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Inter-district Inequality in Birth Registration Coverage in Bihar, 2025

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Abstract

Civil registration of births is essential for legal identity, public services access, and vital statistics in Bihar, yet the state lags national averages due to notification gaps, low awareness, and administrative challenges. Using district-wise data from January 1 to July 15, 2025 (n=38 districts), this study measures birth registration coverage (70.31% statewide: 23,44,751/33,34,773) and inter-district inequality. Coverage ranges from 45.78% (Madhubani) to 108.98% (Sheohar), with mean 70.36%, CV 18.85%, and IQR 61.31–77.97%. Top performers (Sheohar, Patna, Begusarai) exceed 90%; bottom five (Madhubani, Vaishali, Nawada, Gopalganj, Supaul) lag below 60%. Weak negative correlation ($r \approx -0.16$) exists between district birth targets and coverage. April–May peaks (42.7% of registrations) highlight campaign-driven surges. Findings reveal surmountable inequality driven by programmatic factors, not scale. Policy recommendations include district benchmarking, targeted support for laggards, routine registration strengthening, improved target-setting, health platform integration, equity monitoring, and registrar capacity building to achieve universal coverage.

Keywords: Birth registration, Civil Registration System, Bihar, inter-district inequality, coverage analysis, CRS performance, vital statistics

Introduction

Civil registration of births serves as a vital societal resource, enabling legal identity, equitable access to public services, and the production of high-quality vital statistics to support evidence-based policymaking. Despite national progress, Bihar has historically lagged behind the all-India average in completeness of birth registration and continues to face structural and programmatic challenges in strengthening its Civil Registration System (CRS). Analyses of CRS performance in Bihar have documented gaps in notification from health facilities, low public awareness in rural and marginalised communities, and administrative softness at the local registrar level (Kumar K, et al., 2022).

The availability of recent district-wise monthly data on birth registration for 2025 provides an opportunity to quantify how coverage varies within the state. Inter-district inequality is important from both statistical and equity perspectives: large gaps between districts undermine the representativeness of state-level fertility estimates and may signal uneven access to legal identity by geography and social group. Understanding the distribution of coverage and identifying high- and low-performing districts can guide targeted interventions, resource allocation and peer-learning across districts.

This paper uses district-wise data on estimated annual birth targets and registrations achieved between 1 January and 15 July 2025 to measure the level of coverage and inter-district inequality in birth registration in Bihar. It employs summary statistics, inequality indices and simple correlational analysis to characterise patterns and to derive policy-relevant insights.

Objectives

1. To estimate the level of birth registration coverage achieved in Bihar up to 15 July 2025.
2. To quantify inter-district inequality in birth registration coverage using distributional and inequality measures.
3. To classify districts into performance groups and identify high- and low-performing districts.
4. To explore the association between district size (estimated births) and coverage, and draw implications for CRS strengthening.

Methodology

Study design and setting

This is a cross-sectional, analytical study using routinely collected administrative data from the Civil Registration System of Bihar. The unit of analysis is the district (n = 38).

Data source

District-wise data on estimated annual birth targets for 2025 and the number of births registered in each month from January to July 2025 were compiled from the official progress report "District wise Progress of Birth Registration from 01 January 2025 to 15 July 2025" presented in Appendix. For each district, total registrations up to 15 July (Achievement) and percentage of the annual target achieved (Achievement %) are reported. At the state level, the totals are: estimated births 33,34,773; registrations up to 15 July 23,44,751; overall achievement 70.31%.

To situate findings within the broader literature, we reviewed published studies on CRS performance and birth registration in Bihar and India.

Variables

- Ti: Estimated annual birth target for district i.
- Ai: Cumulative births registered in district iii from 1 January to 15 July 2025.
- Coverage proportion $Ci = \frac{\text{Ai}}{\text{Ti}}$
- For comparability with administrative reporting, we also use coverage percentage P_{cti}=100×Ci.
- Monthly registrations M_{im} for district i in month m (Jan–Jul) to describe temporal pattern at state level.

