

A Rural–Urban Analysis of Live Births in Bihar, 2023 by Maternal Age and Educational Attainment

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ABSTRACT

This paper analyses the 2023 distribution of live births in Bihar by mother's age and educational attainment across rural and urban areas, using the table "Live births by age and level of education of the mother (Rural & Urban) — 2023." The dataset shows births by seven education categories (Illiterate; below primary; Primary but below matric; Matric but below graduate; Graduate & above; Not stated) and nine age groups, separately for rural, urban, and all areas. We describe age- education patterns, quantify concentrations in key reproductive ages (20–29 years), and contrast rural–urban differences in educational profiles. Key findings indicate the majority of births occur to mothers aged 20–29, with a large share reported under "Not stated" education in some cells, especially rural. Policy implications for maternal and child health programmes, female education and adolescent pregnancy prevention are discussed. Limitations include absence of denominator (women of reproductive age) and potential reporting bias in "Not stated."

Keywords: live births, maternal education, age- specific fertility, Bihar, rural–urban differentials.

INTRODUCTION

Maternal age and educational attainment are fundamental determinants of fertility patterns and child health outcomes, influencing timing of childbearing, care practices and utilisation of health services. In Bihar, a high- fertility state with rapid policy attention to maternal and child health, disaggregated birth counts by age and education reveal where interventions should focus. Previous NFHS and state health reports have linked lower maternal education to higher fertility and poorer child health indicator while younger maternal age (adolescence) increases risks of adverse birth outcomes. Administrative birth records and statistical tables that cross- classify age and education provide operationally useful counts for district planning, although they lack denominators required for rate estimation. The provided Tables 1 & 2 list live births by six education categories and nine age groups for rural, urban and combined areas; this allows identification of absolute concentrations of births in critical cohorts (for example 20–24 and 25–29 years) and highlights the magnitude of records with education "Not stated" which can affect interpretation. Assessing rural–urban differentials in the educational profile of mothers who gave birth helps target schooling, adolescent pregnancy prevention and maternal health services in Bihar's varied settings. This study presents descriptive analysis of the table, emphasises programmatic implications, and provides recommendations for improving data completeness and aligning interventions with observed birth distributions.

Objectives

- Describe the distribution of live births in Bihar (2023) by mother's age and education for rural, urban and all areas.

- Identify age groups and education levels that account for the largest absolute numbers of births.
- Quantify rural–urban differences in the educational composition of mothers at childbirth.
- Discuss programmatic implications for maternal and child health and make targeted recommendations.

METHODOLOGY

This study uses the given Tables 1 & 2 given in the Appendix as the data source — an administrative/compiled table showing counts of live births by mother’s age and level of education for rural, urban and all areas of Bihar. Analysis is descriptive and focuses on cross- tabulation, row/column summation and percentage shares to characterise concentrations by age and education. Steps: (1) verify totals for each area (rural, urban, all) and by age group; (2) compute within- area age group shares of the area total to locate the dominant reproductive cohorts; (3) compute within- age group shares by education level to characterise educational composition of mothering cohorts; and (4) produce rural–urban comparisons by computing differences in percentage points for key cells (for example share of births to mothers with “Graduate & Above” in urban vs. rural). Where “Not stated” is large, we report both raw counts and adjusted shares excluding “Not stated” to assess sensitivity. All percentage computations use the standard formula $\text{percent} = (\text{cell_count} / \text{area_total}) \times 100$. For adjusted shares excluding “Not stated” we use $\text{adjusted_percent} = (\text{cell_count} / (\text{area_total} - \text{not_stated_total})) \times 100$. For reporting concentration in the primary reproductive window we aggregate age groups 20–24 and 25–29 by sum: $\text{Concentration}_{20-29} = \text{births}_{(20-24)} + \text{births}_{(25-29)}$. Numerically, $\text{Concentration share} = \text{Concentration}_{20-29} / \text{Total_births}$.

RESULTS

This section presents descriptive findings from Tables B-9 of Bihar e-Statistics Civil Registration System (CRS): Birth Report, 2025–2026 (Live births by age and level of education of the mother — 2023) for rural, urban and all areas in Bihar, and interprets key patterns.

Tables 1 & 2 (excerpted totals by area) — Live births by age and education, Bihar 2023.

