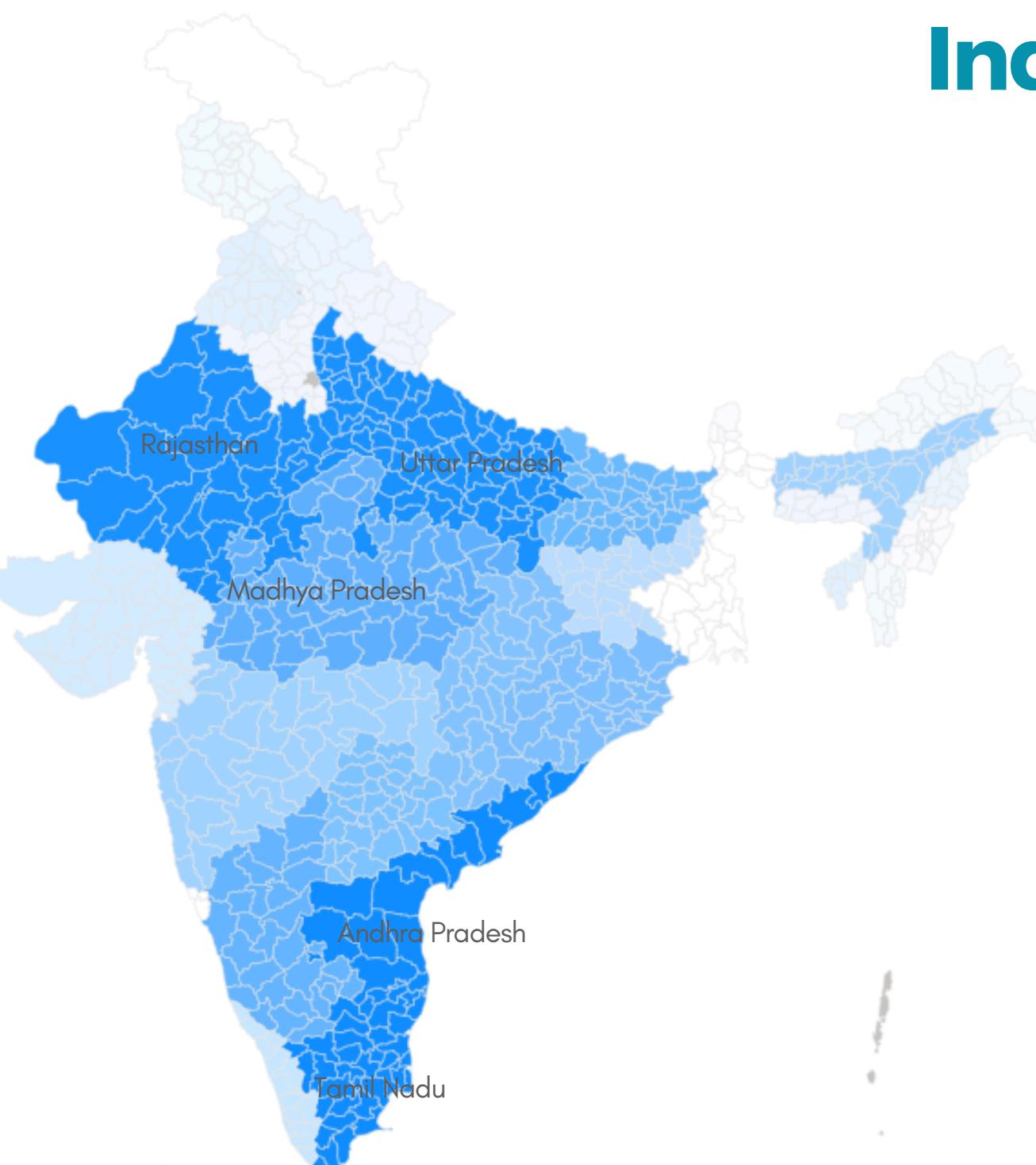
2.1 Household Participation Distribution

States like **Tamil Nadu, Uttar Pradesh, Rajasthan, Andhra Pradesh, and Bihar** see the highest household participation, which could be due to higher rural populations or more effective program implementation.

Conversely, regions like **West Bengal** and the **Union Territories** report the lowest, which may require investigation into program outreach and accessibility.

Total individual Workers by states

State Name	Sum of Total Individuals Worked
Tamil Nadu	73,07,530
Andhra Pradesh	69,70,697
Rajasthan	62,02,607
Uttar Pradesh	61,10,377
Madhya Pradesh	42,50,999
Karnataka	41,65,994
Bihar	39,53,624
Odisha	35,13,118
Telangana	33,86,473
Chhattisgarh	33,43,061
Maharashtra	24,98,027
Assam	24,50,424
Jharkhand	18,75,764
Kerala	13,77,397
Gujarat	11,14,604
Punjab	7,90,415
Tripura	7,19,177
Himachal Pradesh	5,01,337
Nagaland	4,53,050
Meghalaya	3,98,741
Uttarakhand	3,78,858
Haryana	3,57,079
Jammu And Kashmir	3,03,161
Mizoram	2,18,467
Arunachal Pradesh	1,58,198
Manipur	1,42,718
Sikkim	58,506
Puducherry	52,013
Ladakh	13,393
West Bengal	9,405
Andaman And Nicobar	2,338
Goa	1,556
Lakshadweep	55
Dadra and Nagar Haveli and Daman and Diu	2



2. Household and Individual Participation

2.2 Individual Participation Distribution

The stark contrast between **Tamil Nadu's 7 million individuals** and the mere **2 individuals in Dadra and Nagar Haveli and Daman and Diu** underscores the regional disparities in program uptake, possibly due to differences in population, awareness, and local governance.

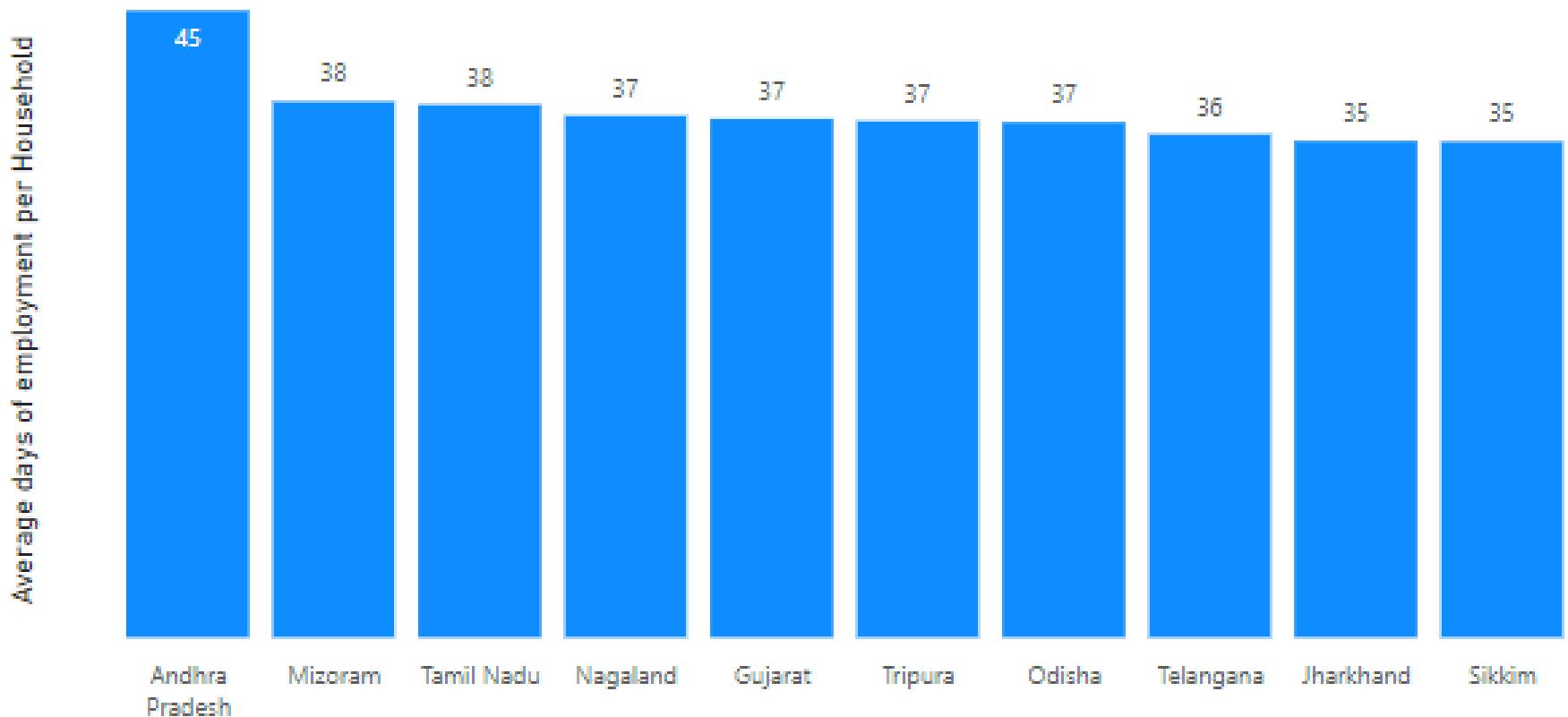
2. Household and Individual Participation

