



Unveiling Regional Disparities-District Level Financial Inclusion Index for Bihar

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Article Info

ISSN (online): 2583-6641

Volume: 04

Issue: 06

November - December 2025

Received: 09-09-2025

Accepted: 11-10-2025

Published: 05-11-2025

Page No: 23-34

Abstract

The Pradhan Mantri Jan-Dhan Yojana (PMJDY), launched in 2014, has emerged as one of the most ambitious financial inclusion programs worldwide, aiming to provide universal access to banking services, affordable credit, and financial literacy. Over the last eleven years, PMJDY has shown remarkable progress in expanding account ownership, mobilizing savings, and promoting the use of digital financial services across Indian states. Building on these insights, the research constructs a District Financial Inclusion Index (DFII) for Bihar's 38 districts, incorporating indicators of availability, access, and usage of financial services. The DFII offers a composite measure to capture intra-district disparities and identify relatively lagging districts. By combining national-level trends with district-level evidence, this study provides a comprehensive picture of financial inclusion progress and challenges. The findings are expected to guide policymakers, financial institutions, and development practitioners in designing targeted interventions to deepen inclusion and enhance the socio-economic status of marginalized populations in Bihar and beyond.

DOI: <https://doi.org/10.54660/IJML.2025.4.6.40-51>

Keywords: States, Regional Disparity, Financial Inclusion, PMJDY, District Financial Inclusion Index

Introduction

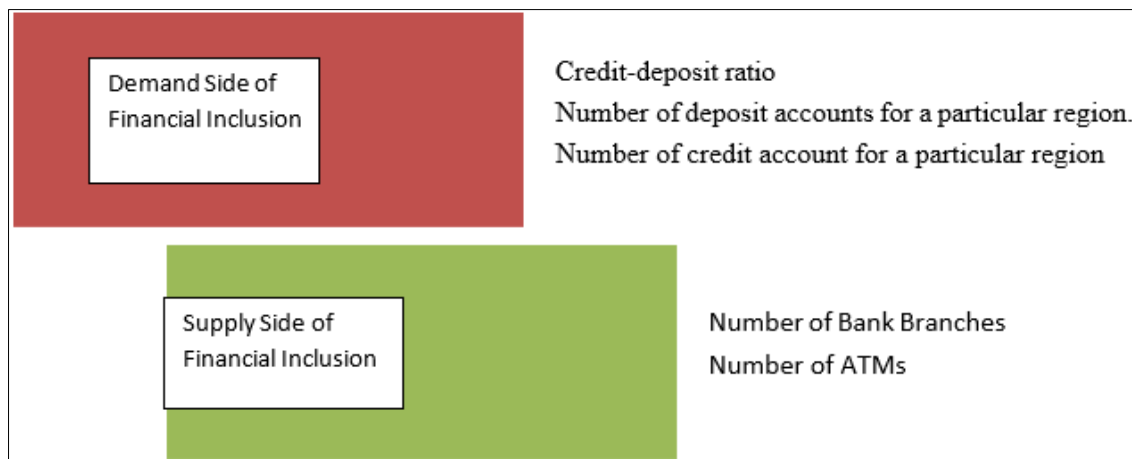
Financial inclusion, defined as the availability of banking services at an affordable cost for disadvantaged and low-income groups, is regarded as an essential component of efforts to foster inclusive economic growth in developing countries. It is widely believed that extending access to institutional financial services to deprived and unbanked women can help address their exclusion and promote empowerment. Financial inclusion has been regarded by successive governments as a top priority, making the assessment of its progress a crucial task. Such assessments provide a concrete and clear understanding of the pace and direction in which financial inclusion goals set by the Reserve Bank of India and the Government of India are being achieved. One of the most effective tools for measuring financial inclusion is the Financial Inclusion Index (FII). This index is constructed by combining multiple parameters to capture the extent of financial inclusion. It serves as an approximate measure of the basic level of inclusion across states, districts, regions, or even towns. Its utility lies in its ability to provide insights at both macro and micro levels, enabling meaningful comparisons and highlighting clear distinctions in financial inclusion between different geographic units. Research on financial inclusion recognizes it as a multi-dimensional phenomenon not merely whether individuals "have an account," but how they access, use, and are constrained from using financial services. A robust framework of measurement, therefore, must capture at least three broad dimensions:

Access	Usages	Barriers
• Infrastructure • Account ownership	• Transaction • Credit • Savings • Payments	• Cost • Distance • Documentation • Trust

Conceptual Framework

This multidimensional framing underpins most indices developed from secondary datasets. The evolution of financial inclusion measurement over the past two decades

demonstrates how approaches have advanced from simple branch density ratios to sophisticated composite indices integrating both supply- and demand-side information.



Global Perspectives: The World Bank's Global Findex Database measures financial inclusion across access, usage, and quality dimensions. Access is gauged by account ownership with banks or mobile providers. Usage includes digital transactions, savings, borrowing (formal/informal), and resilience factors such as emergency funds and insurance. Together, these form the Financial Inclusion Index (FII). The 2021 data highlighted gains in account ownership, narrowing the global gender gap to 4 percentage points the smallest in a decade driven by progress in developing economies. However, regional disparities remain, with Sub-Saharan Africa and MENA facing gaps of up to 22 points, often due to socio-cultural barriers and limited phone or ID access. National policies such as India's digital ID and Kenya's mobile money platforms have boosted women's financial participation. Beyond access, inclusion improves poverty reduction and women's empowerment. Measurement challenges include infrequent surveys, lack of subnational data, and reliance on self-reports, limiting accuracy. Over two decades, metrics evolved from simple access indicators to multidimensional frameworks integrating infrastructure, usage, and exclusion dimensions, deepening insights into inclusive finance globally.

Indian Perspective: Financial Inclusion and PMJDY

The Government of India has placed Financial Inclusion (FI) at the center of its development agenda since the early years of five years planning. Since beginning, policies were framed to ensure that the benefits of banking and credit facilities reached the poor and marginalized. A major breakthrough came with the nationalization of banks in 1969 and later in 1980, which expanded the reach of formal banking institutions into rural and semi-urban areas. These reforms enabled millions to access savings accounts, credit, and remittance services. The New Economic Policy of 1991 further liberalized the financial sector, encouraging competition and efficiency, while also pressing for reforms that supported inclusive growth. A more recent and transformative step was the launch of the Pradhan Mantri Jan

Dhan Yojana (PMJDY) in 2014, which created a massive push towards universal access to banking, digital transactions, insurance, and pension schemes.