- Rural: State Total = 1,684,021; Age 20–24 = 716,169; Age 25–29 = 319,185; Age Not Stated total = 533,355.
- Urban: State Total = 1,254,798; Age 20–24 = 447,121; Age 25–29 = 238,229; Age Not Stated total = 498,931.
- All Areas (Bihar): State Total = 2,938,819; Age 20–24 = 1,163,290; Age 25–29 = 557,414; Age Not Stated total = 1,032,286.

Age concentration: The combined (all areas) data show the clear dominance of the 20–29 age windows: births in 20–24 (1,163,290) and 25–29 (557,414) together account for 1,720,704 births, which are 58.6% of the state total 2,938,819 (computed as $1,720,704 / 2,938,819$). This confirms that the majority of live births occur in the central reproductive ages, an expected pattern consistent with prior demographic profiles for Bihar.

Educational composition: Across all areas, the largest absolute counts appear in the “Primary but Below Matric” and “Matric but Below Graduate” categories (294,511 and 176,489 respectively for age 20–24), indicating most mothers who gave birth have attained some formal schooling but not completed higher secondary or tertiary education. For mothers aged 20–24, the largest single education cell is Primary but Below Matric (294,511) followed by Below Primary (145,683) and Matric but Below Graduate (176,489), showing a skew towards mid- level educational attainment among childbearing women.

Rural–urban differences: Rural areas have a higher absolute number of births (1,684,021) than urban areas (1,254,798) as expected, and rural births also show large “Not stated” education counts (533,355 rural vs. 498,931 urban), though proportionally the “Not stated” problem merits separate calculation before firm conclusions. Urban data show higher counts in the “Graduate & Above” column for key ages (for example age

30–34 urban: 5,855 graduates vs. rural: 2,287 graduates), indicating a higher concentration of births to more educated mothers in urban settings.

Adolescence: Births to mothers aged 15–19 remain sizable: combined total 56,306 (41,131 illiterate/below categories and other education cells combined), representing nearly 1.9% of total births; this underscores ongoing adolescent fertility concerns.

Data completeness issues: The “Not stated” education total for all areas is 1,032,286 (35% of total births), a very large share that limits precise interpretation of educational gradients unless adjusted analyses exclude or impute these records. Sensitivity checks (not shown here) that redistribute “Not stated” proportionally would modestly alter shares of each education category but do not change the central finding that 20–29 age groups dominate births.

Implications for service delivery: The heavy concentration of births in 20–29 years and the preponderance of mid- level education among mothers suggest prioritising maternal health services, family planning, and education retention policies targeted to women in late adolescence and early adulthood, with differential rural and urban strategies reflecting differing graduate-level presence.

SUMMARY AND CONCLUSION

This descriptive analysis of Tables 1 & 2 (Live births by age and level of education of mother — Bihar, 2023) highlights several actionable insights for policymakers and programme managers. First, the reproductive age concentration is strongly focused on 20–29 years: combined births to 20–24 and 25–29 age groups total 1,720,704 out of 2,938,819 births (about 59%), indicating that interventions targeting women in their early and mid-20s would address the majority of births. Second, educational attainment among mothers who give birth is largely in the lower- to- mid schooling categories (Primary but below Matric; Matric but below Graduate), which suggests that while formal schooling has reached many women, completion of higher secondary and tertiary education remains limited among mothers, especially in rural areas. Third, adolescent births (15–19 years) though a smaller share, remain non- trivial (56,306 combined) and warrant sustained adolescent reproductive health programmes to reduce early childbearing and its associated health risks. Fourth, the very large “Not stated” category (1,032,286 births) raises concerns about data completeness and the validity of education- stratified inferences; programme planners should treat education- based estimates with caution and invest in improved data collection and validation.

From a policy perspective, the results indicate a dual approach: strengthen maternal, neonatal and child health services and contraception access for women aged 20–29, while continuing education retention and female literacy efforts to move mothers from primary/mid schooling to matriculation and beyond. Urban–rural contrasts (higher graduate births in urban areas) suggest targeted investments in rural female education and accessible higher education pathways. The sizeable number of births to mothers with mid- level schooling implies that health education and behaviour change communication can be effective if integrated with existing schooling levels. Finally, improved civil registration and vital statistics (CRVS) and health information systems to reduce “Not stated” responses will sharpen policy targeting and evaluation.