Statistical methods

Descriptive analysis

- State-level coverage is calculated as the aggregate coverage proportion across all districts: $\sum_i \boldsymbol{Ai} / \sum_i \boldsymbol{Ti}$

This metric aggregates cumulative registered births ($\sum_i \boldsymbol{Ai}$) over total estimated annual birth targets ($\sum_i \boldsymbol{Ti}$) at the state level.

- Distribution of coverage across districts: mean, standard deviation, median, inter-quartile range (IQR).

Inequality measures

- Coefficient of variation (CV) of district coverage percentages.
- Range and inter-quartile range to capture spread.

Classification of districts

- Districts were grouped into quartiles based on coverage percentage: Q1 (≤25th percentile), Q2, Q3 and Q4 (≥75th percentile).
- Top 5 and bottom 5 districts were listed.

Correlation analysis

- Pearson correlation between district target size (Ti) and coverage percentage to explore whether larger districts tend to have lower or higher coverage.

All analyses were conducted in Python (pandas) using the manually entered district table; results used here are those derived in the previous statistical run.

Data analysis and results

Overall coverage

The state achieved registration of 23,44,751 births out of an estimated 33,34,773 by 15 July 2025, corresponding to an overall coverage of 70.31%. Monthly totals show a clear peak in April and May; April and May together contributed 42.7% of all registrations recorded during January–July, while June and half-July contributed only 14.2%.

Distribution of coverage across districts

District-wise coverage percentages ranged from 45.78% (Madhubani) to 108.98% (Sheohar), with a mean of about 70% and standard deviation sufficient to yield a coefficient of variation of 18.85%. The first quartile of coverage is 61.31%, median 70.36% and third quartile 77.97%. Thus, half of the districts lie between approximately 61% and 78% coverage, while about one-quarter already exceeded 78%.

Table 1 presents the top five districts by coverage percentage are Sheohar (108.98%), Patna (97.69%), Begusarai (93.12%), Kishanganj (90.65%) and Jehanabad (90.27%). The bottom five districts are Madhubani (45.78%), Vaishali (53.77%), Nawada (54.89%), Gopalganj (56.58%) and Supaul (57.92%).

Table 1: Best and worst performing districts in Bihar

Category	District	Achievement %
Highest	Sheohar	108.98
	Patna	97.69
	Begusarai	93.12
	Kishanganj	90.65
	Jehanabad	90.27
Lowest	Madhubani	45.78
	Vaishali	53.77
	Nawada	54.89
	Gopalganj	56.58
	Supaul	57.92

- Over-achievement in Sheohar (109%) and near-saturation in Patna suggest possible early registration of future births or underestimation of annual targets, while several low-performing districts (e.g., Madhubani, Vaishali, Nawada) may require focused supervision and system-level strengthening.

Technical interpretation and program signals

- With a state median near 70% and several districts already above 90%, the overall trajectory is compatible with achieving or exceeding the annual target if the current registration intensity is maintained beyond July.
- The high dispersion (CV ≈ 19%) and concentration of low-performing districts indicate the need for district-specific micro-planning, especially to smooth seasonal fluctuations and address potential under-reporting in lagging districts.

Relationship between district size and coverage

District target sizes vary widely, from about 20,000 to over 1,77,000 estimated births. The correlation between target size and coverage percentage is negative but weak ($r \approx -0.16$), suggesting that larger-target districts tend, on average, to perform slightly worse, but target size explains little of the variability in coverage. Patna, a very large district, is an exception with coverage close to saturation (97.69%).

Discussion

This analysis shows that by mid-July 2025 Bihar had already registered more than 70% of its estimated annual births, placing the state on a plausible path to near-complete coverage by year-end if registration momentum is maintained. The temporal pattern—with substantial surges in April and May—resembles previously described seasonal spikes linked to intensive drives and backlog clearance campaigns in Bihar's CRS. However, the marked decline in June–July suggests that sustained routine registration, beyond campaign periods, remains a challenge.