Literature Review

Early Supply-Side Indicators: Between 2003 and 2007, early financial inclusion measurement focused on branch-based indicators, using the average population served per bank branch as the main proxy for access to financial services. While practical, this approach was limited, as it overlooked alternative channels like ATMs and mobile banking and didn't capture actual usage or behavioral aspects. Scholars later expanded definitions to include credit access—both formal and informal—and basic account ownership, gradually moving beyond infrastructure to more comprehensive perspectives. Joh *et al.* (2008) highlighted the importance of accounting for household savings behaviors as well. The field saw a notable methodological advance with Sarma's composite index (2008–2010) ^[12-14], which integrated dimensions of banking penetration, service availability, and usage. Sarma's framework further extended in 2010 included both supply- and demand-side indicators, laying the foundation for robust, multi-indicator indices that remain influential in the literature today.

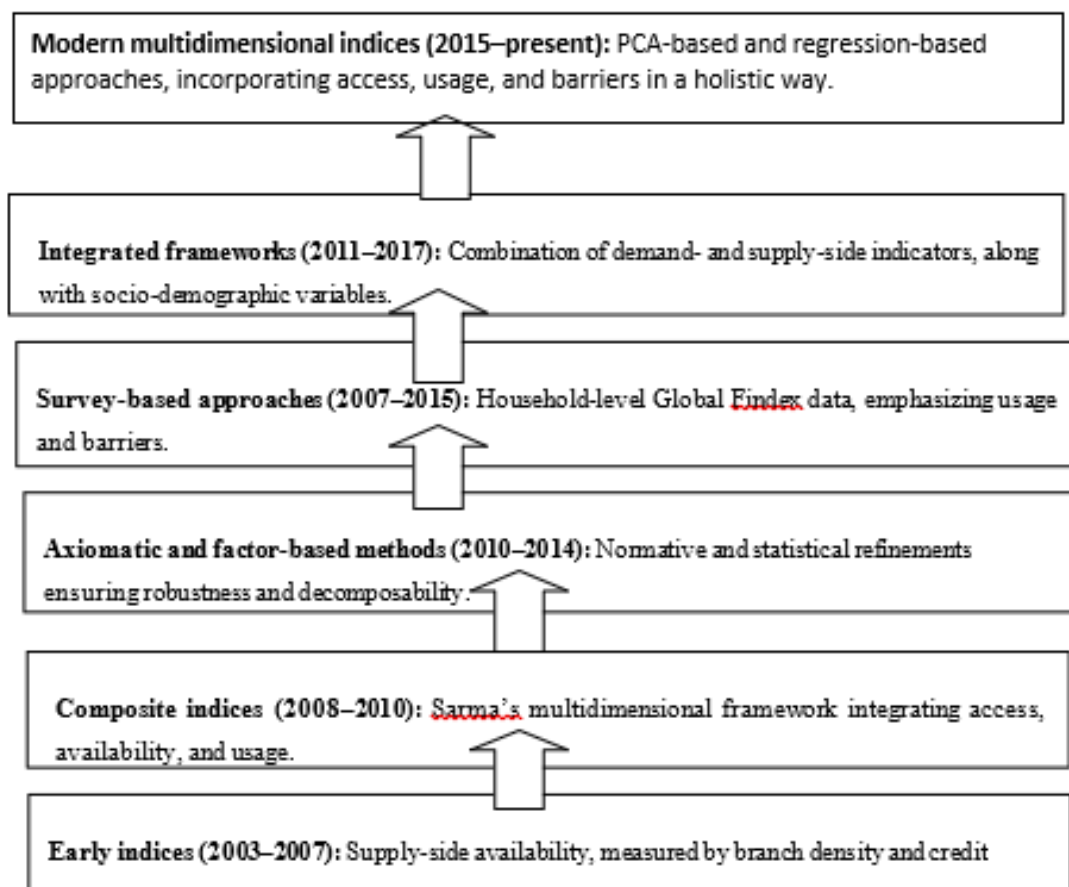
Between 2010 and 2014, financial inclusion measurement advanced through axiomatic and factor-based frameworks. Chakravarty & Pal (2010) set a benchmark using an axiomatic approach, ensuring intuitive quantitative properties and dimensional clarity across access, usage, and availability. Parallel efforts included the use of two-stage principal component analysis (PCA) and factor analysis to assign weights robustly or identify latent drivers. Empirical studies expanded indicator coverage to embrace account penetration, branch and ATM density, usage of loans and deposits, financial literacy, and consumer protection. Bhaskar (2013) introduced inequality metrics to highlight disparities in access, especially in rural regions. The late 2000s saw a shift toward demand-side, survey-based measurement, pioneered by Honohan (2007) ^[3] and followed by the World Bank's

Global Findex Database. Findex, through large-scale direct surveys on account ownership, usage, and barriers, improved cross-country comparability and enabled analysis of subgroup disparities, though it had limits in periodicity and sub-national coverage.

By the early 2010s, financial inclusion frameworks began to integrate both supply- and demand-side indicators, combining household access with infrastructural availability. Studies in Peru and India expanded inclusion metrics to encompass economic, social, and demographic factors, such as income, literacy, gender ratio, and population density. Rural research addressed business correspondents and agent networks, while global work added insurance offices and risk mitigation to classic banking indicators. Modern indices, like

CRISIL Inclusix and Cámara & Tuesta's two-stage PCA-based index, now use large sets of indicators organized under access, usage, and barriers, enhancing cross-country comparability and empirical rigor. These frameworks also account for disparities, analyzing small firms, gender, and rural-urban gaps. By blending infrastructural reach, user behavior, and exclusion constraints, today's indices yield actionable insights to policymakers. Their multidimensionality enables robust tracking of progress, exposes systemic gaps, and informs inclusive policy responses, making them essential tools for promoting financial inclusion and equitable growth in increasingly complex financial landscapes.