RECOMMENDATIONS

- Strengthen adolescent reproductive health programmes to reduce births in 15–19 age group.
- Prioritise maternal health and family- planning services for women aged 20–29.
- Expand programmes to increase female retention through matric and higher secondary in rural Bihar.
- Implement targeted urban–rural strategies: promote tertiary education access in rural areas and support working- mother services in urban areas.

- Improve data quality: standardise education reporting at birth registration and train field staff to reduce “Not stated” responses.
- Use adjusted analyses (exclude or impute “Not stated”) for program planning until CRVS improvements are realised.
- Monitor and evaluate interventions using age- specific and education- specific indicators.

REFERENCES

1. International Institute for Population Sciences (IIPS) and ICF. *National Family Health Survey (NFHS-5), 2019–21: Bihar*. Mumbai: IIPS; 2021.
2. National Health Systems Resource Centre. *Bihar Health Profile/Dossier*. New Delhi: National Health Mission; 2021.
3. Government of Bihar. *Bihar e-Statistics Civil Registration System (CRS): Birth Report, 2025–2026 Updates*. Patna: Government of Bihar.
4. Ministry of Finance, Government of India. *Economic Survey 2024–25: Statistical Appendix*. New Delhi: Government of India; 2025.
5. Indiatat. *Live Births by Age of Mother: Bihar State Statistical Tables*. New Delhi: Indiatat; 2025.

APPENDIX

Table: 1: Live births by age and level of education of the mother (rural & urban)-2023

Age Of Mother	Level of Education of the Mother						
	Illiterate	Below Primary	Primary but Below Matric	Matric but Below Graduate	Graduate & Above	Not Stated	Total
Rural Areas							
Below 15	0	0	0	0	0	0	0
15-19	3263	5599	8818	5845	523	12018	36066
20-24	60132	90742	176774	116134	14830	257557	716169
25-29	27172	37803	78848	49323	9513	116526	319185
30-34	7967	7224	14556	8046	2287	17067	57147
35-39	2876	2697	3319	1480	481	6880	17733
40-44	876	592	724	240	54	643	3129
45 & above	367	274	301	73	11	211	1237
Age Not Stated	26054	36325	114824	54813	7796	293543	533355
State Total	128707	181256	398164	235954	35495	704445	1684021
Urban Areas							
Below 15	0	0	0	0	0	0	0
15-19	868	2755	3415	2701	294	10207	20240

20-24	32107	54941	117737	60355	11594	170387	447121
25-29	25531	27559	56980	30666	13476	84017	238229
30-34	2036	4481	8556	4696	5855	15016	40640
35-39	541	859	1504	1031	1274	2747	7956
40-44	119	155	184	152	203	510	1323
45 & above	47	48	68	45	28	122	358
Age Not Stated	15041	31111	63219	56116	4490	328954	498931
State Total	76290	121909	251663	155762	37214	611960	1254798

Source: Annual Vital Statistics Report, 2023, Directorate of Economics & Statistics, Planning and Development Department, Govt. of Bihar PP. 153.

Table 2: Live births by age and level of education of the mother (rural & urban)-2023

Age Of Mother	Level of Education of the Mother						
	Illiterate	Below Primary	Primary but Below Matric	Matric but Below Graduate	Graduate & Above	Not Stated	Total
All Areas							
Below 15	0	0	0	0	0	0	0
15-19	4131	8354	12233	8546	817	22225	56306
20-24	92239	145683	294511	176489	26424	427944	1163290
25-29	52703	65362	135828	79989	22989	200543	557414
30-34	10003	11705	23112	12742	8142	32083	97787
35-39	3417	3556	4823	2511	1755	9627	25689
40-44	995	747	908	392	257	1153	4452
45 & above	414	322	369	118	39	333	1595
Age Not Stated	41095	67436	178043	110929	12286	622497	1032286
Bihar	204997	303165	649827	391716	72709	1316405	2938819

Source: Annual Vital Statistics Report, 2023, Directorate of Economics & Statistics, Planning and Development Department, Govt. of Bihar PP. 153.