Summary Statistics of Average Days of Employment per Household

Average	Minimum	Median	Maximum	Variance	Standard deviation
30.91	0	32	55	87	9.32

2.3 Average Days Worked per Household

Top 10 States with highest Average Days of Employment per Household



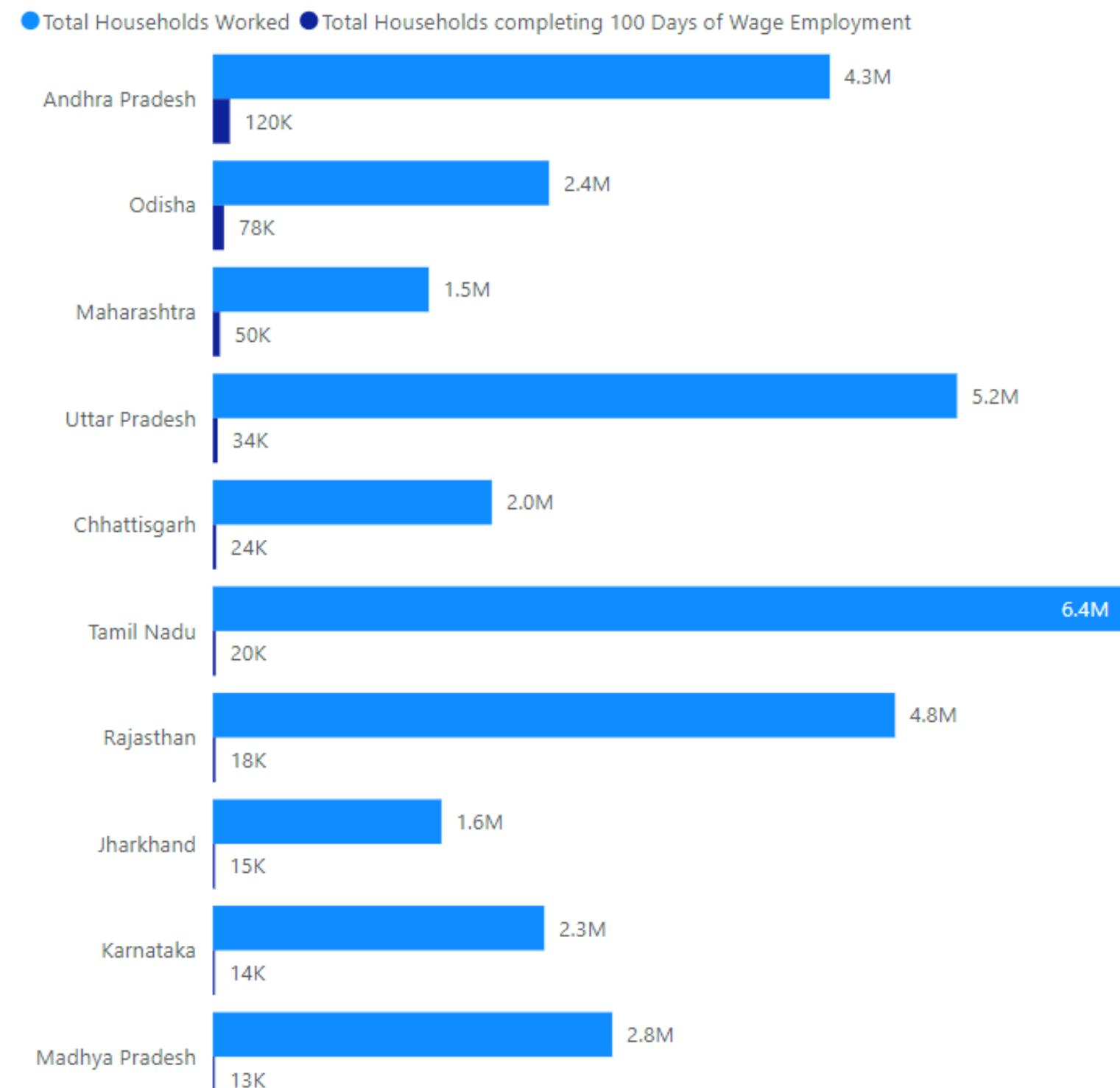
On average, households received **31 days** of employment, which falls short of the guaranteed 100 days of wage employment.

Andhra Pradesh saw the highest average employment day of **45 days**, followed by **Tamil Nadu** and **Mizoram (both with 38 days)**.

In contrast, **Manipur (8 days)**, **West Bengal (11 days)**, and **Dadra and Nagar Haveli (13 days)** had lowest average employment days.

Total households worked VS Total households completing 100 days of Wage Employment

Showing the data for top 10 states with highest households completing 100 days of employment



2. Household and Individual Participation

2.4 Household Completion Percentage

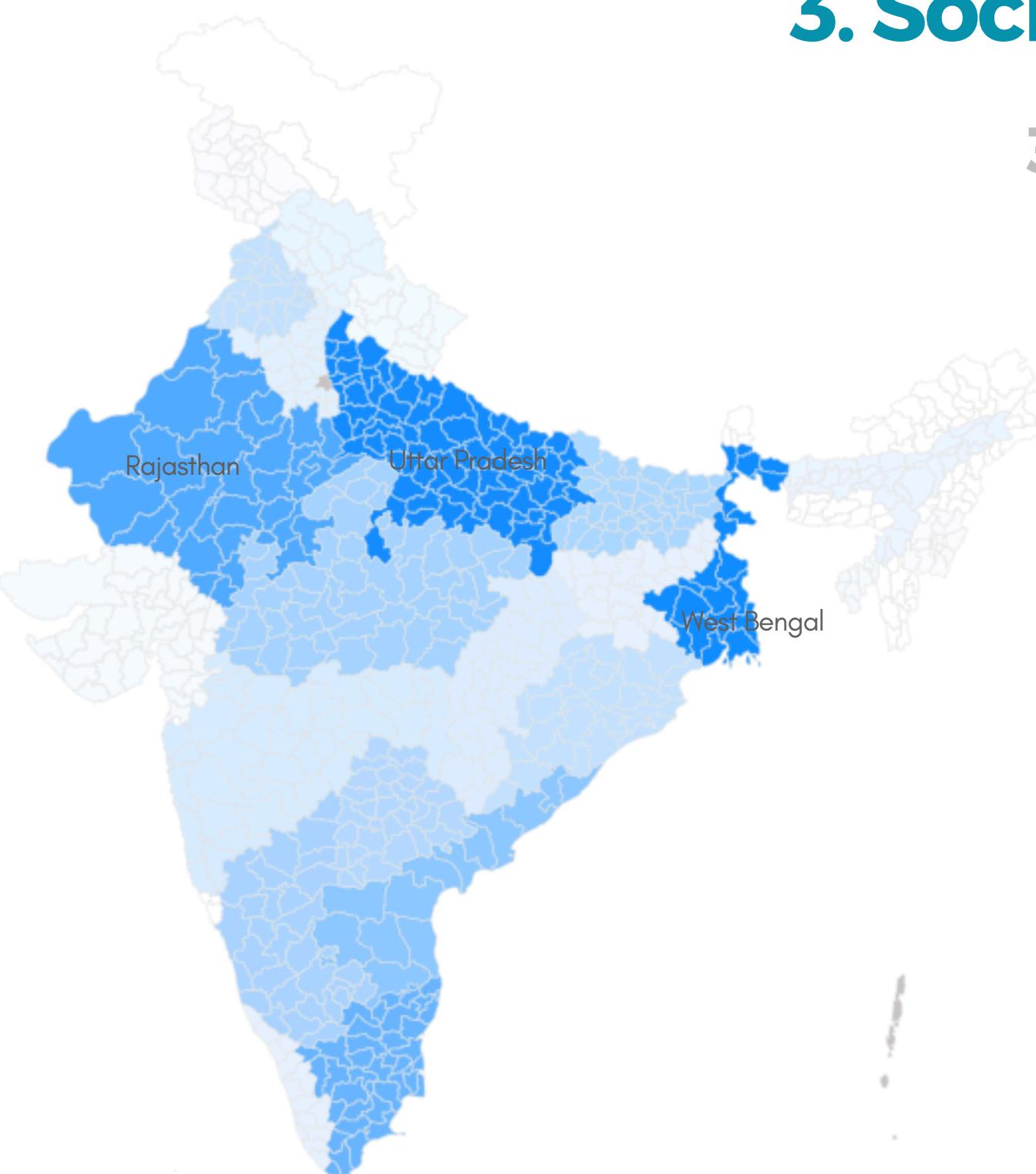
Only **0.92%** of the total households involved in the scheme completed the mandated 100 days of employment.