Inter-district inequality is clearly visible. At one extreme, Sheohar reports coverage above 100%, and Patna, Begusarai, Kishanganj and Jehanabad are all above 90%. Such high coverage may reflect a combination of: relatively better administrative capacity and digital infrastructure; higher institutional delivery rates; intensive local campaigns; and potential under-estimation of annual targets, leading to apparent over-achievement. On the other hand, districts like Madhubani, Vaishali, Nawada, Gopalganj and Supaul remain below 60%, consistent with earlier studies that identified poor awareness, logistical difficulties and weak coordination between health facilities and registration units in several rural districts.

The spread between first and third quartiles (about 17 percentage points) and the CV near 19% point to meaningful inequality, though not extreme when compared with disparities reported across Indian states. Importantly, the relatively weak correlation between district size and coverage indicates that low performance is not inevitable in high-birth-load districts; rather, programmatic factors appear more salient. Patna stands out as a large district with near-universal coverage, indicating that strong local governance, robust IT systems and alignment with urban health facilities can offset scale-related challenges.

From an equity perspective, unequal coverage implies that a child's probability of obtaining a birth certificate—and hence legal identity—depends substantially on place of birth. If low-performing districts also have higher concentrations of poor and marginalised communities, inter-district inequality in registration may reinforce broader social inequalities, as suggested in earlier qualitative work on CRS barriers in Bihar.

Summary and conclusion

Using district-wise administrative data for January–15 July 2025, this study finds that:

- Bihar has achieved 70.31% birth registration coverage of estimated annual births by mid-July.
- Coverage is unevenly distributed across districts, with a range of 45.78–108.98% and considerable inter-quartile spread.
- A group of high-performing districts (e.g., Sheohar, Patna, Begusarai, Kishanganj, Jehanabad) has already reached or neared full coverage, while several districts (Madhubani, Vaishali, Nawada, Gopalganj, Supaul) lag well behind.
- Overall inequality, as reflected in the coefficient of variation (~19%), is sizeable but surmountable, and only weakly linked to district size.

These findings underscore that while Bihar's CRS is capable of high performance, benefits are not evenly distributed. Focused, district-specific strategies are needed to reduce inter-district inequality and to ensure universal, timely birth registration.

Policy recommendations

1. **District-specific performance benchmarking**
   - Use mid-year coverage and inequality measures to classify districts into high, medium and low performers, and establish explicit targets for reducing the gap between the bottom and top quartiles.
2. **Targeted support to low-performing districts**
   - Prioritise Madhubani, Vaishali, Nawada, Gopalganj and Supaul for additional supervisory visits, training, and provisioning of IT infrastructure, drawing on best practices from Sheohar and Patna.
3. **Strengthening routine, not just campaign-based, registration**
   - Smooth the April–May spike by institutionalising regular monthly review meetings, automated reminders from health facilities to registrars, and continuous community mobilisation, thereby avoiding post-campaign drop-offs.

4. **Improved target-setting and data quality assurance**
   - Review the methodology for estimating annual birth targets at district level using recent SRS, NFHS and HMIS fertility estimates to minimise systematic under- or over-estimation that leads to apparent over-achievement.
   - Introduce routine plausibility checks comparing CRS births with expected births and institutional-delivery statistics.
5. **Integration with health and social-protection platforms**
   - Strengthen linkages between CRS, Health Management Information System (HMIS) and schemes such as Janani Suraksha Yojana and conditional cash transfers, so that every institutional birth generates an automatic notification for registration.
6. **Equity-focused monitoring**
   - Augment district-level monitoring with block and facility-level indicators, and where data permit, stratify coverage by sex, caste and rural–urban residence to ensure that improvements in high-performing districts also reach disadvantaged groups.
7. **Capacity building and accountability**
   - Provide refresher training for registrars, ANMs, ASHAs and ward members on legal provisions, digital processes and citizen interface; link district-level CRS performance to administrative reviews and incentives.

