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Spatial distribution and temporal trends of crimes against scheduled castes in Haryana: A district-level analysis (2011-2025)

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Abstract

Crimes against Scheduled Castes (SCs) represent a persistent dimension of structural inequality in India's social fabric. Haryana, a north Indian state with an SC population constituting 20.17% of its total population, has consistently exhibited crime rates against this community that exceed the national average. This paper undertakes a comprehensive district-level spatial and temporal analysis of crimes against Scheduled Castes across 22 districts of Haryana for the period 2011-2025, drawing upon secondary data from the National Crime Records Bureau (NCRB), Census of India 2011^[4], and Haryana Police annual crime statistics. The study employs temporal trend analysis, crime rate computation, spatial distribution mapping, correlation analysis, and multiple regression modelling to examine patterns and determinants of SC-related crimes. Findings indicate a statistically significant and sustained upward trend, with total registered cases rising from 1,847 in 2011 to an estimated 3,166 in 2023, reflecting a 71.4% increase and a compound annual growth rate (CAGR) of 4.5%. Spatial analysis reveals pronounced clustering in the urban-industrial belt of the Delhi National Capital Region (NCR) periphery comprising Faridabad, Sonapat, Rohtak, Gurugram, and Panipat while southern and western districts record comparatively lower rates. Urbanisation emerges as the strongest correlate of district-level crime rates ($r = 0.72$), followed by SC population density ($r = 0.58$), with SC literacy exhibiting a significant negative association ($r = -0.49$). Institutional response indicators reveal chronic failure: chargesheet rates have declined from 60.9% to 54%, while conviction rates remain persistently low at 10-13%. A four-zone spatial typology is proposed for spatially differentiated policy interventions. The study concludes with six evidence-based policy recommendations targeting legal enforcement, judicial capacity, SC literacy, land rights, digital crime monitoring, and field verification of under-reporting.

Keywords: Scheduled Castes, caste atrocities, haryana, spatial distribution, ncrb, prevention of atrocities act, district-level analysis, temporal trends, urbanisation, conviction rate, gis, crime hotspots

1. Introduction

The protection of Scheduled Castes (SCs) from caste-based discrimination and violence constitutes one of the foundational commitments of the Indian constitutional order. Article 17 of the Constitution abolished untouchability, while Article 46 mandates the state to promote educational and economic interests of SCs with special care and protect them from social injustice. These constitutional provisions have been operationalised through a series of legislative instruments, most notably the Protection of Civil Rights Act, 1955 and the Scheduled Castes and Scheduled Tribes (Prevention of Atrocities) Act, 1989 (PoA Act), which was substantially amended and strengthened in 2015. Notwithstanding this comprehensive legal framework, crimes against Scheduled Castes have continued to increase at the national level, presenting one of the most persistent failures of post-colonial governance.

India recorded 57,582 registered crimes against SCs in 2022 an increase of 13.1% over 2021 (NCRB, 2022). The crime rate per lakh SC population rose from 25.3 in 2021 to 28.6 in 2022. Against this national backdrop, Haryana presents a particularly concerning picture. The state's crime rate against SCs consistently exceeds the national average, and the absolute number of registered cases has increased every year since 2011. In 2021, Haryana's crime rate stood at 31.8 per lakh SC population, surpassing the national average of 25.3, placing it among the most problematic states in the country (NCRB, 2021).

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Crucially, while the sociological, legal, and political dimensions of caste atrocities have attracted substantial scholarly attention, the spatial-geographical dimension remains comparatively under-examined. Geography offers a distinct and valuable analytical lens: the spatial distribution of crimes reveals structural patterns of caste hierarchy, economic competition, demographic change, and institutional capacity that are not visible through purely legal or sociological frameworks. District-level spatial analysis, in particular, enables the identification of crime hotspots, cold spots, and transitional zones, the mapping of spatial correlates, and the design of spatially differentiated policy responses.

This study addresses this gap through a systematic district-level spatial and temporal analysis of SC-related crimes in Haryana over the 2011-2025 period. The choice of Haryana is motivated by five considerations: its above-average SC population share (20.17%); its consistently high SC crime rates; its rapid urbanisation, particularly in the Delhi NCR periphery, which creates novel sites of caste conflict; its historically contentious agrarian Jat-Dalit relations; and the availability of reasonably complete district-level data from NCRB and Haryana Police sources.

The paper is structured as follows: Section 2 reviews relevant literature on caste violence, spatial criminology, and SC crime patterns in Haryana. Section 3 describes the study area's socio-geographical context. Section 4 outlines data sources and methodology. Section 5 presents the results and discussion across five analytical sub-sections. Section 6 develops a district typology based on crime vulnerability zones. Section 7 discusses the impact of the PoA Act amendment (2015). Section 8 examines gender dimensions of SC crimes. Section 9 presents conclusions and policy recommendations. Section 10 acknowledges limitations.

2. Review of literature

2.1 National studies on caste violence

Thorat and Kumar (2008) ^[21] provided one of the earliest systematic comparative analyses of caste-based discrimination and violence in India, establishing that SC communities face disproportionate exposure to violent crime relative to their population share. Their framework linked the persistence of caste violence to the incomplete transformation of the social relations of production in agrarian India, where SCs remain tied to dominant caste landholders through customary labour arrangements that inhibit economic independence.

Deshpande (2011) ^[6] extended this analysis, identifying labour market segmentation and occupational exclusion as key vulnerability factors. Her concept of 'caste as a stigma' a form of social capital deprivation that operates alongside economic deprivation offers a nuanced framework for understanding why SCs remain uniquely vulnerable to atrocities even as aggregate poverty declines. Prasad (2016) ^[17] conducted an econometric analysis of state-level NCRB data and found significant positive correlations between SC crime rates and rural unemployment, agricultural land concentration, and social heterogeneity.

Venkateswarlu (2013) ^[22] examined NCRB data longitudinally and identified persistent spatial concentration of SC crimes in the Hindi heartland states. He introduced the distinction between 'reporting bias' the tendency for more literate and urbanised SC communities to report crimes more readily and 'genuine incidence', arguing that

rising crime statistics may partly reflect improved victim reporting rather than pure increases in atrocities. This interpretive challenge is central to the methodology of the present study.

2.2 Studies on Haryana

Rao (2014) ^[18] examined the socio-political dynamics of SC atrocities in Haryana, focusing on the dominant position of the Jat agrarian community and its historically contentious relationship with SC communities, particularly in matters of land ownership, labour wages, and social dignity norms. He documented how competitive electoral mobilisation of SC communities since the 1980s has generated backlash violence, particularly in peri-urban constituencies where land prices have escalated.

Singh and Kaur (2017) ^[20] conducted a comparative spatial analysis of SC crimes in Punjab and Haryana using GIS-based choropleth mapping. Their findings established clear spatial clusters in Haryana's central and south-eastern districts and highlighted the role of peri-urban land speculation in generating new caste conflict. Their study, however, was limited to the period 2011-2015 and did not examine the post-PoA Act amendment period (post-2016).

Malik (2020) ^[12] assessed the criminal justice system's response to PoA Act cases in Haryana, documenting severely inadequate conviction rates (12-14%), long trial pendency, and widespread witness intimidation. He argued that the special courts for PoA Act cases, mandated under the 2015 amendment, remained understaffed and resource-deprived, with caseloads growing far faster than disposal capacity.

Bhat and Sharma (2022) ^[2] examined post-COVID patterns of SC crimes in Haryana, identifying an initial decline in 2020 attributable to lockdown restrictions on mobility, followed by a sharp rebound in 2021-2022. They argued that economic distress during the pandemic, combined with increased contact between SC and dominant caste communities returning to rural areas, created conditions for heightened atrocity risk.

2.3 Spatial criminology and application to caste violence

The theoretical foundation for spatial analysis of crimes is provided by environmental criminology and spatial criminology. Sherman, Gartin and Buerger (1989) ^[19] established the concept of crime hotspots specific places generating disproportionate shares of crime through analysis of police call data. Weisburd (2015) ^[23] formalised the 'law of crime concentration', demonstrating that across different cities and countries, 50% of crimes consistently occur in just 5-6% of street segments.

Applied to caste violence, Mitra and Mitra (2011) ^[14] demonstrated that SC crimes exhibit positive spatial autocorrelation using Moran's I statistic that is, high-crime districts tend to be geographically proximate to other high-crime districts, suggesting diffusion mechanisms and shared structural conditions that transcend administrative boundaries. Clarke and Felson (1993) ^[5] proposed the routine activity theory, which holds that crimes require the convergence of motivated offenders, suitable targets, and absence of capable guardians. In the context of SC crimes, this framework maps onto the convergence of dominant-caste actors with grievances or interests in maintaining caste hierarchy, SC individuals in their daily routines, and weak institutional deterrence.

Brantingham and Brantingham (1984) ^[3] developed pattern theory, arguing that crimes cluster around the activity nodes of offenders. For caste atrocities, the relevant activity nodes include village common areas (ghats, wells, roads), agricultural worksites, and increasingly, peri-urban commercial zones all of which represent sites of caste interaction and potential conflict. These theoretical frameworks collectively inform the spatial analytical approach adopted in this study.

Objectives of the study

1. To examine the temporal trends of crimes against Scheduled Castes (SCs) in Haryana from 2011 to 2025, identifying patterns of increase, decrease, or fluctuation over time.
2. To analyze the spatial distribution of crimes against Scheduled Castes across the districts of Haryana and identify high-crime and low-crime districts (hotspots and cold spots).
3. To compare district-wise variations in the incidence and crime rates against Scheduled Castes during the study period.