Odisha (3.3%), Maharashtra (3.26%), and Andhra Pradesh (2.76%) lead in the percentage of households completing 100 days of wage employment.

In contrast, several regions, including **Dadra and Nagar Haveli and Daman and Diu, Goa, and West Bengal**, have districts with no households achieving this milestone, indicating significant regional disparities.

Total SC Workers by states

State Name	Total SC workers
West Bengal	52,80,447
Uttar Pradesh	51,30,964
Rajasthan	38,29,542
Tamil Nadu	33,02,096
Andhra Pradesh	25,46,297
Madhya Pradesh	19,63,755
Karnataka	18,86,612
Bihar	18,31,567
Telangana	16,66,018
Punjab	13,37,969
Odisha	12,98,509
Maharashtra	8,77,383
Chhattisgarh	7,84,991
Haryana	5,93,405
Kerala	5,56,924
Jharkhand	5,33,528
Himachal Pradesh	4,85,987
Assam	4,02,472
Uttarakhand	2,39,689
Gujarat	2,22,431
Tripura	1,99,102
Jammu And Kashmir	85,027
Puducherry	27,312
Manipur	26,930
Meghalaya	7,914
Sikkim	6,474
Goa	236
Arunachal Pradesh	57
Mizoram	52
Andaman And Nicobar	0
Dadra and Nagar Haveli and Daman and Diu	0
Ladakh	0
Lakshadweep	0
Nagaland	0



3. Social Inclusion and Equity

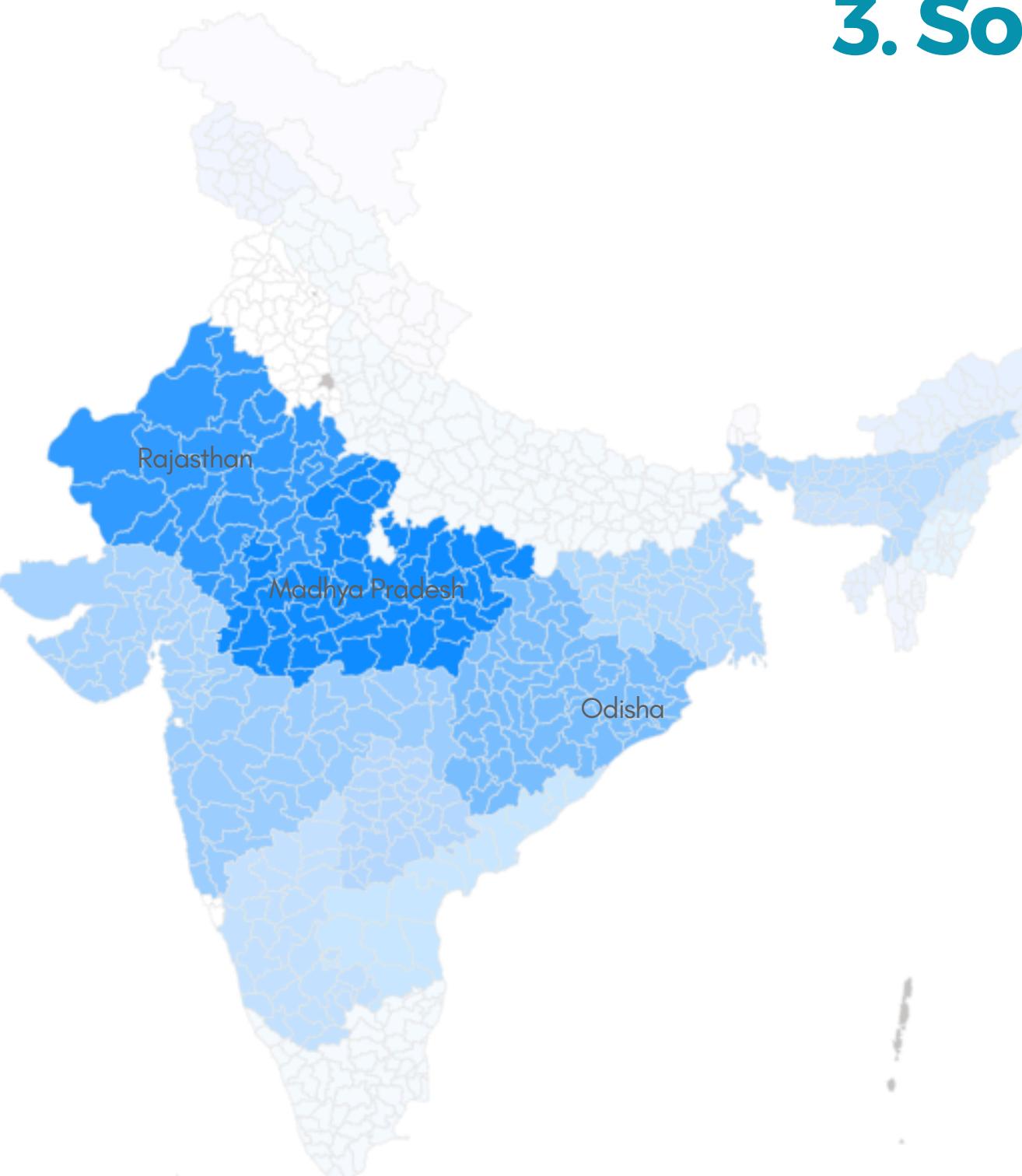
3.1 Total number of SC workers per state

Scheduled Castes (SC) are officially designated groups of people and among the most disadvantaged socio-economic groups in India.

Regarding NREGA, its inclusivity is evident with **35 million** SC workers nationwide, with the highest number coming from **West Bengal, Uttar Pradesh, and Rajasthan**.

Total ST Workers by states

State Name	ST workers
Madhya Pradesh	44,43,186
Rajasthan	37,50,169
Odisha	24,81,830
Chhattisgarh	24,51,087
Maharashtra	18,27,855
Gujarat	16,52,099
Jharkhand	15,32,946
West Bengal	14,87,260
Telangana	14,06,279
Assam	13,05,197
Karnataka	10,61,411
Meghalaya	10,34,797
Andhra Pradesh	9,47,730
Nagaland	7,43,312
Tripura	4,72,906
Arunachal Pradesh	4,35,524
Manipur	4,08,272
Mizoram	2,29,439
Jammu And Kashmir	2,20,042
Tamil Nadu	1,89,769
Bihar	1,83,597
Uttar Pradesh	1,82,888
Kerala	1,67,245
Himachal Pradesh	1,25,143
Uttarakhand	54,054
Sikkim	51,100
Ladakh	50,220
Goa	4,642
Andaman And Nicobar	1,678
Punjab	515
Lakshadweep	481
Puducherry	235
Dadra and Nagar Haveli and Daman and Diu	0
Haryana	0



3. Social Inclusion and Equity

3.2 Total number of ST workers per state

Scheduled Tribes (ST) refer to various indigenous communities or tribes recognized by the government for special protection and assistance. They are often referred to as “Adivasi” (earliest inhabitants), “Vanvasi” (inhabitants of forests), and “Vanyajati” (people of forests).

There are total **28 million** ST Worker participants in this scheme, with **Madhya Pradesh, Rajasthan** and **Odisha** having the highest number of them, while **Dadra and Nagar Haveli** and **Haryana** having none.