Progressive Evolution: Literature Source



Besides the above studies, various studies by Bec et. al (2006), FICCI & UNDP (2006), Lit et. al (2006), Hon (2008), Kum et. al (2011), Rey et. al (2011), IMF (2012), Sar (2013) and WB (2012) measured financial inclusion on several dimensions like: The indicators of financial inclusion include the number of commercial bank branches per 1,000 km² and ATMs per 1,000 km², which reflect the geographical access to financial services. Outstanding deposits with commercial banks as a percentage of GDP indicate the overall penetration of banking in the economy, while deposit accounts with commercial banks per 1,000 adults and household deposit

accounts per 1,000 adults measure the extent of individual and household participation in the formal banking system. Similarly, the number of commercial bank branches per lakh adults and ATMs per 100,000 adults capture population-based access to banking services. On the credit side, outstanding loans from commercial banks as a percentage of GDP provide insights into credit penetration, whereas loan accounts with commercial banks per 1,000 adults and household loan accounts per 1,000 adults reflect the distribution of credit among individuals and households.

Table 1:

Dimension	Indicator name	Variables	Source
Usage	Number of Deposit Accounts	% of adults with a formal savings account	Demirgüç-Kunt & Klapper 2013,2015
	Number of Loan Accounts	% with formal borrowing or credit access	
	Account Ownership	Proportion of adults owning any formal financial account	
	Savings	Total amount or prevalence of savings accounts	
	Credit or Loan Usage	Proportion of population with access to credit or loans	
Access	Access to Bank Branches	Branch density per 100,000 population	Honohan (2007) ^[3] , Chakravarty & Pal (2010)
	Number of ATMs	ATMs per 100,000 population	
	Distance to Service Points	Geographical distance or travel time to nearest branch or ATM	
Barrier s	Affordability	Costs associated with opening or maintaining accounts	Chakravarty & Pal (2010),Dabla-Norris <i>et al.</i> (2015),Chakravarty & Pal (2010), Mishra (2007)
	Financial Literacy /Awareness	Knowledge or awareness about financial products	
	Trust in Financial System	Level of trust or confidence in financial institutions	
	Barriers to Access	Costs, distance, documentation, trust issues	

Compiled by author from various literature source

State wise Analysis of Coverage and Impact of PMJDY

This section presents an updated overview of the coverage and impact of the Pradhan Mantri Jan Dhan Yojana (PMJDY) on financial inclusion across various states and Union Territories of India, using the latest data available on the PMJDY official website as of 2025. The analysis focuses on multiple dimensions, including the total number of accounts opened in both rural and urban areas, the aggregate number of beneficiaries, and the issuance of RuPay debit cards. A

special emphasis has been given to identifying the leading performers among states and UTs. Researchers have ranked the top twelve states based on two primary indicators the number of accounts opened under rural and urban segment and the volume of RuPay cards issued to beneficiaries. This ranking helps highlight regional differences in outreach and financial access while showcasing states that have made significant progress under PMJDY.

Table 2: State and UT ranking as per Urban to Total Beneficiary Accounts Penetration

State Name	Rural	Urban	Total Beneficiaries	Balance in beneficiary accounts (in crore)	No. of RuPay cards issued to beneficiaries	Rank
Andaman And Nicobar Islands	46,378	17,278	63,656	46.33	38,067	
	*(72.857%)	*(27.142%)	100		*(59.80)	
Chandigarh	49,385	288,883	338,268	199.82	216,549	
	*(14.599)	*(85.40)	100		*(64.01)	2nd
Delhi	649,016	6,224,907	6,873,923	3,384.32	5,302,552	
	*(9.44)	*(90.55)	100		*(77.14)	Ist
Jammu And Kashmir	1,852,393	384,232	2,236,625	1,700.31	1,796,643	
	*(82.82)	*(17.17)	100		*(80.328)	
Ladakh	15,677	3,538	19,215	25.66	14,402	
	*(81.58)	*(18.41)	100		*(74.95)	
Lakshadweep	8,409	1,868	10,277	18.44	7,789	
	*(81.82)	*(18.17)	100		*(75.79)	
Puducherry	145,741	122,774	268,515	120.05	167,667	
	*(54.27)	*(45.72)	100		*(62.44)	3rd
The Dadra And Nagar Haveli and Daman and Diu	229,894	12,811	242,705	180.61	171,140	
	*(94.72)	*(5.27)	100		*(70.51)	
State Name	Rural	Urban	Total Beneficiaries	Balance in beneficiary accounts (in crore)	No. of RuPay cards issued to beneficiaries	Rank
Andhra Pradesh	11,051,987	5,170,273	16,222,260	5,196.62	10,470,911	8th
	*(68.128%)	*(31.87%)	100		*(64.54%)	
Arunachal Pradesh	466,075	10,424	476,499	260.77	319,395	
	*(97.81)	*(2.187)	100		*(67.029)	
Assam	22,752,182	2,471,395	25,223,577	6,675.76	14,991,186	
	*(90.20)	*(9.79)	100		*(59.43)	
Bihar	57,695,128	8,128,806	65,823,934	26,324.38	47,465,317	