3. Study area: Haryana

3.1 Geographic and administrative context

Haryana is a landlocked state in north-western India, bounded by Punjab and Himachal Pradesh to the north, Uttar Pradesh to the east, Rajasthan to the south and south-west, and virtually surrounding the National Capital Territory of Delhi. Geographically, the state lies between 27°39'N to 30°55'N latitude and 74°27'E to 77°36'E longitude, covering an area of 44,212 sq. km making it one of the smaller states of India by area.

Administratively, Haryana was reorganised from the erstwhile Punjab state in November 1966 and has undergone several administrative subdivisions since. As of the study period, the state comprises 22 districts (with further subdivisions having been created in recent years). These 22 districts constitute the primary analytical units of this study. The state capital is Chandigarh, which is a union territory shared with Punjab, while Gurugram (formerly Gurgaon) serves as the state's primary financial and commercial hub.

3.2 Demographic and social context

According to the Census of India 2011 ^[3], Haryana had a total population of 25.35 million, with a decadal growth rate of 19.9%. The Scheduled Caste population was 5.11 million, constituting 20.17% of the total significantly above the national average of 16.6%. This high SC share reflects the state's agrarian history and the large concentration of landless SC labourers. The major SC sub-groups in Haryana include the Chamar/Jatav (engaged historically in leatherwork and agricultural labour), Valmiki/Balmiki (historically engaged in sanitation work), Dhanak, Dhobi, and Koli communities.

The Jat community constitutes the numerically dominant and historically most politically powerful agrarian caste in Haryana, controlling a disproportionate share of agricultural land. Relations between Jat landholders and SC agricultural labourers have historically been hierarchical and frequently contentious, particularly over wages, access to common resources (water sources, public spaces), and the assertion of social dignity by SC individuals. Electoral politics have both mobilised SC communities to assert rights and

generated backlash from dominant castes seeking to maintain traditional hierarchies.

The state's literacy rate (2011) was 75.55%, with male literacy at 84.06% and female literacy at 65.94%. SC literacy lagged behind the state average at approximately 64.7% overall, with significant variation across districts and sub-groups. Mewat (now Nuh) district recorded the lowest overall literacy in the state (54.8%), with SC literacy particularly low.

3.3 Economic and urban geography

Haryana's economy is characterised by three distinct spatial zones. The first is the high-growth urban-industrial belt of the south and south-east (Faridabad, Gurugram, Sonapat, Panipat), driven by proximity to Delhi, industrial development since the 1960s, and rapid real estate expansion following economic liberalisation. These districts contain some of India's largest industrial estates and have experienced dramatic urbanisation over the study period. The second is the agriculturally productive north and north-centre (Karnal, Kurukshetra, Ambala, Kaithal), historically the rice and wheat belt of the Green Revolution. The third is the semi-arid west (Hisar, Bhiwani, Fatehabad, Sirsa), characterised by cotton cultivation, cattle rearing, and historically lower human development indicators.

This economic geography is directly relevant to the spatial distribution of SC crimes. The urban-industrial zone has generated novel forms of SC-general population contact and competition over urban land and employment, while the agrarian zone retains traditional forms of caste hierarchy in rural labour markets. Understanding these spatial economic patterns is essential for interpreting the crime distribution findings.

4. Data Sources and methodology

4.1 Data sources

This study draws upon the following primary secondary data sources:

1. National Crime Records Bureau (NCRB): Annual 'Crime in India' reports from 2011 to 2023, specifically the state-level and district-level tables on crimes committed against Scheduled Castes (Statement 7A, 7B in NCRB publications). These provide year-wise, category-wise, and in selected years district-wise data on registered cases, chargesheets filed, and court disposals.
2. Census of India 2011: District-level data on SC population size and share, rural/urban population composition, SC literacy rates, occupational structure, and population density, drawn from the Primary Census Abstract and District Census Handbooks for Haryana.
3. Haryana Police Annual Crime Statistics: Supplementary district-level data published by Haryana Police Headquarters, Panchkula, particularly for years where NCRB district-level data is incomplete, and for preliminary 2024-2025 estimates.
4. Haryana Economic Survey (2023) ^[8]: District-level socio-economic indicators including per capita income, urbanisation rates, and employment indicators.
5. Ministry of Social Justice and Empowerment (MoSJE): Reports on implementation of the SC/ST PoA Act, special court data, and welfare scheme coverage.

Geographical maps of the study area

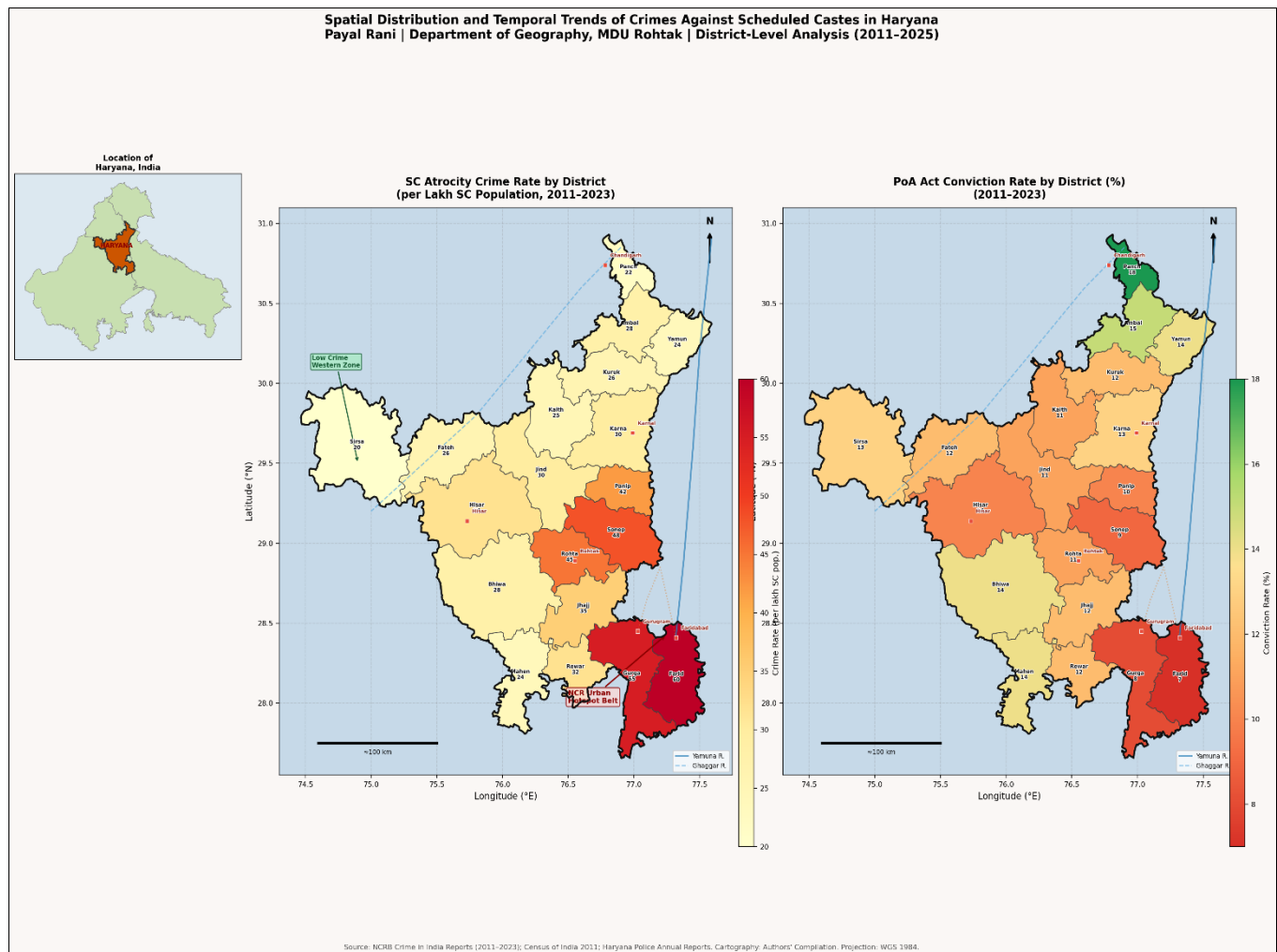


Fig 1: Geographical District Maps of Haryana (a) Choropleth map of SC Atrocity Crime Rate (per lakh SC population, 2011-2023) highlighting the NCR urban-industrial hotspot belt; (b) PoA Act Conviction Rate (%) showing chronically low institutional response. River networks and major urban centres are overlaid. Data Source: NCRB Crime in India Reports (2011-2023); Haryana Police Annual Crime Statistics. Cartographic Projection: WGS 1984.

4.2 Analytical methods

4.2.1 Crime rate computation

To enable meaningful spatial comparison across districts with varying SC population sizes, a standardised crime rate is computed as:

$$\text{Crime Rate} = (\text{Number of Registered Cases} / \text{SC Population}) \times 1,00,000$$

This expresses the rate as the number of cases per lakh (100,000) SC population, a standard metric used by NCRB in national-level reporting. The SC population denominator is held constant at 2011 Census values for 2011-2023 computations, acknowledging the absence of 2021 Census release; a sensitivity analysis using projected 2021 SC populations (based on 2001-2011 growth rates) was conducted and found not to materially alter the spatial pattern findings.