3. Social Inclusion and Equity

Table showing Top 5 states with highest % of SC workers among active workers

	State Name	SC workers against active workers	Total Active Workers	% SC workers
1	Punjab	1337969	1872687	71.45
2	Haryana	593405	1216597	48.78
3	Uttar Pradesh	5130964	16630532	30.85
4	Puducherry	27312	90891	30.05
5	Tamil Nadu	3302096	11009244	29.99

Table showing Top 5 states with highest % of ST workers among active workers

	State Name	ST workers against active workers	Total Active Workers	% ST workers
1	Ladakh	50220	50221	100
2	Lakshadweep	481	484	99.38
3	Mizoram	229439	231504	99.11
4	Nagaland	743312	754297	98.54
5	Arunachal Pradesh	435524	464771	93.71

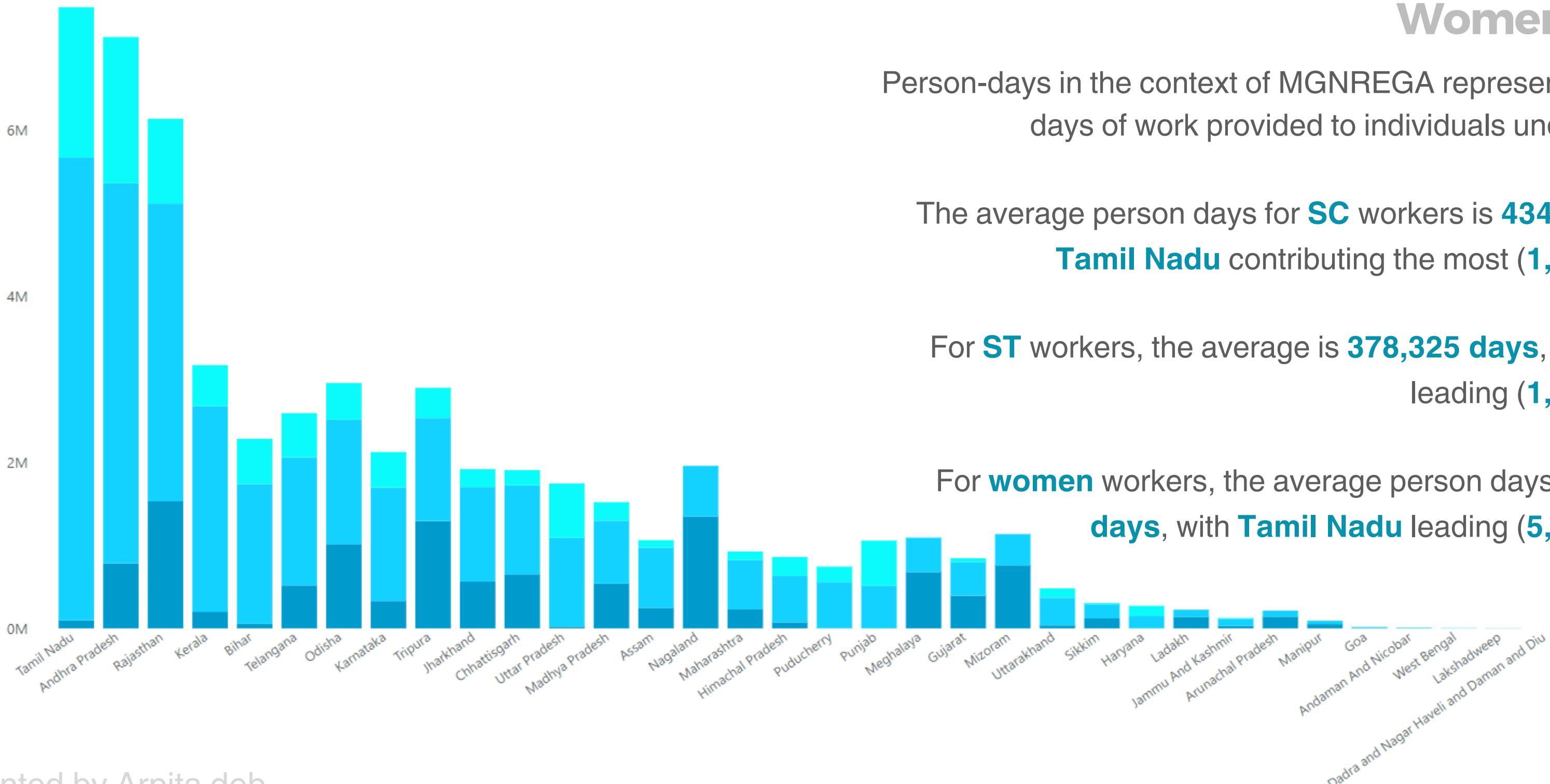
3.3 Representation of SC & ST workers among active workers

Punjab stands out with an impressive **71.45%** SC representation among active workers. In contrast, regions like **Andaman and Nicobar Islands** have no SC workers, highlighting the diversity in demographic composition and the scheme's reach across different states.

Among active workers, **Ladakh** leads with **100%** ST representation, followed by **Lakshadweep** (99.38%) and **Mizoram** (99.11%).

Stack Chart showing Average Person days of SC, ST and Women workers

- Average of ST Persondays
- Average of Women Persondays
- Average of SC Persondays



3. Social Inclusion and Equity

3.4. Average Person days of SC, ST and Women workers

Person-days in the context of MGNREGA represent the number of days of work provided to individuals under the scheme.

The average person days for **SC** workers is **434,057 days**, with **Tamil Nadu** contributing the most (**1,814,200 days**).

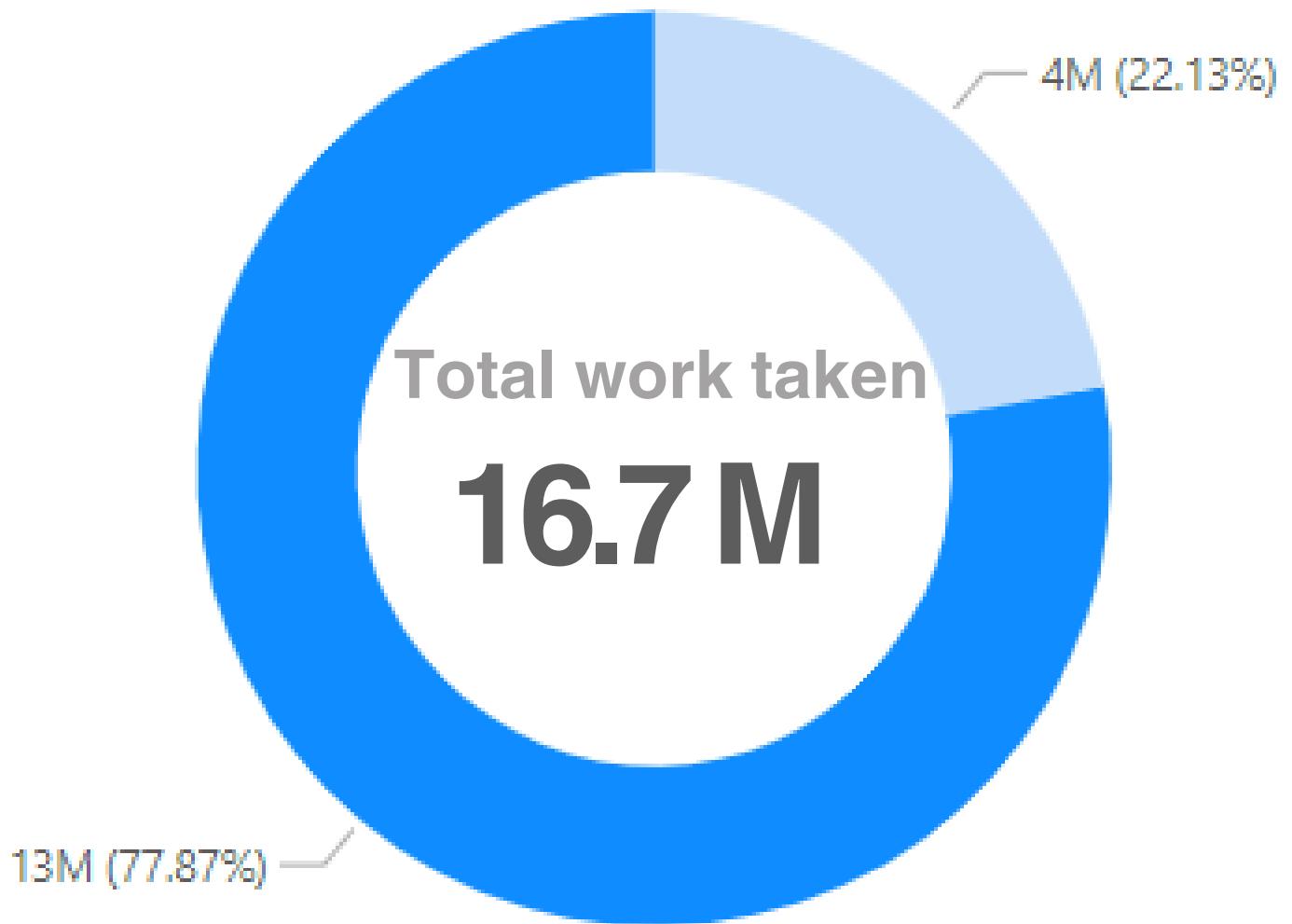
For **ST** workers, the average is **378,325 days**, with **Rajasthan** leading (**1,531,360 days**).