	*(87.65)	*(12.34)	100		*(72.109)	
Chhattisgarh	15,217,015	3,230,698	18,447,713	8,518.80	11,225,844	
	*(82.48)	*(17.51)	100		*(60.85)	
Goa	189,187	33,191	222,378	199.8	157,149	
	*(85.07)	*(14.92)	100		*(70.66)	
Gujarat	13,386,460	6,204,812	19,591,272	11,029.59	14,895,994	9th
	*(68.32)	*(31.67)	100		*(76.03)	
Haryana	6,267,010	4,546,313	10,813,323	7,186.17	7,432,510	4th
	*(57.95)	*(42.04)	100		*(68.73)	
Himachal Pradesh	1,897,980	126,817	2,024,797	1,467.95	1,330,963	
	*(93.73)	*(6.26)	100		*(65.73)	
Jharkhand	18,063,791	1,970,706	20,034,497	10,891.11	13,649,122	
	*(90.16)	*(9.83)	100		*(65.21)	
Karnataka	14,591,457	6,402,840	20,994,297	10,747.30	13,065,091	
	*(69.50)	*(30.49)	100		*(62.23)	
Kerala	5,433,828	1,729,956	7,163,784	3,475.56	3,888,161	
	*(75.85)	*(24.14)	100		*(54.27)	
Madhya Pradesh	36,032,291	10,042,003	46,074,294	17,253.13	34,286,048	
	*(78.20)	*(21.79)	100		*(74.41)	
Maharashtra	25,976,161	10,924,731	36,900,892	18,303.77	26,088,029	
	*(70.394)	*(29.60)	100		*(70.69)	
Manipur	827,464	259,826	1,087,290	294.98	706,320	
	*(76.10)	*(23.89)	100		*(64.96)	
Meghalaya	828,446	57,649	886,095	493.5	535,921	
	*(93.49)	*(6.50)	100		*(60.48)	
Mizoram	262,098	161,705	423,803	209.8	197,018	
	*(61.84)	*(38.15)	100		*(46.48)	6th
Nagaland	314,564	97,829	412,393	139.33	310,985	
	*(76.27)	*(23.72)	100		*(75.40)	
Odisha	20,727,398	2,691,589	23,418,987	11,783.55	16,760,513	
	*(88.50)	*(11.49)	100		*(71.56)	
Punjab	6,060,692	3,562,780	9,623,472	4,559.30	6,851,313	7th
	*(62.97)	*(37.02)	100		*(71.19)	
Rajasthan	28,858,344	8,759,299	37,617,643	21,257.11	27,923,579	
	*(76.71)	*(23.28)	100		*(74.23)	
Sikkim	71,898	33,014	104,912	54.15	72,428	10th
	*(68.53)	*(31.46)	100		*(69.036)	
Tamil Nadu	11,129,611	6,871,623	18,001,234	6,410.97	13,025,574	
	*(61.82)	*(38.17)	100		*(72.35)	5th
Telangana	9,370,709	3,645,566	13,016,275	4,938.65	8,960,353	
	*(71.99)	*(28.00)	100		*(68.83)	
Tripura	1,015,004	123,925	1,138,929	647.63	619,556	
	*(89.11)	*(10.88)	100		*(54.39)	
Uttar Pradesh	81,312,176	19,738,937	101,051,113	55,767.35	68,707,813	
	*(80.46)	*(19.53)	100		*(63.99)	
Uttarakhand	2,845,576	1,110,255	3,955,831	2,722.81	2,672,872	
	*(71.93)	*(28.066)	100		*(67.56)	
West Bengal	46,003,563	8,678,757	54,682,320	26,094.76	35,607,126	
	*(84.12)	*(15.87)	100		*(65.11)	
Total	441,644,988	123,842,010	565,486,998	268,580.14	389,931,900	

Researchers Compilation based on data collected from ministry of Finance (PMJDY-2025)

In table number 2, The researchers divided the analysis into two segments: Union Territories in the upper portion of the table and states in the lower portion. Among Union Territories, Delhi, Chandigarh, and Puducherry show a higher proportion of urban beneficiaries compared to their total beneficiaries. Similarly, in the case of states, Haryana, Tamil Nadu, Mizoram, Punjab, and Andhra Pradesh record a greater percentage of urban beneficiaries. In contrast, the majority of other states, including Bihar the primary state under study reflect a dominance of rural beneficiaries, highlighting the rural-centric nature of financial inclusion under PMJDY across most parts of India.

The analysis of PMJDY balances across Andaman & Nicobar Islands (46.33), Ladakh (25.66), Lakshadweep (18.44), and Sikkim (54.15) highlights significant regional variations.

Among these, Ladakh and Lakshadweep represent the lowest balance holders, reflecting weaker economic strength and limited banking activity. These areas are geographically isolated with smaller populations and limited livelihood opportunities, which restrict the capacity of beneficiaries to maintain higher deposits. The Andaman & Nicobar Islands, while slightly better, still fall on the lower side in terms of account balances, indicating that financial inclusion has not fully translated into active usage and higher savings. In contrast, Sikkim reports relatively higher balances among the four, suggesting better economic participation and stronger integration of people into the financial system. Overall, these states and Union Territories illustrate that while PMJDY has achieved wide coverage, the balance levels remain low in

smaller and remote regions, pointing to the need for improved financial literacy, income opportunities, and savings mobilization.

The analysis of PMJDY balances across Bihar (26,324), Maharashtra (18,303), Rajasthan (21,257), Uttar Pradesh (55,767), and West Bengal (26,094) reveals sharp differences in account usage and deposit levels. Uttar Pradesh stands out with the highest balance, indicating stronger participation and higher savings among beneficiaries. Bihar and West Bengal reflect almost similar balances, placing them in the moderate range, while Rajasthan follows slightly lower. Interestingly, Maharashtra, despite being one of India's most industrialized states, records the lowest balance, pointing to weaker usage of PMJDY accounts by rural and marginalized groups. Overall, the figures highlight uneven progress in financial inclusion across major states.

This table highlights the issuance of RuPay debit cards across different States and Union Territories (UTs) in India, reflecting the progress of financial inclusion and adoption of digital transactions. The data shows that among UTs, Delhi, Jammu and Kashmir (80%), Ladakh (75%), Lakshadweep (76%), and Dadra & Nagar Haveli and Daman & Diu (70.5%) report the highest penetration of RuPay cards, indicating strong acceptance of digital banking. On the other hand, states like Mizoram (46%) and Tripura (54%) show the lowest penetration, reflecting challenges in expanding financial inclusion in the Northeast region. Overall, the distribution suggests that citizens across states and UTs are positively responding to government initiatives aimed at promoting financial inclusion and building a cashless economy. Since RuPay cards are a key instrument for enabling digital payments, their wider adoption indicates progress toward a digitally empowered economy. However, in many states where penetration remains below 50%, challenges persist. One significant reason could be the transaction charges imposed after a limited number of free ATM withdrawals, as per RBI norms. These costs reduce the affordability and accessibility for low-income account holders, discouraging them from frequent usage. Addressing such barriers is crucial to achieving universal adoption of digital financial services.