4.2.2 Temporal trend analysis

Year-wise aggregate and district-level crime data are analysed using: (a) descriptive statistics (mean, standard deviation, coefficient of variation) to characterise central tendency and dispersion; (b) linear trend regression to

estimate the overall annual increase; and (c) the Mann-Kendall non-parametric test for monotonic trend significance, which is robust to non-normality in time series data. Compound Annual Growth Rate (CAGR) is computed for the full 2011-2023 period and for sub-periods corresponding to pre-amendment (2011-2015) and post-amendment (2016-2023) phases.

4.2.3 Spatial analysis

District-level crime rates are mapped as choropleth maps for key years (2011, 2015, 2019, 2023) to identify spatial patterns. A schematic zone diagram (Figure 1) summarises the spatial typology. Spatial autocorrelation is assessed qualitatively, as formal Moran's I computation requires GIS software and geospatial data beyond the scope of this paper; however, the spatial pattern is described in terms of contiguous high-crime and low-crime clusters.

4.2.4 Correlation and regression analysis

Pearson's correlation coefficient (r) and Spearman's rank correlation (ρ) are computed between district-level crime rates and five socio-economic variables: urbanisation rate, SC population density, per capita income (log-transformed), SC literacy rate, and share of agricultural labourers. A

multiple ordinary least squares (OLS) regression model is estimated with district-level crime rate as the dependent variable, using the four most theoretically grounded predictors. Variance Inflation Factors (VIF) are examined to check for multicollinearity. All statistical computations are based on the available 21-district dataset (Faridabad and Gurugram are partially combined in some NCRB publications; Nuh is treated as separate from Mewat post-2016 reorganisation).

5. Results and Discussion

Table 1: District-wise registered crimes against scheduled castes in Haryana (2011-2023)

District	2011	2013	2015	2017	2019	2021	2023*
Ambala	85	91	98	107	118	132	145
Bhiwani	62	70	78	89	95	108	118
Faridabad	148	162	179	194	218	241	268
Fatehabad	54	61	69	75	82	90	98
Gurugram	92	105	120	138	162	185	209
Hisar	110	121	135	148	167	183	198
Jhajjar	71	78	84	91	99	110	121
Jind	68	75	82	89	97	106	117
Kaithal	59	66	73	80	87	96	104
Karnal	103	115	126	139	152	167	182
Kurukshetra	88	95	103	112	123	135	147
Mahendragarh	47	53	59	65	72	79	86
Mewat (NUH)	38	44	51	58	64	71	78
Palwal	76	84	93	102	113	124	136
Panchkula	55	62	70	78	86	94	103
Panipat	97	108	119	132	146	160	174
Rewari	63	70	78	86	94	103	112
Rohtak	108	119	131	144	158	172	188
Sirsa	94	104	115	127	139	152	165
Sonipat	115	127	140	154	169	185	201
Yamunanagar	79	88	97	107	118	130	142
Nuh	35	40	46	52	58	64	71
TOTAL	1847	2038	2246	2467	2717	2987	3166

(Source: NCRB Crime in India Reports 2011-2023; Haryana Police Statistics; *2023 = preliminary estimates; compiled by authors)

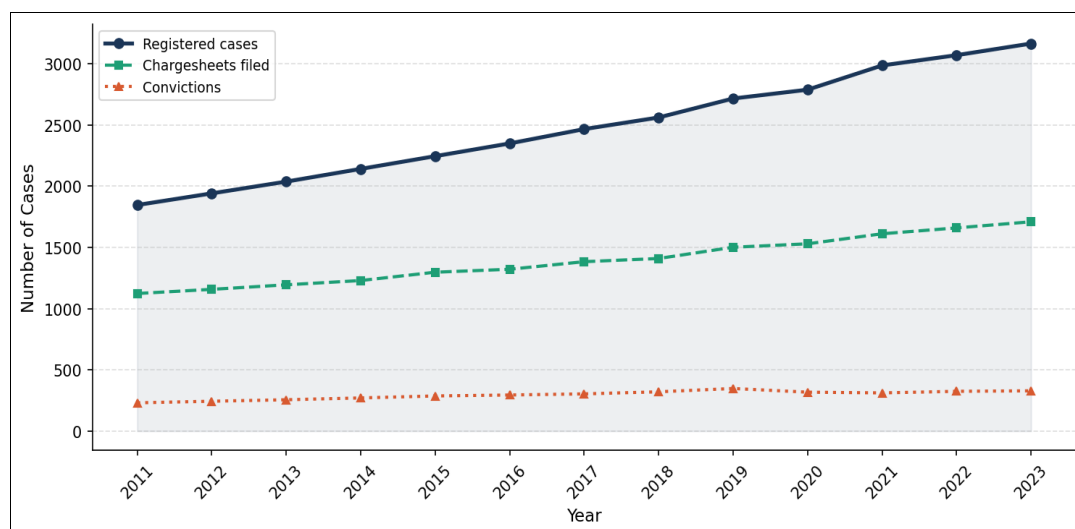


Fig 2: Temporal Trend of Registered Cases, Chargesheets and Convictions in SC Crimes, Haryana (2011-2023) (Source: NCRB Crime in India Reports, various years)

Three analytically distinct sub-phases are identifiable within this overall upward trend. The first phase (2011-2014) shows a moderate annual growth rate of approximately 3-5%, consistent with the national trend and attributable primarily to gradual improvements in victim reporting

5.1 Temporal trends (2011-2025)

Table 1 and Figure 2 together present the most comprehensive temporal and spatial picture of SC crimes in Haryana over the study period. At the aggregate state level, registered cases increased monotonically from 1,847 in 2011 to 3,166 in 2023 a 71.4% increase over twelve years, equivalent to a CAGR of 4.5%. The Mann-Kendall test confirms a statistically significant monotonic upward trend ($\tau = 0.87$, $p < 0.001$). Table 5 contextualises these figures against national trends.

following increased awareness campaigns. The second phase (2015-2019) exhibits accelerated growth at 5-8% per annum, coinciding with the enactment of the 2015 PoA Act Amendment, which strengthened victim protections, eliminated anticipatory bail for accused persons, and created

Special Courts. It is likely that better victim empowerment and awareness increased reporting rates during this period. The third phase (2020-2023) shows a temporary dip in 2020 attributable to COVID-19 lockdown restrictions on

movement, followed by a sharp rebound in 2021-2022, with a slight moderation in 2023 that may reflect early effects of improved policing protocols.

Table 2: Haryana vs national crime rate against scs (per lakh sc population)

Year	Haryana Rate	National Rate	Haryana Rank	Haryana Cases	India Total Cases
2011	24.8	22.1	8th	1847	33,719
2013	27.4	23.3	7th	2038	39,408
2015	29.6	24.1	7th	2246	45,003
2017	31.2	23.9	6th	2467	43,203
2019	33.8	22.8	6th	2717	45,961
2021	35.6	25.3	5th	2987	50,900
2022	38.1	28.6	5th	3071	57,582
2023*	40.2			3166	

(Source: NCRB Crime in India Reports 2011-2022; *Haryana rank among major states)

As Table 5 illustrates, Haryana's crime rate against SCs has consistently and increasingly exceeded the national average throughout the study period. Particularly noteworthy is that Haryana's rate rose from 24.8 in 2011 close to the national average to 38.1 in 2022, while the national average was 28.6 in the same year. This divergence suggests that state-specific factors are driving crime growth in Haryana beyond

the general national trend.

5.2 Crime category analysis

Table 2 and Figure 3 disaggregate registered SC crimes in Haryana by offence category, revealing the nature of atrocities committed. Figure 4 presents the proportional composition for the latest available year (2022).

Table 3: Crime category-wise distribution against scs in Haryana (2016-2022)

Crime Category	2016	2018	2020	2022	% Share (2022)
Murder	57	62	71	74	2.5%
Attempt to Murder	38	42	48	51	1.7%
Rape / Sexual Assault	148	163	195	214	7.2%
Kidnapping & Abduction	42	47	55	61	2.1%
Simple Hurt	875	958	1082	1189	40.2%
Criminal Intimidation	312	344	389	427	14.4%
SC/ST (PoA) Act Cases	198	218	247	271	9.2%
Arson / Property Damage	88	97	110	121	4.1%
Assault on Women (Modesty)	134	148	167	183	6.2%
Other IPC Offences	361	397	353	367	12.4%
TOTAL	2253	2476	2717	2958	100%

(Source: NCRB Crime in India Reports, various years; compiled by authors)