For **women** workers, the average person days was **1,322,646 days**, with **Tamil Nadu** leading (**5,575,217 days**).

4. Work Completion Rates

Total Work Taken Breakdown

● Total Completed Works ● Total Ongoing Works

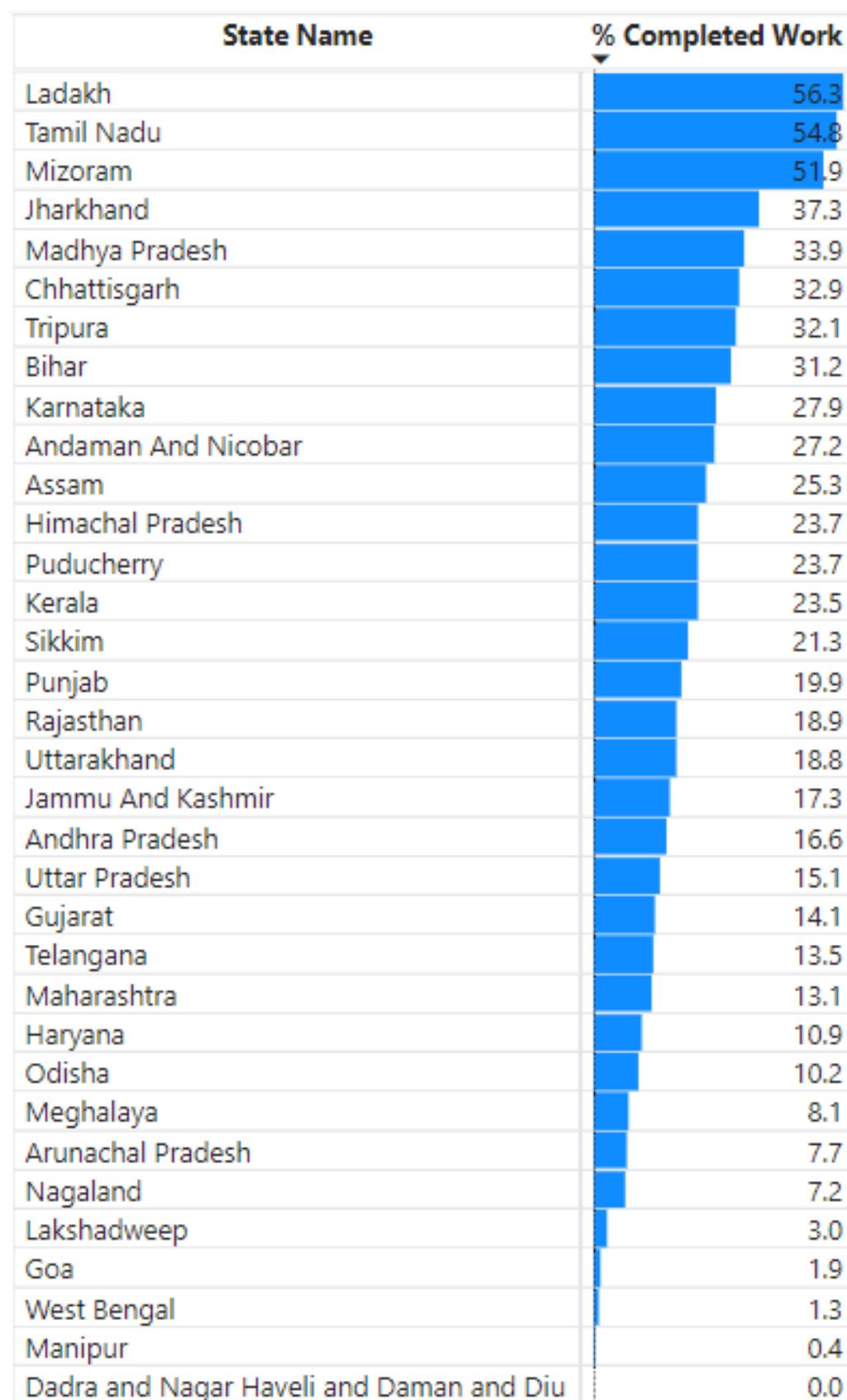


4.1 Total Work taken Breakdown

The total number of projects undertaken (including both new initiatives and carry-over tasks) was **16,765,863**, approximately **16.7 million** in total.

Among these, 13.05 million projects, accounting for **77.87%**, were still in progress, while the remaining **22.13%** (equivalent to 3.71 million projects) had been completed.

State-wise Work distribution



4. Work Completion Rates

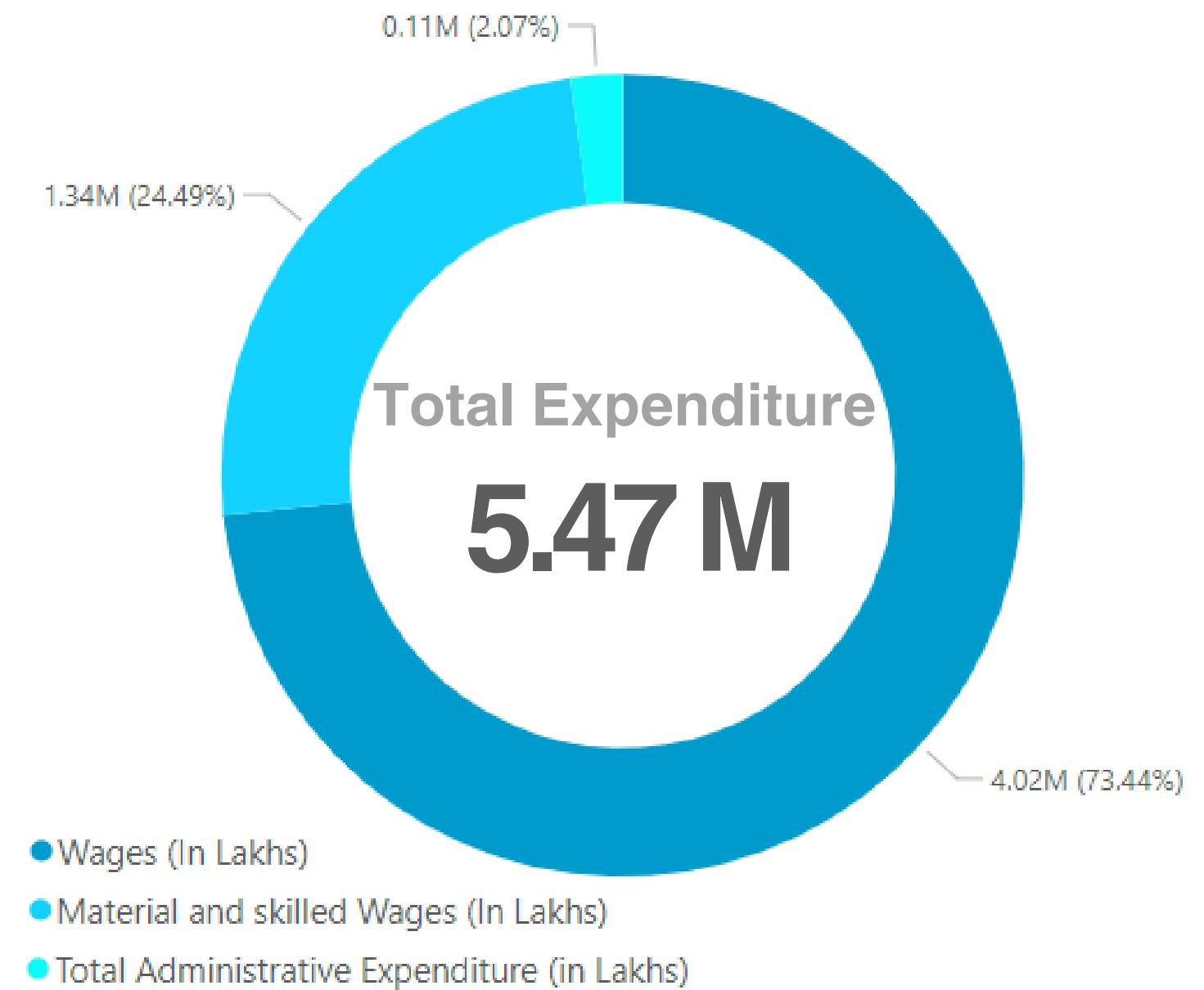
4.2 State-wise Total Work taken Breakdown

Ladakh led the completion rate, with **56.3%** of its total projects finished. **Tamil Nadu** followed closely with **54.8%** completed works, and **Mizoram** achieved **51.9%**. Naturally, these regions had the fewest ongoing projects.