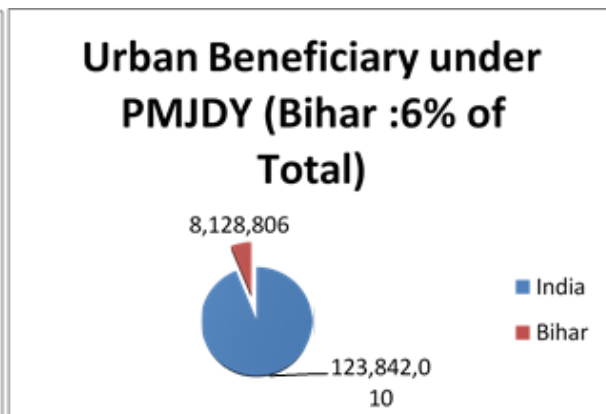
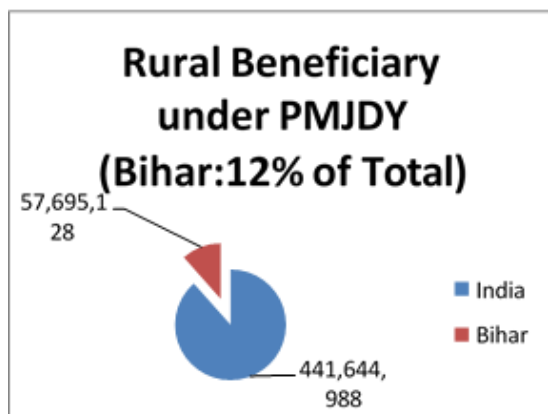
Bihar at a glance under PMJDY: Financial Inclusion holds special significance in Bihar, one of India's most socio-economically disadvantaged states. A large section of its population, particularly in rural districts, has historically remained excluded from formal financial services. Bihar's performance under the Pradhan Mantri Jan Dhan Yojana (PMJDY) illustrates the deepening of financial inclusion in one of India's most socio-economically challenged states. The latest data indicate that the state has achieved a total of 65.82 million beneficiary accounts, of which 57.69 million (approximately 88%) are held in rural and semi-urban branches, while

8.12 million (12%) are located in urban and metropolitan areas. This distribution closely aligns with Bihar's demographic profile, where the majority of the population resides in rural settlements, thereby underscoring the scheme's success in addressing regional disparities in access to formal finance. By 2025, approximately 78% of rural women in Bihar held bank accounts, aligning closely with male account ownership. Over 5 crore PMJDY accounts had been opened in the state, with 3.67 crore in rural areas, demonstrating the scheme's strong penetration. As of September 2025, Bihar recorded 57,695,128 Jan Dhan accounts, underscoring the extensive uptake of financial services among women. This expansion reflects the complementary role of SHGs and Jeevika, which had laid the groundwork for women's collective financial activity. The combination of group-based SHGs and individual PMJDY accounts has enhanced women's autonomy, social bargaining power, and capacity to make household financial decisions, thereby strengthening both economic and social empowerment.

The aggregate balance of ₹26,324.38 crore deposited in these accounts highlights not only widespread account ownership but also the growing reliance on formal savings channels. Furthermore, the issuance of 47.46 million RuPay debit cards demonstrates a significant expansion of transactional capacity, contributing to digital financial participation. Collectively, these indicators affirm PMJDY's role in advancing inclusive growth and women's empowerment in Bihar.

Table 3:

State Name	Rural Beneficiary	Urban Beneficiary	Total Beneficiaries	Balance in beneficiary accounts (in crore)	No. of RuPay cards issued to beneficiaries
Bihar	47,320,629	17,972,184	65,292,813	25,617.46	47,157,080



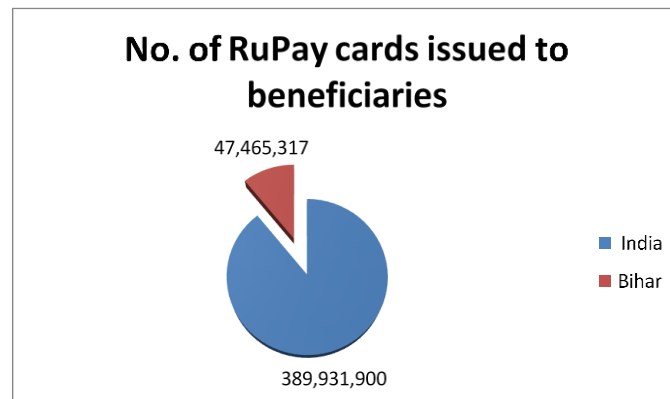


Fig 1-3:

Measuring District wise Financial Inclusion Index, Analysis and Coverage: Bihar

To assess the inclusiveness of the financial system across the 38 districts, we construct a District Financial Inclusion Index (FII) by evaluating multiple dimensions. Different researchers have adopted varied approaches in defining and measuring financial inclusion. For instance, Honohan (2007) [3] focused on formal bank accounts and deposits as a share of per capita GDP. Sarma (2008) [12] measured inclusion through three dimensions: Penetration (number of bank accounts per 1,000 population), Availability (number of bank branches and ATMs per 1,000 population), and Usage (number of beneficiaries). Mehrotra *et al.* (2009) examined indicators such as the number of bank offices, deposit accounts, deposit volumes at the rural level, and district-level credit from banks.