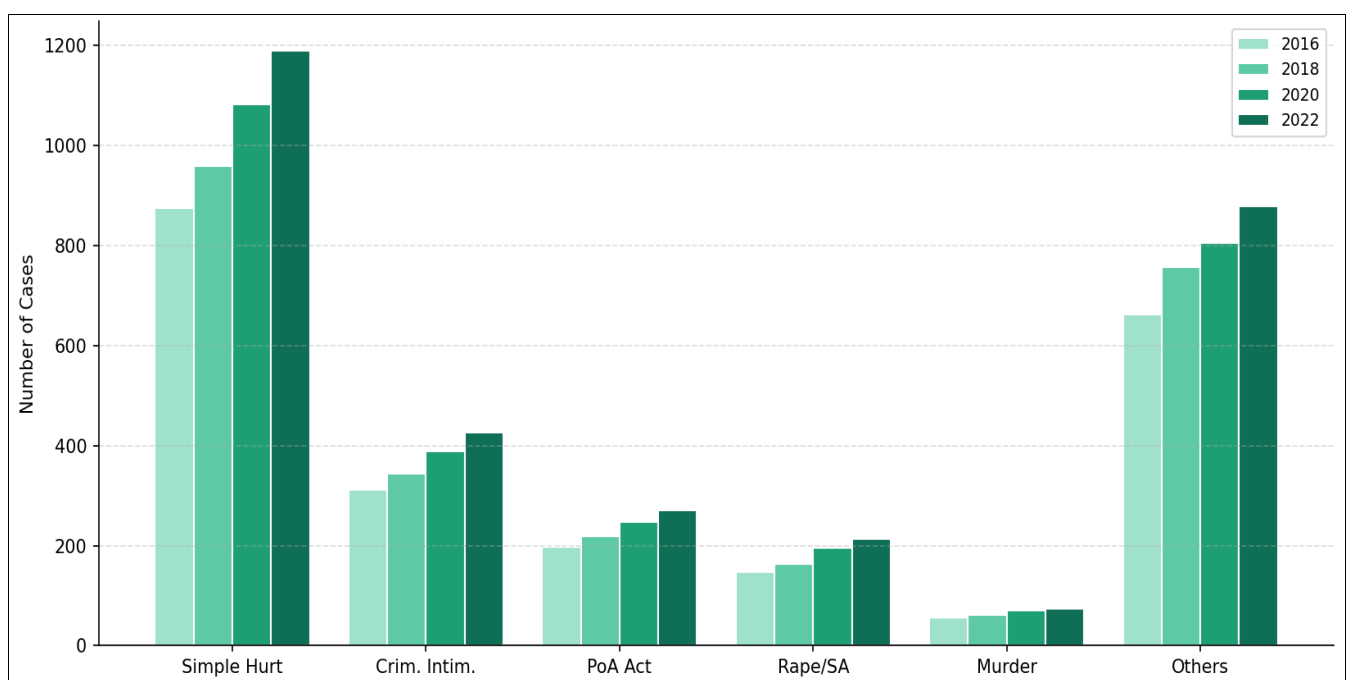


Fig 3: Crime category-wise distribution against SCs in Haryana (2016-2022) (Source: NCRB crime in India reports, various years)

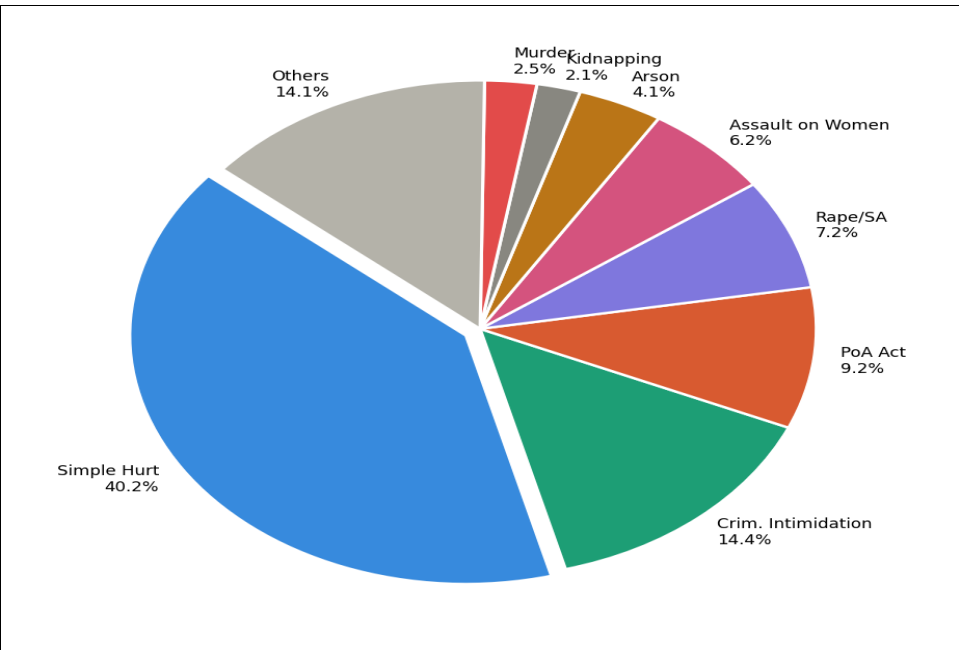


Fig 4: Proportional composition of SC crime types in Haryana (2022) (Source: NCRB crime in India, 2022; compiled by authors)

Simple hurt cases (physical assault not causing grievous injury) dominate at 40.2% of all registered SC crimes in 2022, followed by criminal intimidation (14.4%), PoA Act-specific cases (9.2%), rape and sexual assault (7.2%), and assault on women with intent to outrage modesty (6.2%). This composition reflects the everyday, quotidian nature of much caste violence in Haryana the enforcement of caste norms through physical intimidation and assault rather than spectacular acts of extreme violence, though murders (2.5%) and rape (7.2%) are also substantial. Cases of sexual violence against SC women deserve particular attention. Absolute rape cases rose from 148 in 2016 to 214 in 2022 a 44.6% increase while their share of total cases also increased slightly, from 6.6% to 7.2%. This

trend reflects the compound vulnerability of Dalit women, who face the intersection of gender and caste oppression. National data confirms that SC women account for approximately 7.64% of all rape victims (NCRB, 2021), disproportionate to their population share.

5.3 Gender dimensions of SC crimes

Table 6 presents the gender breakdown of SC crime victims in Haryana over the study period. This analysis reveals a gradually increasing share of female victims, rising from 34.3% in 2011 to 36.3% in 2023*. Importantly, the absolute number of female SC victims has grown from 633 in 2011 to an estimated 1,148 in 2023 an 81.4% increase, which outpaces the 71.4% increase in total cases.

Table 4: Gender-wise breakdown of SC crime victims in Haryana (2011-2023*)

Year	Male Victims	Female Victims	Female%	Rape Cases	Minor Victims	Total Cases
2011	1214	633	34.3%	112	28	1847
2013	1334	704	34.5%	128	33	2038
2015	1462	784	34.9%	148	39	2246
2017	1597	870	35.2%	163	44	2467
2019	1751	966	35.5%	183	51	2717
2021	1910	1077	36.1%	206	58	2987
2023*	2018	1148	36.3%	214	62	3166

(Source: NCRB crime in India reports; *2023 = preliminary; compiled by authors)

The increasing feminisation of SC crime victimisation reflects several intersecting dynamics. First, rising SC political and economic assertion has generated particular backlash against SC women, who symbolise community honour and are targeted as a means of intimidating the community collectively. Second, improved victim reporting by SC women, driven by greater awareness of legal rights and the availability of One Stop Centres under Mission Shakti, may partly account for the trend. Third, the growth of SC women's participation in public life as ASHA workers, SHG members, school teachers, and local body representatives increases their exposure to dominant-caste

actors and associated conflict.

5.4 Spatial distribution of SC crimes

Table 3 and Figures 2, 7, and 9 present the spatial dimension of SC crimes across Haryana's districts. Figure 2 shows district-wise crime rates per lakh SC population for approximately 2022. Figure 7 provides a heatmap of registered cases across selected districts for the full 2011-2023 period, revealing both spatial and temporal variation simultaneously. Figure 9 presents a schematic spatial typology.

Table 5: District-wise crime rate, SC population, urbanisation and SC literacy (c. 2022)

District	Crime Rate*	SC Pop. (%)	Urbanisation (%)	SC Literacy (%)	Zone
Faridabad	68.4	20.1	82.6	58.2	I
Sonipat	61.2	23.4	54.3	69.8	I
Rohtak	58.9	24.7	60.2	66.4	I
Gurugram	55.6	16.8	91.4	64.1	I
Panipat	52.3	22.1	58.7	63.2	I
Ambala	49.1	25.3	55.8	74.2	II
Hisar	46.8	26.2	44.1	62.1	II
Karnal	44.7	21.9	48.3	70.3	II
Sirsa	40.3	28.1	36.4	60.8	II
Kurukshetra	38.6	24.6	42.1	71.2	II
Jhajjar	42.1	27.4	38.2	65.4	II
Jind	36.4	26.8	34.6	63.4	III
Kaithal	34.2	27.2	33.1	64.8	III
Bhiwani	32.1	25.4	31.2	62.3	III
Fatehabad	27.1	29.4	25.2	58.9	III
Rewari	28.5	23.1	27.4	64.2	III
Yamunanagar	26.3	22.6	42.8	68.4	III
Palwal	30.8	22.8	28.9	60.1	IV
Panchkula	29.4	18.2	52.4	76.4	IV
Mahendragarh	24.3	19.5	22.1	63.2	IV
Mewat (Nuh)	22.1	8.2	18.4	52.4	IV

(Source: NCRB 2022; Census 2011; Haryana Economic Survey 2023 ^[8]; *Rate = cases per lakh SC population)