Conversely, **Dadra and Nagar Haveli** had nearly **0%** completed projects, followed by **Manipur (0.4%)** and **West Bengal (1.3%)**. These areas also had the highest number of ongoing projects.

5. Budget and Resource Allocation

Total Expenditure Breakdown



5.1 Expenditure Breakdown

The total expenditure is allocated as follows:

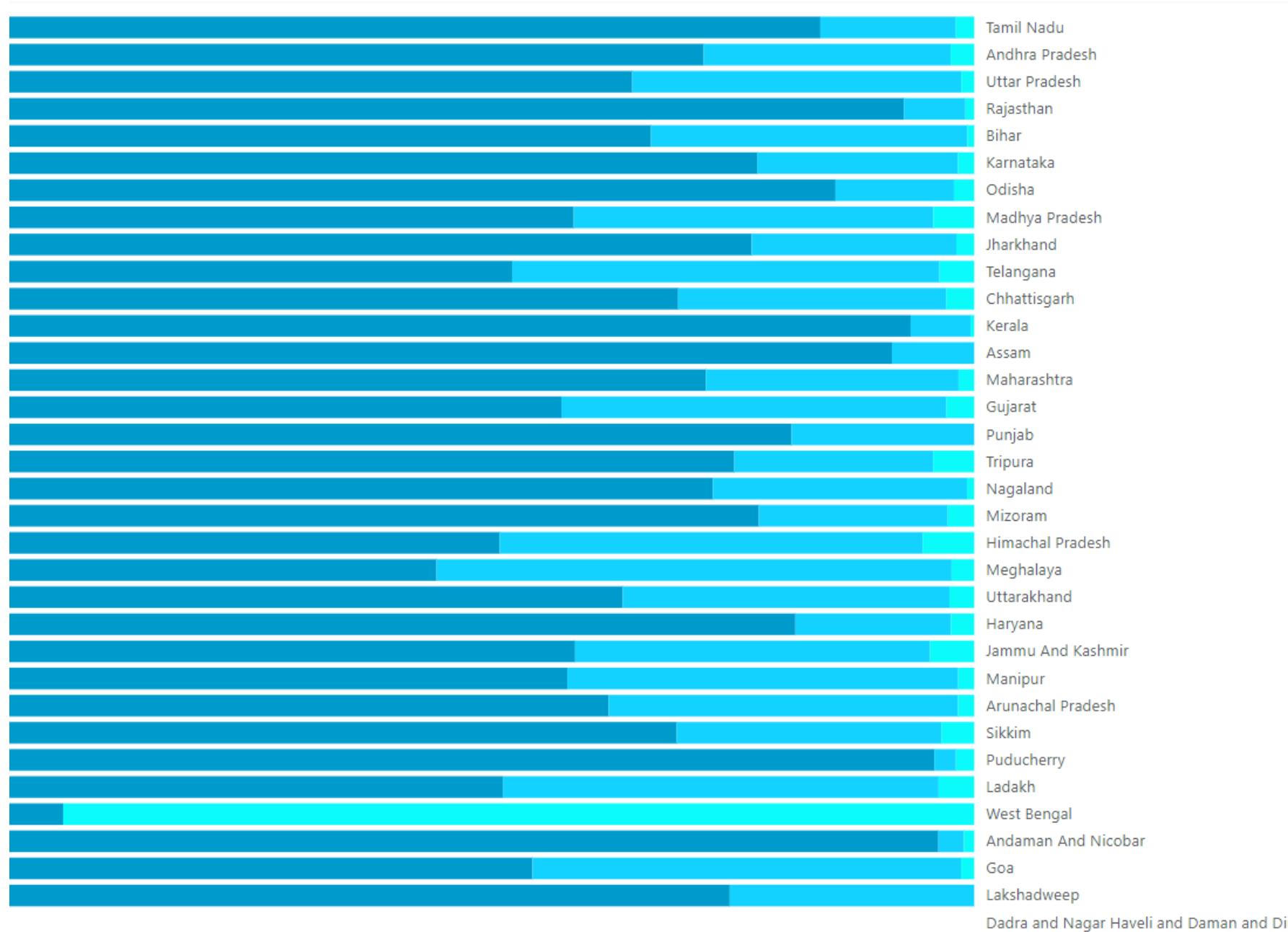
- **73.44%** for wages
- **24.49%** for materials and skilled wages
- **2.07%** for administrative costs

State-wise **Tamil Nadu** has the highest expenditure (**727,295 Lakhs**), while **Lakshadweep** has the lowest (**6.25 Lakhs**).

5. Budget and Resource Allocation

Stack Chart showing State-wise breakdown of total works taken

● Wages (In Lakhs) ● Material and skilled Wages (In Lakhs) ● Total Administrative Expenditure (in Lakhs)



5.2 State wise Expenditure Breakdown

The highest wage expenditure is observed in **Andaman and Nicobar (96.32%)**, **Puducherry (95.9%)**, and **Kerala (93.46%)**. **Himachal Pradesh (51.19%)**, **Meghalaya (44.69%)**, and **West Bengal (6.27%)** have the lowest wage expenditure.

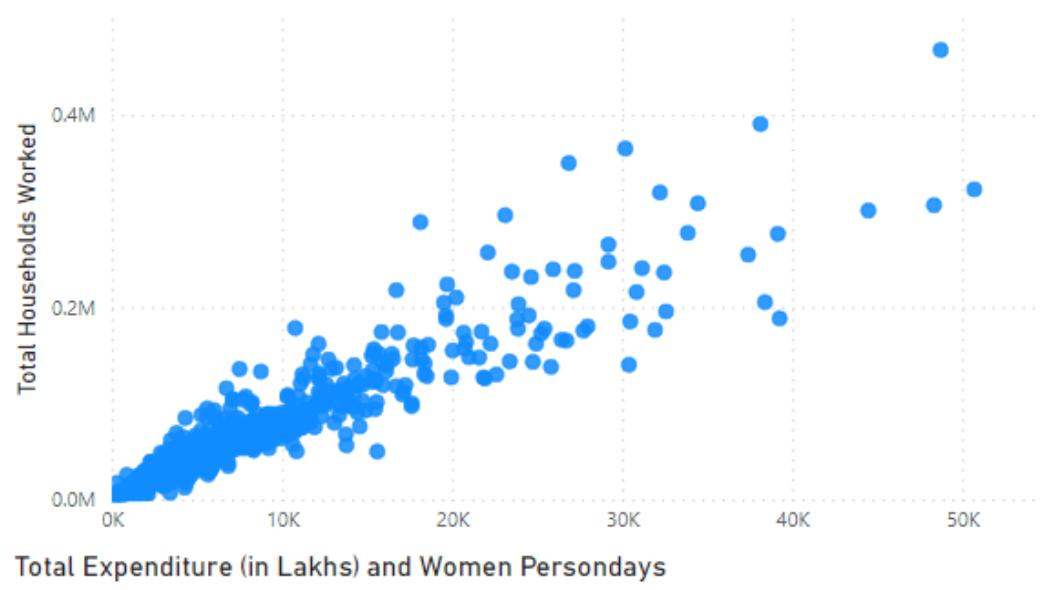
Meghalaya leads in allocating funds to materials and skills wages, with **52.98%** followed by **Ladakh (44.82%)** and **Goa (44.09%)**. **Andaman and Nicobar (2.61%)**, **Puducherry (2.23%)**, and **West Bengal (0%)** allocate the least to this category.

West Bengal stands out with the highest administrative expenditure, utilizing **93.73%** of its total expenditure for administrative purposes. In contrast, **Lakshadweep, Assam, and Punjab** allocate no funds to administrative expenses.