To construct the Financial Inclusion Index (FII) for the 38 districts, we adopt the framework proposed by Sarma (2008) [13] as our base reference. In her study, Sarma evaluates financial inclusion using three key dimensions: Penetration (or Accessibility), Availability, and Usage, drawing from an all-India dataset and employing a methodology inspired by the Human Development Index (HDI) calculation. Each dimension is computed as:

$$D_i = \frac{(d_1 + d_2 + d_3 + \dots + d_n)}{n}$$

$$d_i = \frac{(A_i - m_i)}{(M_i - m_i)}$$

where i = i th indicator; D = dimension; d = variables of dimension; A = actual value; m = minimum value; and M =

maximum value (Sarma, 2008) [13].

$$FII = 1 - \sqrt{\{[(1-p_i)^2 + (1-a_i)^2 + (1-u_i)^2] / 3\}}$$

where i = i th indicator; p = dimension indices for penetration (or accessibility); a = availability; and u = usage (Sarma, 2008) [12]. This FII (or IFI) is a multidimensional approach that computes different FI dimensions through a single digit, the value of which lies between 0 to 1, indicating 0 for complete FE (Financial Exclusion) and 1 for complete FI (Sarma & Pais, 2008) [12]. In this study, we have considered 3 dimensions of FI, the details of which are provided in table. For the construction of the District-level Financial Inclusion Index (FII) of Bihar, the methodology is based on the district-wise availability of data for the identified indicators. The most recent data, available for FY 2021, has been obtained from the official portals of the Government of Bihar and the PMJDY (Pradhan Mantri Jan Dhan Yojana). In this study, we have considered nine indicators, grouped under three dimensions, to develop both the sub-indices and the composite index.

- The inclusion of Availability indicators highlights the ease of physical access to financial institutions, suggesting that citizens do not need to travel long distances to reach the nearest bank branch or ATM.
- The Accessibility indicators reflect the effectiveness of financial inclusion schemes in integrating previously excluded sections of the population into the formal financial system.
- The Usage indicators demonstrate the extent to which people are engaging with financial services, as reflected in the per capita levels of deposits and credit.

Table 3

Indicators of FI			
Sl. No.	Dimension	Variable	Symbol
1	Availability	Number of banks branched per 1000 Sq Km	D1
		No. of ATM per 1000 Sq.Km.	
		Total number of BC/CSP outlets per Sq Km	
2	Accessibility	Total Number of PMJDY Per 1000 Population (As on August 2025)	D2
		Total number of PMSBY accounts per 1000 population	
		Total number of PMJJBY accounts per 100 population	
		Total number of APY Accounts per 1000 Population	
3	Usages	Per capita Deposit (In Rupees)	D3
		Per capita Credit (In rupees)	

Dimensions & Indicators in present Studies

Methodology

The index construction follows a structured three-step process.

- First, normalization is applied using min-max scaling for each indicator across all states. The Excel template is formula-enabled, so once raw values are entered, the normalized scores are automatically generated.
- Second, dimension grouping organizes the nine indicators into three core dimensions Availability, Access, and Usage. For each dimension, the score is calculated as the simple average of its normalized indicators, ensuring comparability within the group.

Finally, a composite score is derived by assigning equal weight to each dimension. This means the overall index is the average of the three-dimension scores, preventing any dimension with a higher number of indicators from exerting disproportionate influence. Equal weighting across dimensions thus balances the framework and maintains consistency in interpretation. All underlying formulas are pre-built in the Excel sheet, allowing seamless replication and easy updating when new data is added. Although Bihar faces challenges in terms of socio-economic development, it has

been making gradual progress in strengthening its financial infrastructure.

Data Source and Frame of Study: The dataset for the present analysis has been compiled using district-level information retrieved primarily from the official State Level Bankers' Committee (SLBC) Bihar portal. The study employs district-wise population data from the Census of India 2011 as the demographic baseline, ensuring uniformity and consistency in measurement across districts. In addition, district area details were sourced from multiple credible government and statistical websites to support geographical normalization within the index framework. These datasets collectively form the empirical foundation for constructing the Financial Inclusion Index (FII) for Bihar. The integration of demographic, spatial, and financial parameters enables the assessment of inclusion disparities across districts. This methodological approach facilitates a comprehensive evaluation of access, availability, and usage dimensions of financial services. The compiled information thus provides a reliable and standardized base for district-wise comparative analysis and the identification of spatial clusters with low levels of financial inclusion.

Table 4: Availability Index (District wise): Dimension (I)

S. No.	Name of District	No. of Bank Branches	No. of ATMs	Total Banking Outlets/ BC Outlet.	Total	Area	Banking Facilities per Sq. Km	Availability Sub Index (d1)	District Rank
1	Araria	171	116	2695	2982	2,829	1,054	0.01167181	18
2	Arwal	67	32	468	567	637	890	0.00879959	25
3	Aurangabad	208	148	1533	1889	3,303	572	0.00322575	34
4	Banka	136	99	1404	1639	3,018	543	0.00272076	35
5	Begusarai	237	203	3377	3817	1,917	1,991	0.0280856	5
6	Bhagalpur	296	302	2084	2682	2,569	1,044	0.01149495	19
7	Bhojpur	249	197	1827	2273	2,473	919	0.00930786	24
8	Buxar	160	107	1312	1579	1,624	972	0.0102391	22
9	Darbhanga	261	226	3926	4413	2,278	1,937	0.02714135	6
10	Gaya	336	337	10135	10808	4,978	2,171	0.03123894	3
11	Gopalganj	201	170	2265	2636	2,033	1,297	0.01591996	11
12	Jamui	130	66	1396	1592	3,099	514	0.00220646	36
13	Jehanabad	99	76	618	793	1,569	505	0.00206114	37
14	Kaimur (Bhabua)	130	67	1107	1304	3,363	388	0	38
15	Katihar	197	132	1885	2214	3,056	724	0.00589827	31
16	Khagaria	120	81	1558	1759	1,486	1,184	0.01394251	16
17	Kishanganj	114	79	1209	1402	1,884	744	0.00624308	30
18	Lakhisarai	92	49	690	831	1,229	676	0.00505193	32
19	Madhepura	124	91	1925	2140	1,787	1,198	0.01418464	15
20	Madhubani	289	195	3952	4436	3,501	1,267	0.01540254	12
21	Munger	145	121	840	1106	1,419	779	0.00686073	29
22	Muzaffarpur	414	431	13972	14817	3,173	4,670	0.07500488	2
23	Nalanda	263	193	1857	2313	2,354	983	0.01041939	21
24	Nawada	160	78	1835	2073	2,492	832	0.00777929	28
25	Pashchim Champaran	234	216	4729	5179	5,229	990	0.01055698	20
26	Patna	1014	1514	181513	184041	3,202	57,477	1	1
27	Purbi Champaran	316	257	4614	5187	3,969	1,307	0.0160999	10
28	Purnia	243	185	2557	2985	3,228	925	0.00940585	23
29	Rohtas	255	166	1833	2254	3,850	585	0.0034631	33
30	Saharsa	105	101	1728	1934	1,702	1,136	0.01311215	17
31	Samastipur	309	229	3689	4227	2,905	1,455	0.01869582	8
32	Saran	277	254	3114	3645	2,641	1,380	0.01738352	9
33	Sheikhpura	66	42	479	587	689	852	0.00813132	27
34	Sheohar	46	29	586	661	443	1,492	0.01934431	7
35	Sitamarhi	176	137	2324	2637	2,199	1,199	0.01421343	14
36	Siwan	266	205	2221	2692	2,219	1,213	0.01445827	13
37	Supaul	129	92	1893	2114	2,410	877	0.00857307	26
38	Vaishali	269	246	3886	4401	2,036	2,162	0.03107145	4