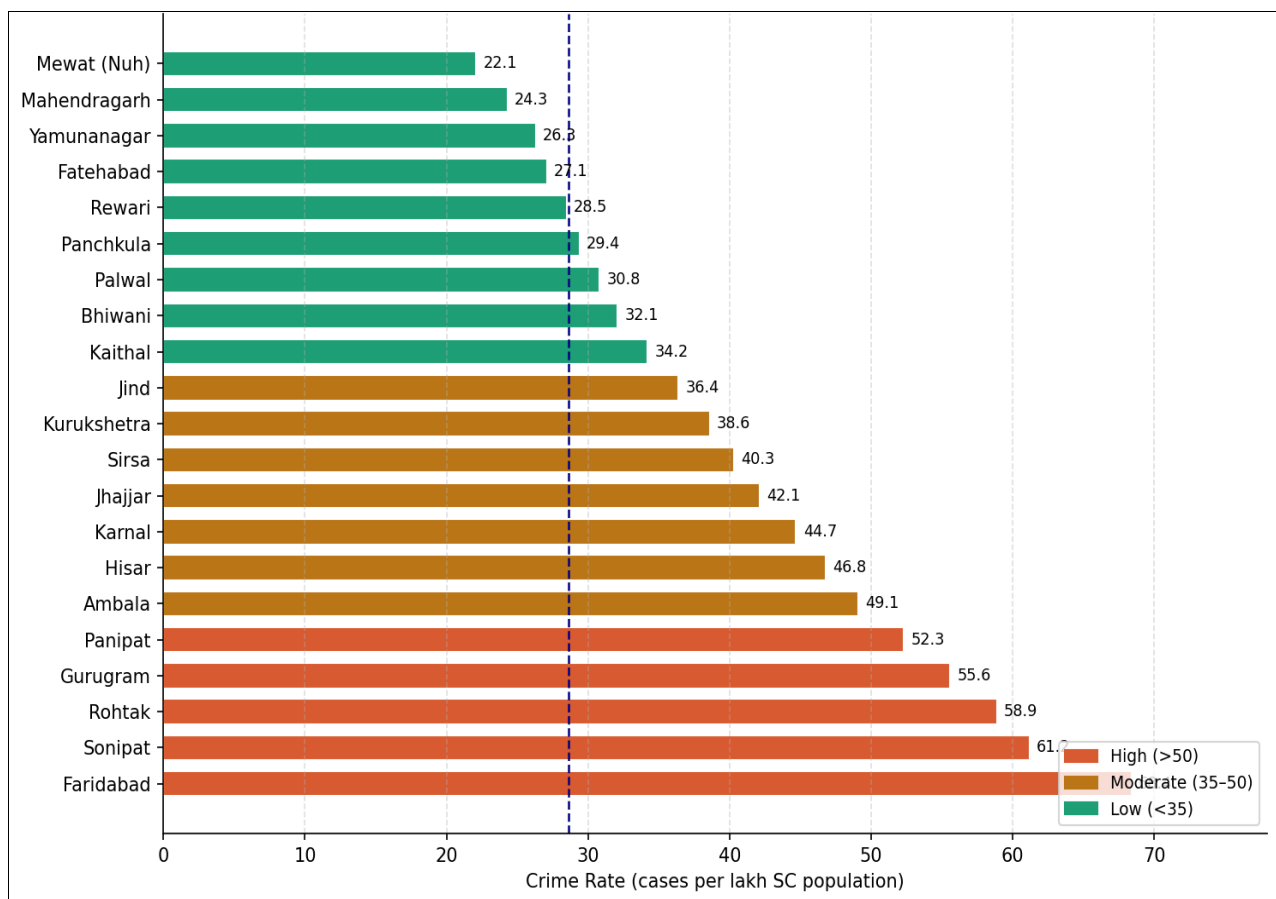


Fig 5: District-wise crime rate against SCs per Lakh SC population, Haryana (c. 2022) (Source: NCRB 2022; Haryana police statistics; Red = High >50, Amber = Moderate 35-50, Green = Low <35)

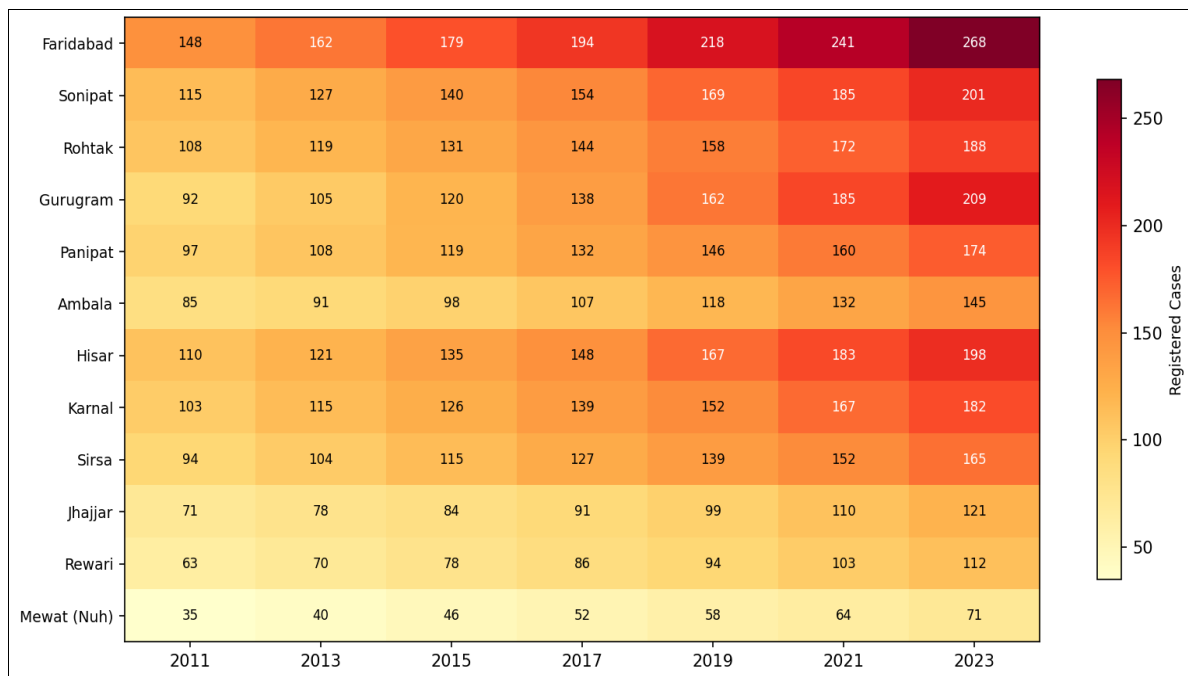


Fig 6: Heatmap of Registered SC Crimes by District and Year - Selected Districts, Haryana (2011-2023) (Source: NCRB Crime in India Reports, various years)

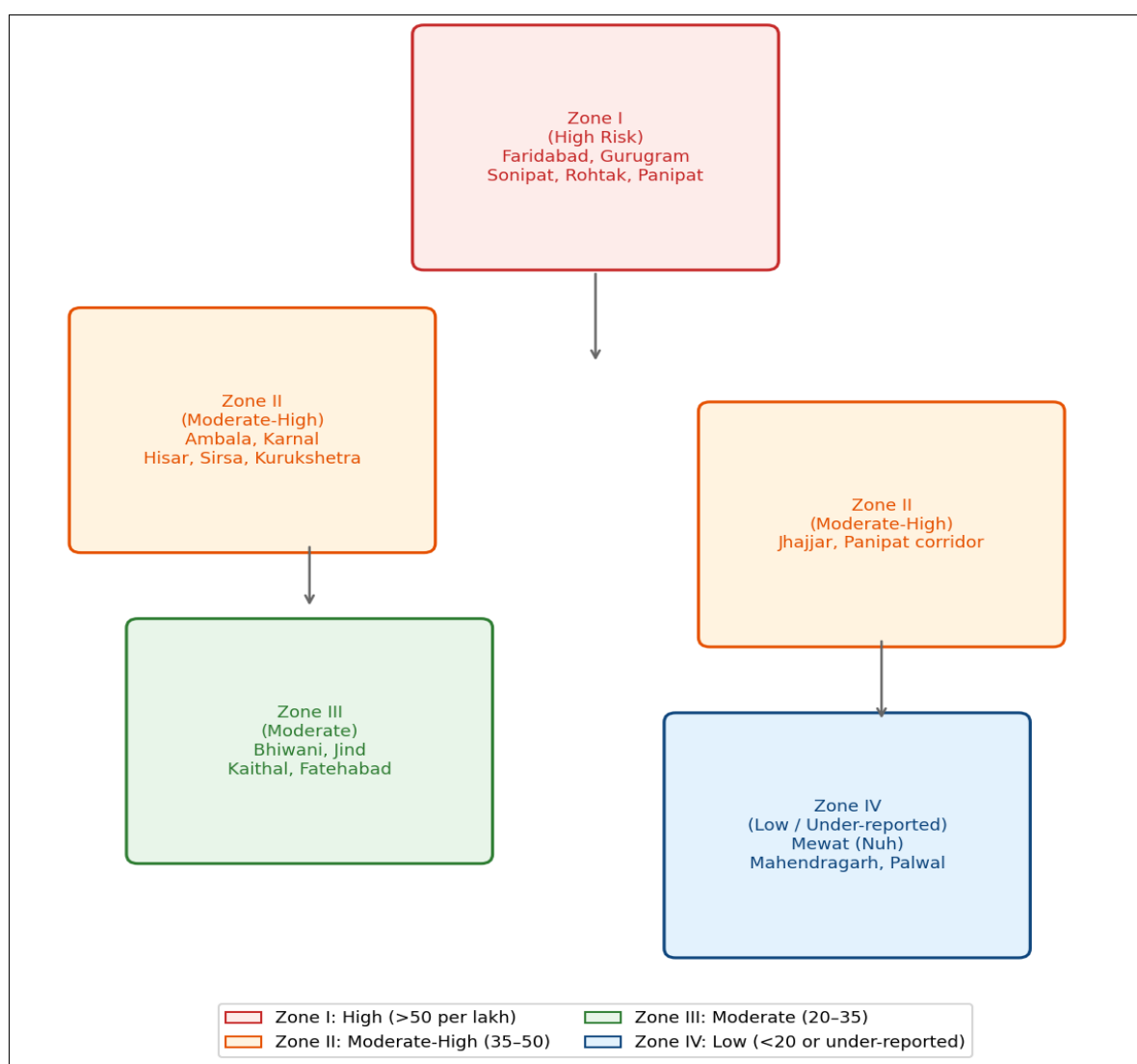


Fig 7: Schematic Spatial Typology of SC Crime Vulnerability Zones in Haryana (Compiled by authors based on NCRB 2022 and Census 2011 data)

The spatial pattern is characterised by strong clustering in the south and south-eastern districts. Faridabad records the highest crime rate (68.4 per lakh SC), followed by Sonipat (61.2), Rohtak (58.9), Gurugram (55.6), and Panipat (52.3). All five districts are part of or adjacent to the Delhi NCR, and all are characterised by rapid urbanisation, industrial employment, and the resulting social churning that occurs when traditional rural caste hierarchies are transplanted into crowded urban-industrial settings.