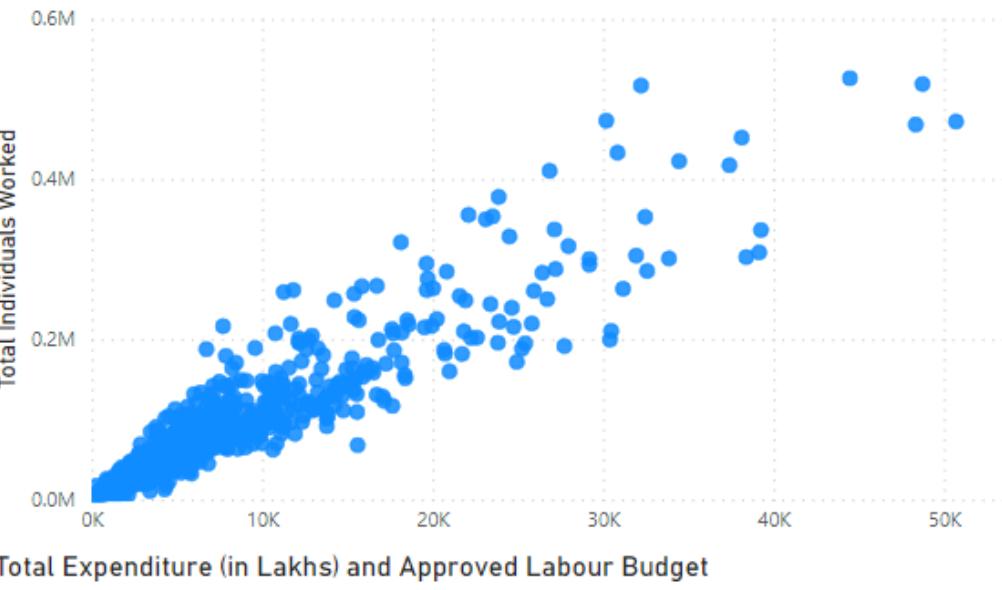
5. Budget and Resource Allocation

Relation between Expenditure and various attributes of MGNREGA Scheme

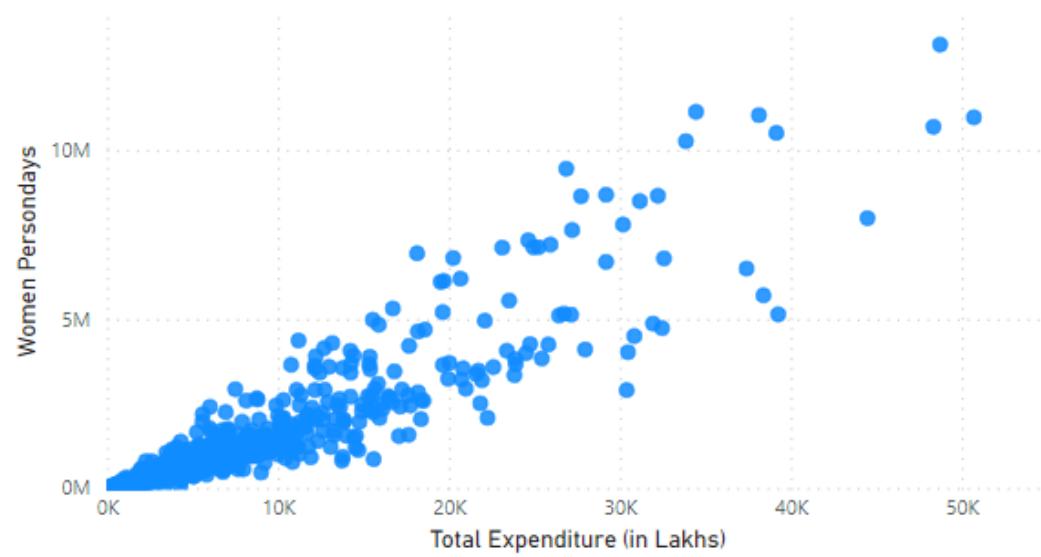
Total Expenditure (in Lakhs) and Total Households Worked



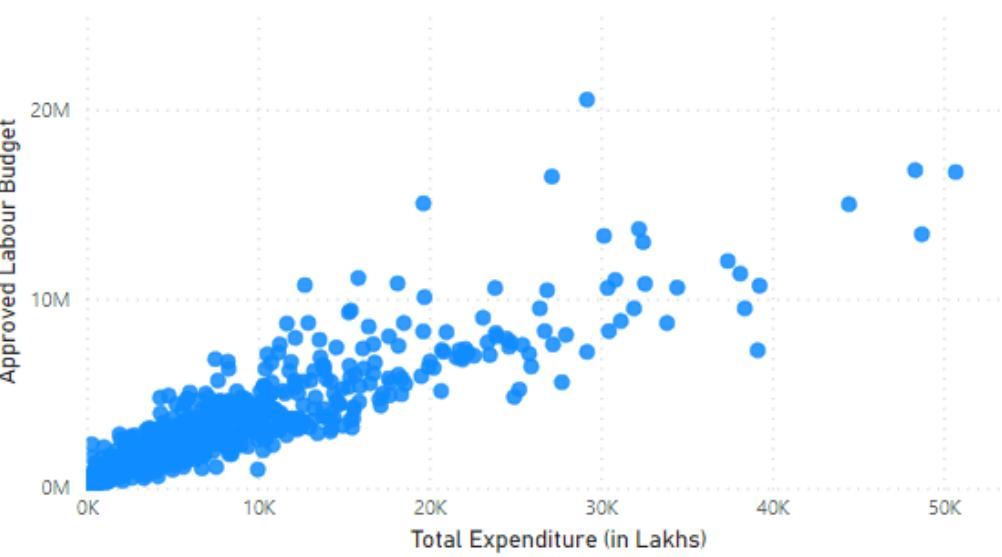
Total Expenditure (in Lakhs) and Total Individuals Worked



Total Expenditure (in Lakhs) and Women Persondays



Total Expenditure (in Lakhs) and Approved Labour Budget



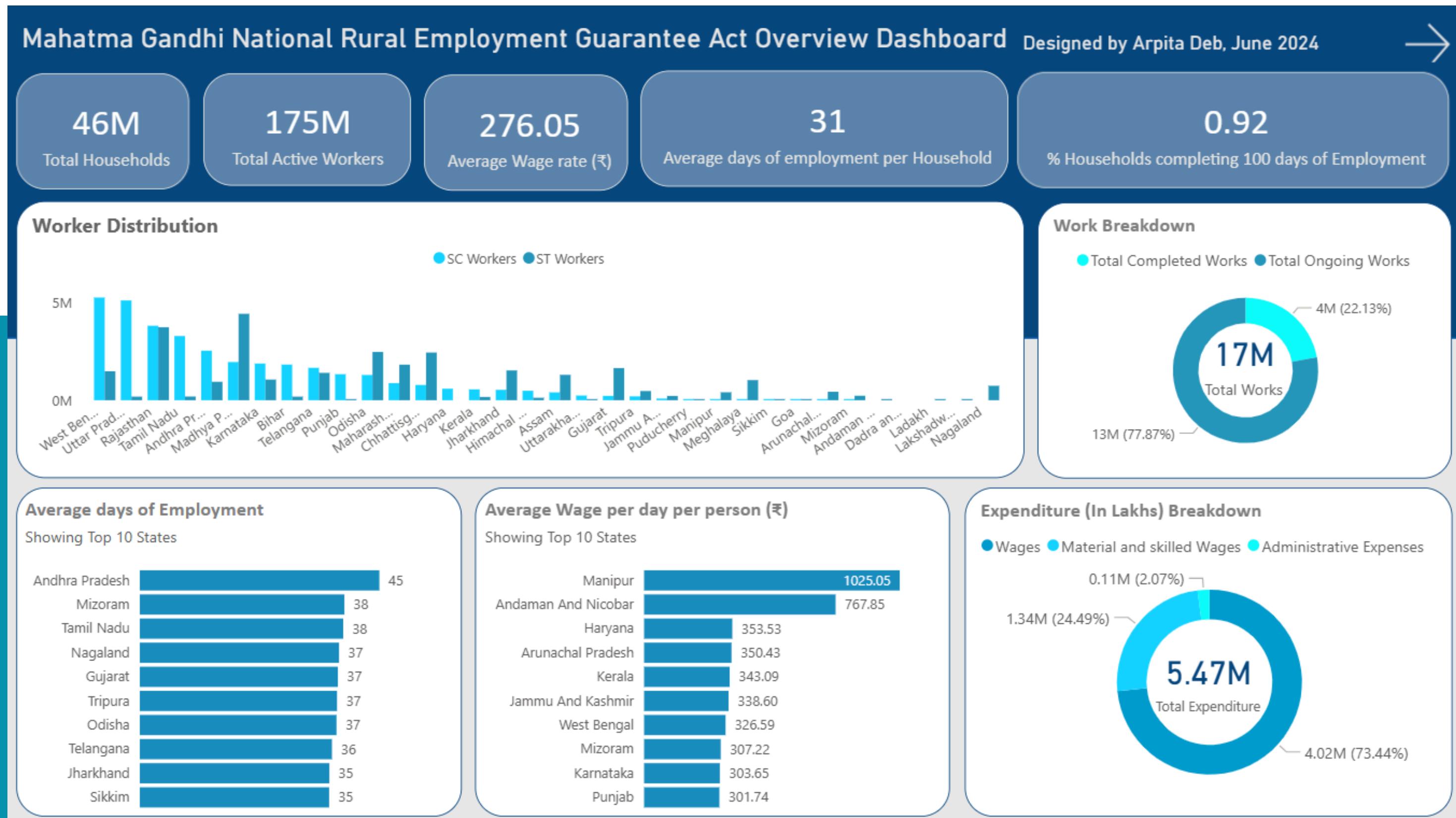
5.3 Correlation with Employment Generation