Table 5: Accessibility Index (District wise): Dimension II

Sr. No.	Name of district	PMJDY Accounts	PMJJBY	PMSBY	APY	Total Number of FI Accounts	Accessibility Sub- Index (d2)	Rank
1	Araria	660	47	191	52	950	0.493012	15
2	Arwal	140	28	62	15	245	0.045013	36
3	Aurangabad	549	88	219	58	914	0.470369	17
4	Banka	483	58	162	38	741	0.360084	24
5	Begusarai	579	101	234	60	975	0.508564	13
6	Bhagalpur	606	84	261	51	1003	0.526329	12
7	Bhojpur	503	76	260	56	894	0.457641	19
8	Buxar	409	52	166	35	662	0.309940	27
9	Darbhanga	578	69	187	51	886	0.452363	20
10	Gaya	953	144	417	104	1618	0.917549	2
11	Gopalganj	518	61	176	48	803	0.399244	22
12	Jamui	397	74	182	32	685	0.324280	26
13	Jehanabad	190	29	103	22	345	0.108191	35
14	Kaimur (Bhabua)	334	47	147	29	556	0.242844	31
15	Katihar	660	61	184	43	947	0.491192	16
16	Khagaria	380	48	145	30	603	0.272574	29
17	Kishanganj	435	26	113	26	599	0.270100	30
18	Lakhisarai	221	30	100	15	367	0.122629	34
19	Madhepura	387	46	141	40	614	0.279488	28
20	Madhubani	765	75	221	60	1121	0.601556	9
21	Munger	219	44	148	24	434	0.165288	33
22	Muzaffarpur	935	117	330	95	1478	0.828740	4
23	Nalanda	457	81	279	65	882	0.450019	21
24	Nawada	476	67	181	51	775	0.381526	23
25	Pashchim Champaran	861	75	248	59	1242	0.678542	7
26	Patna	915	178	549	106	1748	1.000000	1
27	Purbi Champaran	983	101	301	54	1439	0.803667	5
28	Purnia	726	70	260	75	1133	0.609066	8
29	Rohtas	545	72	245	47	909	0.467187	18
30	Saharsa	340	42	127	31	541	0.233101	32
31	Samastipur	889	131	402	74	1496	0.840152	3
32	Saran	891	90	275	67	1324	0.730378	6
33	Sheikhpura	120	25	86	12	243	0.043470	37
34	Sheohar	122	11	34	8	174	0.000000	38
35	Sitamarhi	704	75	216	40	1035	0.547052	10
36	Siwan	615	74	222	61	972	0.507214	14
37	Supaul	442	54	162	37	695	0.331057	25
38	Vaishali	645	81	248	56	1030	0.543877	11

Table 6: Usages Index (District wise) Dimension (III)

Sr. No.	Name of District	Per Capita Deposit	Per Capita Advances	Total	Usages Sub Index	Rank
1	Araria	21400	19461	40861	0.00407	37
2	Arwal	36020	17345	53365	0.03288	23
3	Aurangabad	39572	25232	64805	0.05924	15
4	Banka	27796	14927	42723	0.00836	32
5	Begusarai	44339	32790	77129	0.08763	6
6	Bhagalpur	64143	33382	97524	0.13462	2
7	Bhojpur	52550	23282	75832	0.08464	7
8	Buxar	47078	21585	68663	0.06813	13
9	Darbhanga	43239	21901	65141	0.06001	14
10	Gaya	52011	29611	81623	0.09799	5
11	Gopalganj	43008	20653	63661	0.05660	17
12	Jamui	35174	17499	52673	0.03129	24
13	Jehanabad	44441	20205	64647	0.05887	16
14	Kaimur (Bhabua)	33599	20655	54254	0.03493	22
15	Katihar	29300	22514	51814	0.02931	24
16	Khagaria	29723	19033	48756	0.02226	29
17	Kishanganj	26732	21376	48108	0.02077	30
18	Lakhisarai	41730	19857	61587	0.05182	20
19	Madhepura	23678	18483	42161	0.00707	34
20	Madhubani	27765	15173	42938	0.00886	31
21	Munger	69260	24190	93451	0.12524	3
22	Muzaffarpur	53918	37737	91655	0.12110	4

23	Nalanda	52282	22702	74984	0.08269	8
24	Nawada	33735	18768	52503	0.03089	25
25	Pashchim Champaran	23160	19305	42465	0.00776	33
26	Patna	317762	155357	473118	1.0	1
27	Purbi Champaran	27332	22569	49901	0.02490	28
28	Purnia	31237	30354	61591	0.05183	19
29	Rohtas	45120	24055	69175	0.06931	11
30	Saharsa	30713	20900	51613	0.02884	27
31	Samastipur	34804	22110	56914	0.04106	21
32	Saran	42540	19620	62160	0.05314	18
33	Sheikhpura	45798	22926	68724	0.06827	12
34	Sheohar	22746	16349	39094	0.00000	0
35	Sitamarhi	25920	15807	41727	0.00606	36
36	Siwan	49449	24653	74101	0.08066	9
37	Supaul	24580	17473	42054	0.00682	35
38	Vaishali	40208	32202	72409	0.07676	10

Table 7: Calculation of District Financial Inclusion Index (Availability, Accessibility and Usage)