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Appendix

District wise Progress of Birth Registration in Bihar from 01 January 2025 to 15 July 2025

S.No.	District Name	Estimated Annual Target	Jan/25	Feb/25	Mar/25	Apr/25	May/25	Jun/25	Jul/25	Achievement*	Percentage
1	Araria	90812	6774	8654	8199	14447	13949	5508	2962	60493	66.61
2	Arwal	22613	2705	2706	2307	3877	3545	1698	811	17649	78.05
3	Aurangabad	81788	6814	5839	5982	11772	13879	8667	3610	56563	69.16
4	Banka	66026	7667	6410	6714	8408	10601	5223	2205	47228	71.53
5	Begusarai	93992	14913	11504	12906	18434	15997	9528	4246	87528	93.12
6	Bhagalpur	96123	11863	8849	8376	11553	13676	6562	2128	63007	65.55
7	Bhojpur	87260	10777	8248	8977	15662	13765	5050	1752	64231	73.61
8	Buxar	54829	5137	4617	4698	6473	6399	3371	1709	32404	59.10
9	Darbhanga	126084	16412	14392	14057	17170	15497	12293	2528	92349	73.24
10	Gaya	140343	19431	15467	15485	28796	23205	10303	5228	117915	84.02
11	Gopalganj	82855	8014	6516	7096	9552	12352	2223	1128	46881	56.58
12	Jamui	56802	5335	3661	4823	10613	10896	3090	1436	39854	70.16
13	Jehanabad	35876	6337	3723	4043	5781	8104	2935	1461	32384	90.27
14	Kaimur	52625	5601	4384	4972	8726	9048	3158	1243	37132	70.56
15	Katihar	98719	12877	11338	12641	15031	14729	7244	3603	77463	78.47
16	Khagaria	53633	6089	5277	5236	7228	10529	5372	1855	41586	77.54
17	Kishanganj	54453	6604	5605	7055	11672	12778	4425	1224	49363	90.65
18	Lakhisarai	31822	3697	2556	2175	4696	3608	2101	1080	19913	62.58
19	Madhepura	64480	6451	5772	5618	9115	11579	5746	2151	46432	72.01
20	Madhubani	145767	10689	9229	10023	13987	15133	5427	2251	66739	45.78
21	Munger	42720	4371	3339	3888	5018	5461	2226	1016	25319	59.27
22	Muzaffarpur	154144	13181	11643	12857	18659	26589	9326	3024	95279	61.81
23	Nalanda	90988	9214	7989	6032	11019	15493	5722	2920	58389	64.17
24	Nawada	71444	6345	4084	4353	9088	11389	2686	1274	39219	54.89
25	Paschimi Champaran	126617	13905	10857	10296	14177	16136	7192	4287	76850	60.69
26	Patna	177605	28370	24152	25099	28952	33413	22691	10818	173495	97.69
27	Purbi Champaran	164883	19167	16081	18944	31176	27037	8575	4873	125853	76.33
28	Purnea	104153	11995	11493	12396	16741	16757	11714	4875	85971	82.54
29	Rohtas	94399	11355	9481	9728	10359	10886	4151	1881	57841	61.27
30	Saharsa	60962	8213	5371	5145	6723	10074	3436	1754	40716	66.79
31	Samastipur	137758	13611	13084	11594	16269	15607	7038	3877	81080	58.86

32	Saran	127243	14536	11950	12813	20945	22089	10905	5638	98876	77.71
33	Sheikhpura	20101	2614	1902	2423	3749	4061	1611	663	17023	84.69
34	Sheohar	21337	3041	3212	3542	6807	4694	1489	468	23253	108.98
35	Sitamarhi	111096	11455	10146	9835	13018	15258	5567	2964	68243	61.43
36	Siwan	107527	11829	9512	9844	13159	22475	8103	2905	77827	72.38
37	Supaul	71977	6666	6328	5688	7729	10698	2943	1638	41690	57.92
38	Vaishali	112917	8792	8118	8390	13011	14213	5518	2671	60713	53.77
	Total (Bihar)	3334773	372847	313489	324250	479592	521599	230817	102157	2344751	70.31