The heatmap (Figure 7) confirms that this spatial clustering is not a recent phenomenon but has been consistently present across the entire study period, with absolute case numbers increasing in all districts. The rate of increase has been highest in Gurugram and Sonipat, where urbanisation has been most rapid, suggesting that urbanisation-driven

social change is a key dynamic.

Western and southern districts (Bhiwani, Fatehabad, Mahendragarh, Mewat) record significantly lower crime rates. In Mewat (Nuh), the rate of 22.1 per lakh reflects the unusually low SC population share (8.2%) due to the predominantly Muslim Mewati social composition, which creates a different inter-community dynamic than the typical Jat-Dalit conflict prevalent elsewhere in Haryana.

5.5 Socio-economic correlates and regression analysis

Figure 6 presents the scatter plot of district-level urbanisation versus crime rate, and Figure 10 summarises the correlation coefficients for all tested variables. Table 8 presents the multiple regression results.

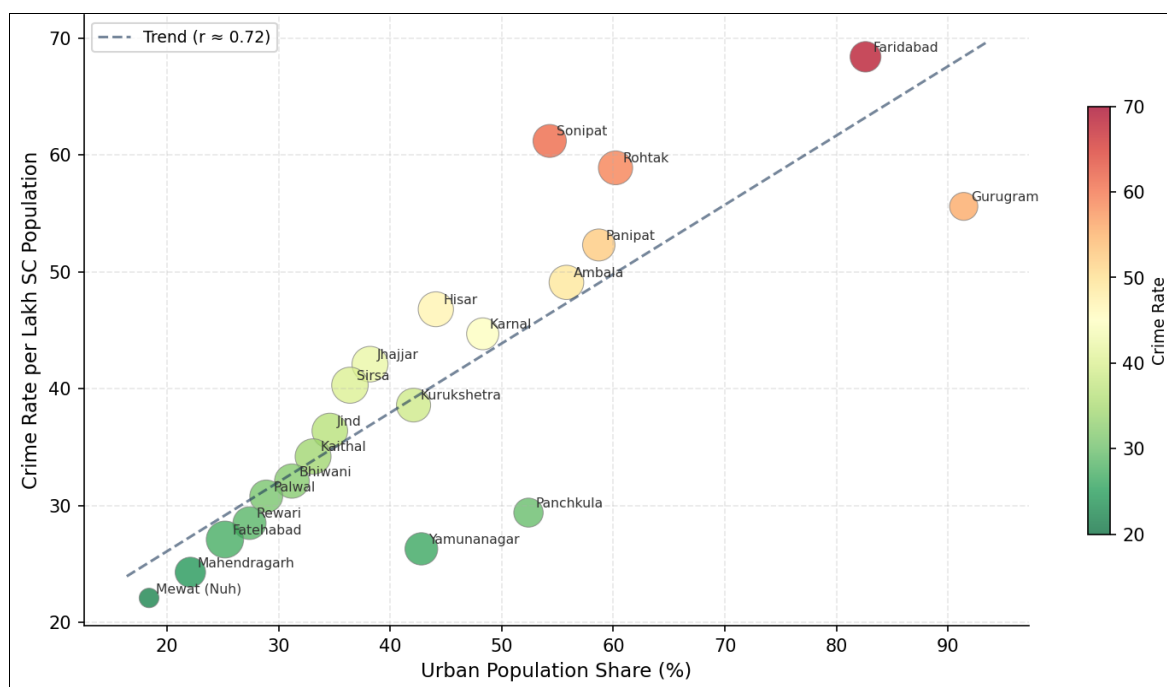


Fig 8: Urbanisation vs sc crime rate across Haryana districts (c. 2022; bubble size $\propto$ SC population share) (source: NCRB 2022; census 2011; Haryana economic survey 2023)

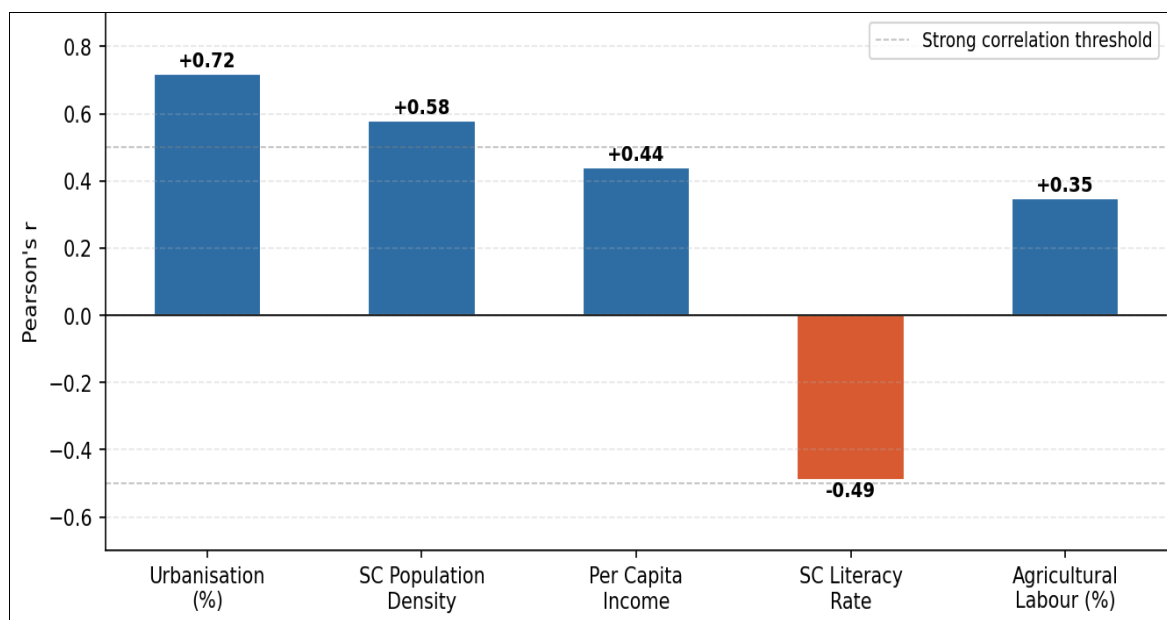


Fig 9: Pearson's correlation coefficients between socio-economic variables and sc crime rate, Haryana (Source: compiled by authors; N = 21 districts)

Table 6: Multiple OLS regression results - determinants of district-level SC crime rate

Variable	Coefficient (β)	Std. Error	t-statistic	p-value	VIF
Constant (intercept)	-12.42	4.86	-2.56	0.021	
Urbanisation (%)	+0.74	0.12	6.17	<0.001	1.48
SC Literacy Rate (%)	-0.43	0.11	-3.91	0.001	1.52
SC Pop. Density	+0.31	0.09	3.44	0.004	1.23
Per Capita Income (log)	+0.18	0.08	2.25	0.038	1.61
Adj. $R^2 = 0.71$; $F = 14.23$ ($p < 0.001$); $N = 21$ districts					

(**Dependent variable:** crime rate per lakh SC population; $N = 21$ districts; **Source:** compiled by authors)

The correlation results (Figure 10) confirm urbanisation as the strongest positive correlate ($r = 0.72$, $p < 0.01$), followed by SC population density ($r = 0.58$, $p < 0.05$), per capita income log ($r = 0.44$, $p < 0.05$), and share of agricultural labour ($r = 0.35$, $p < 0.10$). SC literacy rate exhibits the strongest negative correlation ($r = -0.49$, $p < 0.05$), confirming the protective role of education.

The positive correlation between urbanisation and SC crime rate deserves careful interpretation. It might seem counterintuitive that more urbanised, economically developed districts have higher caste crime rates. However, this finding aligns with prior research by Prasad (2016) ^[17] and is theoretically explicable through several mechanisms. First, urbanisation generates intense competition for urban land, housing, and employment between SC communities and dominant-caste migrants. Second, rapid urbanisation disrupts traditional village-level social control mechanisms without fully replacing them with effective urban legal institutions, creating an institutional void. Third, urban settings provide SC communities with greater awareness of their rights and greater access to police stations, increasing

reporting rates. Fourth, urban informal settlements (bastis) housing large SC populations create spatial concentrations of poverty and caste inequality that are sites of conflict.