Computation of District FII					
District	D1	D2	D3	FII (District)	District Rank
Araria	0.01167	0.49301	0.00407	0.138662595	22
Arwal	0.0088	0.04501	0.03288	0.028781042	37
Aurangabad	0.00323	0.47037	0.05924	0.151648052	18
Banka	0.00272	0.36008	0.00836	0.107922285	25
Begusarai	0.02809	0.50856	0.08763	0.179727442	9
Bhagalpur	0.01149	0.52633	0.13462	0.193695109	6
Bhojpur	0.00931	0.45764	0.08464	0.160654745	14
Buxar	0.01024	0.30994	0.06813	0.119811009	24
Darbhanga	0.02714	0.45236	0.06001	0.157397014	16
Gaya	0.03124	0.91755	0.09799	0.234292073	3
Gopalganj	0.01592	0.39924	0.0566	0.139898977	21
Jamui	0.00221	0.32428	0.03129	0.10732658	26
Jehanabad	0.00206	0.10819	0.05887	0.055379073	35
Kaimur (Bhabua)	0	0.24284	0.03493	0.086280332	32
Katihar	0.0059	0.49119	0.02931	0.145722453	20
Khagaria	0.01394	0.27257	0.02226	0.094934605	29
Kishanganj	0.00624	0.2701	0.02077	0.090934012	31
Lakhisarai	0.00505	0.12263	0.05182	0.058593007	34
Madhepura	0.01418	0.27949	0.00707	0.091358488	30
Madhubani	0.0154	0.60156	0.00886	0.161239623	13
Munger	0.00686	0.16529	0.12524	0.09662159	28
Muzaffarpur	0.075	0.82874	0.1211	0.256716347	2
Nalanda	0.01042	0.45002	0.08269	0.158730012	15
Nawada	0.00778	0.38153	0.03089	0.123229225	23
Pashchim Champaran	0.01056	0.67854	0.00776	0.169967129	12
Patna	1	1	1	1	1
Purbi Champaran	0.0161	0.80367	0.0249	0.192239697	7
Purnia	0.00941	0.60907	0.05183	0.176768845	10
Rohtas	0.00346	0.46719	0.06931	0.154785047	17
Saharsa	0.01311	0.2331	0.02884	0.086174835	33
Samastipur	0.0187	0.84015	0.04106	0.202486946	4
Saran	0.01738	0.73038	0.05314	0.196928755	5
Sheikhpura	0.00813	0.04347	0.06827	0.039639083	36
Sheohar	0.01934	0	0	0.006406258	38
Sitamarhi	0.01421	0.54705	0.00606	0.150520716	19
Siwan	0.01446	0.50721	0.08066	0.171482705	11
Supaul	0.00857	0.33106	0.00682	0.102443557	27
Vaishali	0.03107	0.54388	0.07676	0.183657391	8

Table 8:

Value of Index	Group	No. of District	District with their rank
$0.67 < FII \leq 1$	High FII	1	Patna
$0.50 < FII \leq 0.67$	Medium High FII	0	None
$.25 < FII \leq 0.50$	Medium FII	1	Muzaffarpur
$0.10 < DFII > 0.25$	Medium Low FII	25	Araria, Aurangabad, Banka, Begusarai, Bhagalpur, Bhojpur, Buxar, Darbhanga, Gaya, Gopalganj, Jamui, Katihar, Madhubani, Nalanda, Nawada, Pashchim Champaran, Purbi Champaran, Purnia, Rohtas, Samastipur, Saran, Sitamarhi, Siwan, S upaul, Vaishali
$0 < DFII > 0.10$	Low FII	11	Arwal, Jehanabad, Kaimur (Bhabua), Khagaria, Kishanganj, Lakhisarai, Madhepura, Munger, Saharsa, Sheikhpura, Sheohar

Researcher's Calculation

Analysis

This classification of Financial Inclusion Index (FII) across Bihar reveals pronounced regional disparities in access and usage of financial services. Only Patna falls within the high inclusion category ($FII > 0.67$), reflecting its urban advantage, better infrastructure, and dense banking network. Muzaffarpur, with a medium score (0.25–0.50), represents moderate inclusion but still lags in digital and credit access dimensions. Most districts (25) cluster in the medium-low range (0.10–0.25), indicating widespread but shallow financial penetration, especially in northern and southeastern Bihar. The remaining 11 districts rank low ($FII < 0.10$), showing serious exclusion marked by limited financial infrastructure, low female account ownership, and weaker digital adoption. The concentration of low and medium-low FII districts underscores significant rural–urban and gender-based divides, suggesting the need for targeted interventions—particularly digital literacy, improved access to formal credit and savings products, and expansion of bank and agent networks in underserved regions.

Conclusion

The district-wise Financial Inclusion Index (FII) computations for Bihar reveal considerable variation in the level of financial inclusion across the state. Patna leads decisively with a perfect FII score, reflecting unparalleled access, availability, and usage of financial services, consistent with its urban, administrative, and economic status. Other districts like Muzaffarpur, Gaya, Samastipur, Saran, and Bhagalpur rank highly, indicating relatively better penetration of banking infrastructure, credit and savings accounts, and digital financial services. A notable number of districts, such as Begusarai, Vaishali, Purbi Champaran, Purnia, and Siwan, occupy intermediate ranks, suggesting moderately strong banking access but scope for further enhancement in digital inclusion and account usage. Conversely, a large group of districts, including Araria, Nawada, Gopalganj, and Banka, register much lower FII values. The lowest-ranking districts—Sheohar, Arwal, Sheikhpura, Lakhisarai, and Jehanabad—exhibit critical deficiencies in all three index dimensions. These districts suffer from inadequate financial infrastructure and limited reach of both traditional and digital banking services. The findings underline persistent spatial disparities, with most districts requiring targeted policy attention for increased outreach, digital literacy initiatives, and stronger last-mile financial service delivery, especially in rural and remote regions where inclusion lags most acutely.

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How to Cite This Article

Kumari V. Unveiling Regional Disparities: District Level Financial Inclusion Index for Bihar. *Int J Manag Organ Res*. 2025;4(6):23-34. doi:10.54660/IJJL.2025.4.6.40-51.

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