The scatterplot reveals a **positive relationship*** between total expenditure and several key factors: **total households worked, the number of individuals involved, women's person-days, and the approved labor budget.**

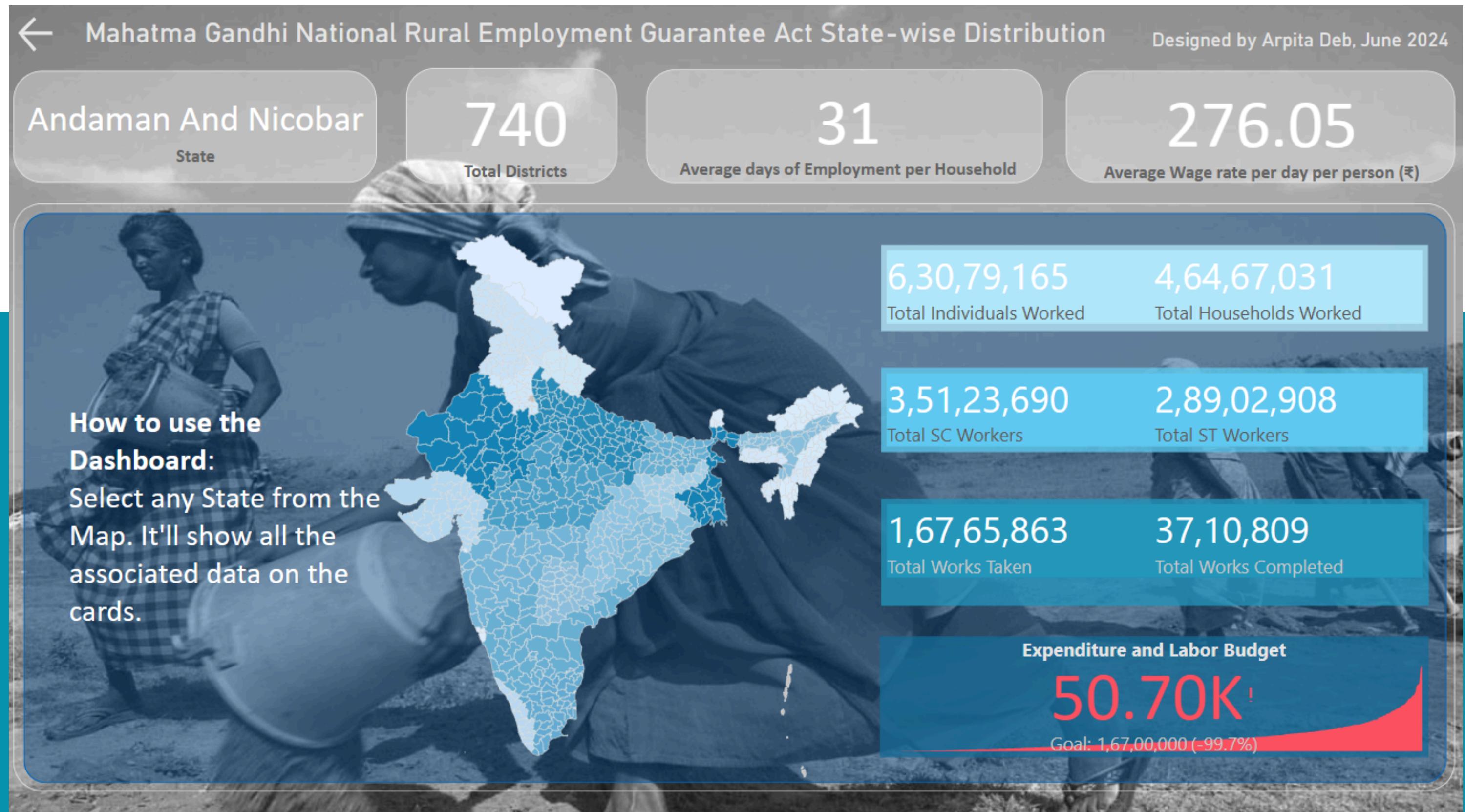
Specifically, higher total expenditure correlates with greater employment generation. This connection highlights the significance of adequate funding in achieving the program's objectives, as it leads to increased participation by households and individuals.

*A Positive slope in the scatterplot indicates a potential positive correlation

Power BI Dashboard



Power BI Dashboard



SUMMARY



- **Employment Opportunities:** NREGA successfully provides rural households with employment opportunities, although the average falls short of the guaranteed 100 days of wage employment.
- **Regional Disparities:** States like Tamil Nadu, Uttar Pradesh, Rajasthan, Andhra Pradesh, and Bihar have the highest participation rates, but regional disparities persist.
- **Funding Impact:** Adequate funding positively correlates with greater employment generation, emphasizing its crucial role in achieving program objectives.
- **Challenges and Insights:** Only 0.92% of households achieve the mandated 100 days of employment. Addressing roadblocks, such as incomplete projects, regional disparities, increasing awareness and participation are essential. Data-driven insights will help optimize NREGA's impact by identifying low-participation regions and tracking progress.

RECOMMENDATIONS



- Aim to get households closer to the 100-day employment mandate for sustained income support.
- Focus on states with low participation rates through awareness campaigns, accessibility improvements, and addressing local barriers.
- Integrate skill programs within MGNREGA for better employment prospects beyond the scheme.
- Regularly assess performance, identify areas for improvement, and ensure accountability.
- Reduce delays and ensure timely payments to boost workforce participation and satisfaction.

LIMITATIONS

- The analysis doesn't consider how metrics changed over time.
- Data on women in the workforce, which significantly contributes to the scheme, are missing.
- The quality of employment (work conditions, satisfaction levels) isn't addressed; future studies could explore these aspects.
- Long-term employment status after engagement with the scheme isn't provided.
- Comparative analysis with other employment schemes or states without MGNREGA is lacking.
- Geographical barriers affecting participation and completion rates (e.g., work site accessibility, migration patterns) aren't explored.



FUTURE IDEAS

01

Longitudinal Impact Study

Assess the long-term economic and social impacts of MGNREGA on households by using Household income, employment patterns, and social indicators before, during, and after participation in the scheme. Use time-series data to evaluate changes in economic stability, track shifts in employment sectors, and measure improvements in quality of life.

02

Comparative Policy Analysis

Compare the outcomes of MGNREGA with other similar rural employment schemes. Perform a cross-sectional study to identify strengths and weaknesses of each scheme, and provide insights into best practices for rural employment programs.

03

Geo-Spatial Analysis of Work Sites

Understand the geographical distribution of work sites and their accessibility by employing GIS mapping to visualize site distribution, identify areas with low accessibility, and suggest locations for new work sites to optimize reach by using locations of work sites, distance from villages, transportation availability, and regional topography.

REFERENCE

- [Mahatma Gandhi National Rural Employment Guarantee Act, 2005 - Wikipedia](#)
- [Mahatma Gandhi National Rural Employment Guarantee Scheme](#)
- [An evaluation of India's National Rural Employment Guarantee Act - World Bank](#)

APPENDIX

- [Problem Statement Document](#)
- [GitHub Project Documentation](#)
- [Data sets used](#)
- [Data Analysis SQL Codes](#)
- [Project Video Presentation](#)
- [MGNREGA Data Analysis with SQL Medium Article](#)

THANK YOU FOR YOUR TIME

Presented by
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