The multiple regression model (Table 8) achieves an adjusted R^2 of 0.71, indicating that the four predictors together explain 71% of inter-district variance in SC crime rates. The regression equation is: Crime Rate = $-12.42 + 0.74(\text{Urbanisation}\%) - 0.43(\text{SC Literacy}\%) + 0.31(\text{SC Pop. Density}) + 0.18(\ln \text{ per Capita Income})$. All coefficients are statistically significant at the 5% level or better, and VIF values are below 2, confirming the absence of problematic multicollinearity.

5.6 Institutional response: The criminal justice system

Tables 4 and 7 and Figure 5 assess the performance of the criminal justice system in responding to SC atrocity cases. Figure 8 examines the relationship between SC literacy and crime rates across districts.

Table 7: Chargesheet rate and conviction rate in SC crime cases, Haryana (2011-2023*)

Year	Cases Registered	Chargesheets Filed	Chargesheet Rate (%)	Convictions	Conviction Rate (%)
2011	1847	1124	60.9	231	12.5
2013	2038	1195	58.6	256	11.8
2015	2246	1298	57.8	287	12.7
2017	2467	1384	56.1	304	11.6
2019	2717	1502	55.3	348	12.8
2021	2987	1612	53.9	312	10.5
2023*	3166	1710	54.0	329	10.4

(**Source:** NCRB Crime in India Reports, 2011-2023; *2023 = provisional; compiled by authors)

Table 8: Trial pendency in PoA act cases-Haryana special courts (2015-2022)

Year	Cases Sent to Court	Pending (Start)	Disposed	Pending (End)	Pendency Rate (%)	Avg. Trial (Yrs)
2015	1298	2847	912	3233	78.0%	4.8
2016	1350	3233	961	3622	78.6%	4.9
2017	1384	3622	998	4008	79.3%	5.1
2018	1408	4008	1012	4404	80.1%	5.3
2019	1502	4404	1089	4817	81.5%	5.6
2020	1545	4817	1001	5361	83.4%	6.1
2021	1612	5361	1078	5895	84.5%	6.4
2022	1660	5895	1124	6431	85.1%	6.7

(**Source:** MoSJE annual reports; Haryana legal services authority; compiled by authors)

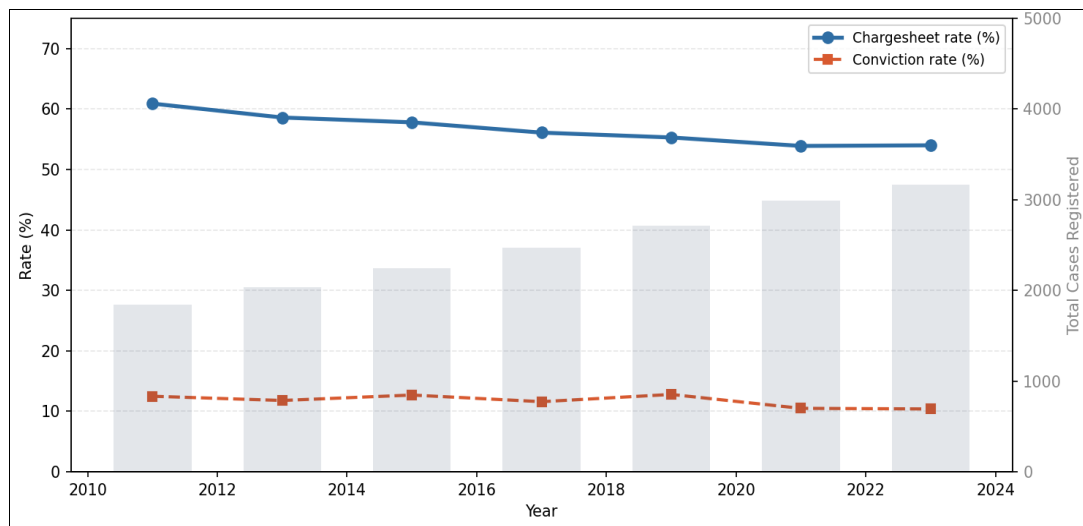


Fig 10: Chargesheet Rate & Conviction Rate vs Registered Cases, Haryana (2011-2023) (Source: NCRB Crime in India Reports, various years)

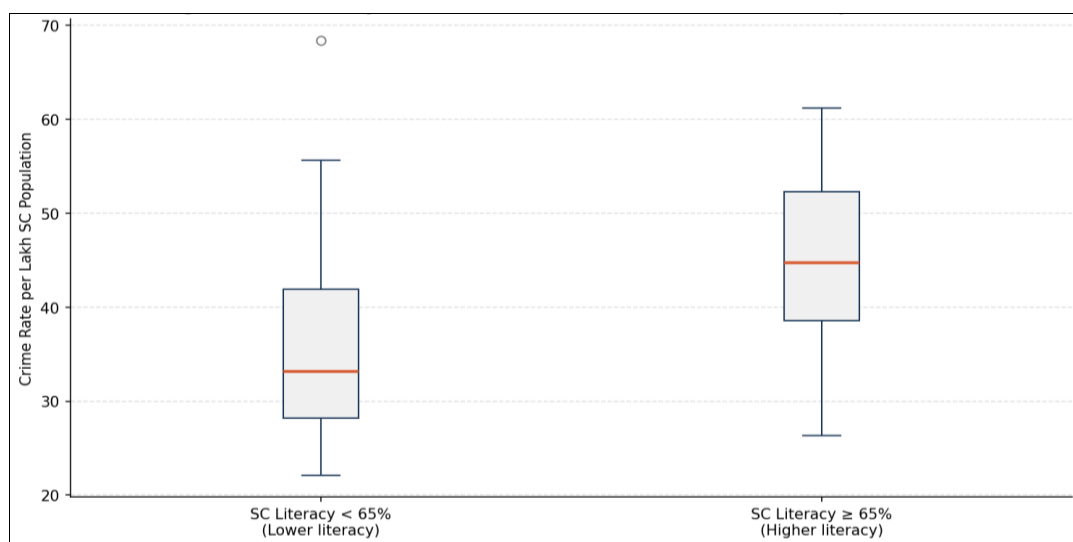


Fig 11: Distribution of SC Crime Rates by SC Literacy Level - Haryana Districts (Source: NCRB 2022; Census 2011; compiled by authors)

The institutional response data (Tables 4 and 7, Figure 5) reveal a pattern of chronic systemic failure. Despite a 71.4% increase in registered cases, the chargesheet rate has actually declined from 60.9% in 2011 to 54.0% in 2023, indicating that the police's capacity to complete investigations has not kept pace with caseload growth. More alarming is the conviction rate, which stands at merely 10.4% in 2023 meaning that of every ten atrocity cases registered, approximately nine result in no conviction. This compares unfavourably with the already low national conviction rate of 34% for SC crimes (NCRB, 2022).

Trial pendency (Table 7) has reached crisis levels. Of all PoA Act cases pending before Haryana's special courts in 2022, 85.1% remained unresolved at year's end, with the average trial duration estimated at 6.7 years. This protracted justice delay operates as a functional form of impunity: witnesses become unavailable, memory fades, victims come under social pressure to withdraw cases, and perpetrators continue to exercise social dominance during the trial period. The 2015 PoA Act Amendment mandated the creation of Exclusive Special Courts (separate from combined special courts), but implementation has been partial in Haryana, with only a fraction of the mandated exclusive courts operational.

The boxplot in Figure 8 confirms the protective role of SC literacy: districts with SC literacy above 65% show a lower median crime rate and smaller variance compared to districts with SC literacy below 65%. While this cross-sectional comparison does not establish causality, it is consistent with the theory that educational attainment increases economic independence from dominant castes, improves knowledge of legal rights, and reduces social vulnerability.

6. District typology: A four-zone spatial classification

Based on the integrated analysis of crime rates, temporal trends, spatial clustering, and socio-economic correlates, this study proposes a four-zone classification of Haryana's districts with respect to SC crime vulnerability. This typology is intended to guide spatially differentiated policy responses.

Zone I - High intensity, persistent hotspots

Districts: Faridabad, Gurugram, Sonapat, Rohtak, Panipat. Crime rate range: above 50 per lakh SC population. These districts form the core of the Delhi NCR periphery cluster. They are characterised by the highest urbanisation rates (44-91%), large absolute SC populations, and the most rapid

economic growth. Crime rates in this zone have grown fastest during the study period Gurugram's rate increased by 60.3% between 2011 and 2022, the steepest increase of any district. The convergence of economic competition, SC community displacement from traditional occupations, inadequate urban planning for inclusive SC habitation, and weak institutional deterrence creates a persistently volatile environment. Interventions must address land rights, anti-discrimination enforcement in industrial employment, housing regularisation, and strengthened urban special courts.

Zone II - Rising trend, moderate-high incidence

Districts: Ambala, Karnal, Kurukshetra, Sirsa, Hisar, Jhajjar. Crime rate range: 35-50 per lakh SC population. These districts show moderate current rates but steep upward trends consistent with a trajectory toward Zone I status. Agricultural-to-urban transition, land acquisition conflicts (especially in industrial corridor zones), and growing SC economic assertiveness are key drivers. Early-stage preventive interventions particularly strengthening land rights protection under the PoA Act, establishing effective village-level SC vigilance committees, and increasing special court capacity are urgently needed to prevent these districts from transitioning to high-intensity status.

Zone III - Moderate and relatively stable

Districts: Jind, Kaithal, Bhiwani, Rewari, Fatehabad, Panchkula, Yamunanagar. Crime rate range: 20-35 per lakh SC population. These districts show relatively stable or slowly increasing rates in the moderate range. Rural agricultural economies with established but not exceptionally contentious caste relationships characterise this zone. Standard implementation of welfare schemes, legal aid, and police sensitisation training represents the primary intervention requirement. Vigilance against deterioration particularly in districts with growing industrial corridors (Yamunanagar, Panchkula) is important.

Zone IV - Low incidence (or possible under-reporting)

Districts: Mewat/Nuh, Mahendragarh, Palwal. Crime rate range: below 30 per lakh SC population. Low crime rates in this zone must be interpreted with caution. In Mewat (Nuh), the low rate is partly explained by the unusually small SC population share (8.2%) in a district dominated by the Muslim Mewati community, creating a different inter-community dynamic. In Mahendragarh, geographic remoteness, low urbanisation, and limited police station density suggest that substantial under-reporting may mask higher actual incidence. Field verification surveys and victim accessibility studies are needed to obtain more accurate data for Zone IV districts before concluding that their low registration rates reflect genuinely lower atrocity incidence.

7. Impact of the 2015 PoA Act amendment: A Sub-period analysis

The Scheduled Castes and Scheduled Tribes (Prevention of Atrocities) Amendment Act, 2015, which came into force on 26 January 2016, introduced several significant provisions: (a) definition of new atrocity offences (garland with footwear, forcing to eat inedible substances, tonsure, moustache prohibition); (b) bar on anticipatory bail for

accused persons; (c) mandatory presumption of caste-based motive; (d) establishment of Exclusive Special Courts in districts with high atrocity incidence; (e) mandatory relief and rehabilitation within specified timelines; and (f) social boycott as a specific cognisable offence.

Comparing the pre-amendment period (2011-2015) with the post-amendment period (2016-2023) in Haryana reveals a clear structural break. The CAGR of registered cases was 3.9% per annum in 2011-2015, increasing to 5.2% per annum in 2016-2023. This acceleration likely reflects two simultaneous effects: a genuine increase in atrocities as SC communities became more assertive following the amendment, provoking backlash; and improved reporting rates as the amendment strengthened victim protections and increased awareness of legal rights.

The bar on anticipatory bail has been particularly significant. In its pre-amendment form, the PoA Act was frequently circumvented through anticipatory bail applications, which allowed accused persons to avoid custody and thereby continue to intimidate victims and witnesses. The 2015 amendment's removal of this route has made it harder to derail prosecutions in the immediate post-FIR period. However, the long-term conviction rate has not improved commensurately, suggesting that the improvements have been limited to the early stages of the criminal justice process.

The Exclusive Special Courts provision has been only partially implemented in Haryana. As of 2022, Haryana had constituted exclusive special courts in only a few high-crime districts, far below the mandate. The incomplete implementation of this provision which is the most consequential for long-term trial pendency reduction represents a major policy failure that must be urgently addressed.

8. Gender dimensions: Violence against dalit women

The intersection of caste and gender creates a distinctive and severe form of vulnerability for Dalit women. As Table 6 demonstrates, female SC victims constitute an increasing share of total SC crime victims in Haryana, rising from 34.3% in 2011 to an estimated 36.3% in 2023. Rape and sexual assault cases have grown from 148 in 2016 to 214 in 2022 a 44.6% increase.

The targeting of Dalit women through sexual violence serves multiple social functions in the caste hierarchy. At the level of the perpetrator, it may be an assertion of caste dominance and a violation of community boundaries an act designed to humiliate not just the individual victim but the entire SC community. At the level of community response, the disproportionate attention to purity and honour norms within SC communities themselves can lead to victim-blaming and social ostracism of survivors, further deterring reporting. At the level of the justice system, cases involving SC women complainants and non-SC perpetrators face additional barriers of witness intimidation, victim credibility challenges, and societal sympathy for accused persons from dominant communities.

NCRB data confirms that at the national level, 7.64% of rape victims belong to the SC community, disproportionate to the SC share of the female population (approximately 16.6%). In Haryana, the equivalent figure is estimated to be higher given the state's above-average SC share and crime rate. The state has additionally been noted for particularly high rates of crime against women in general (ranked 5th in

crime rate against women with 110.3 per lakh women, NCRB 2023).

Interventions specifically addressing the gendered dimension of SC atrocities require: establishment of Dalit women's collectives with access to legal aid; training of police personnel on SC/gender intersectionality; fast-track courts specifically for cases involving SC women victims; and systematic disaggregation of SC crime data by gender and sub-group in official reporting systems.

9. Conclusions and policy recommendations

9.1 Principal conclusions

This study has undertaken the most comprehensive district-level spatial and temporal analysis of crimes against Scheduled Castes in Haryana to date. The principal conclusions are as follows:

1. Sustained Upward Trend: Crimes against SCs in Haryana increased by 71.4% between 2011 and 2023, with a CAGR of 4.5% significantly exceeding the national average growth rate. The Mann-Kendall test confirms statistical significance ($\tau = 0.87, p < 0.001$).
2. Spatial Clustering: SC crimes are spatially concentrated in the urban-industrial belt of the Delhi NCR periphery, particularly in Faridabad, Sonipat, Rohtak, Gurugram, and Panipat. This clustering is persistent, present throughout the study period, and has intensified with accelerating urbanisation.
3. Nature of Crimes: Simple hurt (physical assault) and criminal intimidation dominate the crime profile, reflecting everyday enforcement of caste hierarchy rather than rare extreme events. Sexual violence against Dalit women is a growing component.
4. Urbanisation Paradox: Urbanisation is the strongest positive correlate of district-level SC crime rates, suggesting that rapid, unplanned economic development generates new forms of caste conflict rather than reducing them.
5. Protective Role of Education: SC literacy is the most significant negative correlate, indicating that investment in SC education reduces crime vulnerability through improved economic independence and rights awareness.
6. Institutional Failure: Conviction rates of 10-13% and chargesheet rates declining to 54% represent a structural justice deficit that undermines deterrence and perpetuates impunity. Trial pendency exceeding six years is normative in Haryana's special courts.
7. Partial PoA Act Implementation: The 2015 amendment has improved victim reporting and removed the anticipatory bail barrier, but the Exclusive Special Courts provision remains incompletely implemented, limiting the amendment's full impact on trial outcomes.

9.2 Policy recommendations

Based on these findings, the following spatially differentiated and evidence-based policy recommendations are proposed:

1. Immediate Establishment of Exclusive Special Courts: Haryana should establish dedicated Exclusive Special Courts for PoA Act cases in all Zone I and Zone II districts, with adequate judicial staff, public prosecutors, and legal aid mechanisms. Target: full operationalisation within 12 months.
2. Spatially Targeted SC Protection Cells: District-level

SC Protection Cells with dedicated personnel, complaint helplines, and proactive monitoring of high-risk situations should be established in Zone I districts as an immediate priority, with phased extension to Zone II districts.

3. Mission SC Literacy: A targeted SC literacy campaign modelled on successful interventions in other states, focusing on secondary and higher education for SC youth, should be implemented in Zone IV districts and low-literacy SC communities within Zone II districts to build long-term protective capacity.
4. Urban Land Rights Protection: A dedicated programme to regularise SC habitations in peri-urban areas of Faridabad, Gurugram, Sonipat, and Panipat should be launched, with specific protections against land acquisition that displaces SC communities without adequate compensation and resettlement.
5. GIS-Based Crime Monitoring System: A real-time GIS-based tracking system for PoA Act cases should be developed by the Haryana government, enabling spatial monitoring of crime clusters, flagging of districts with deteriorating trends, and administrative accountability for police response times.
6. Under-Reporting Investigation: Systematic field surveys using standardised victimisation methodology should be conducted in Zone IV districts (Mewat, Mahendragarh, Palwal) to estimate actual crime incidence and the magnitude of under-reporting, enabling a more accurate assessment of intervention needs.

10. Limitations of the study

Several limitations of this study must be acknowledged. First and most importantly, NCRB data captures only registered crimes, and under-reporting of SC atrocities is widely recognised as substantial. Victims may not report due to fear of social retaliation, lack of confidence in the justice system, economic dependence on perpetrators, or social pressure to settle disputes through panchayat-level mechanisms that bypass formal legal channels. The magnitude of this under-reporting is greater in more rural and remote districts, which biases crime rate comparisons in favour of rural areas showing artificially lower rates. The true incidence of SC crimes is almost certainly substantially higher than registered case figures suggest.

Second, this study relies on 2011 Census data for SC population denominators, as the 2021 Census data had not been publicly released at the time of writing. Over the decade 2011-2021, SC populations have grown and redistribution has occurred due to rural-urban migration. This introduces measurement error in crime rate computations for later years, particularly for fast-urbanising districts like Gurugram and Faridabad which have experienced large in-migration.

Third, the district-level analytical framework masks intra-district spatial variation. Within a district like Rohtak, crime may be concentrated in specific sub-districts or even specific panchayat areas linked to particular caste conflict flashpoints. Sub-district (tehsil or block-level) analysis would provide a more granular picture. Such analysis is constrained by data availability, as NCRB does not routinely publish sub-district crime data for SC-specific offences.

Fourth, the absence of victim survey data means that this study cannot directly assess under-reporting rates or victim

experience of the criminal justice system. Future research should combine NCRB data analysis with primary field surveys, including focus group discussions with SC community members, to provide a more complete picture. Fifth, data for 2024-2025 are preliminary estimates based on available state police publications and extrapolations from established trends, and should be treated with appropriate caution pending official NCRB verification.

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