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### Spatio-Temporal Analysis of Crimes against Women A case study of Hansi-I and Hansi-II Blocks, Hisar

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#### ABSTRACT

Women occupy a vital place in the society. They are considered the first architects and future builders of society, being the first teachers of children. From the last decade's crime statistics, we see sharp number of crimes registered under 'cruelty' by husband and his relatives. Now there are many types of crimes against women reported and recorded like rape, cruelty by husband, relatives, family, society, dowry death, sexual harassment, molestation, etc. expanding the new horizon of research. This research attempts to focus on spatio-temporal analysis of crime against women for the period 2019-2020 of Hansi-I and Hansi-II block with special reference to rape by state level mapping and trend analysis. Remote sensing (Sentinel-2) satellite data with 30 m spatial resolution have been used for preparation of base map and crime location hot spot of the study area. The study is based on secondary data is collected from civil line Police Station, Hansi for the year of 2018 and 2019. GIS is used to view the hotspot of any type of crime activities. It is very efficient software for identifying the crime hotspot in an easy manner. The result indicate that total 58 number of crime were recorded including rape, domestic violence, sexual harassment, dowry and kidnapping found in study area during 2018. It has been observed that rape, domestic violence, sexual harassment, dowry and kidnapping recorded case 9, 19, 14, 13 and 4 respectively. In 2019 it has been found that 19 domestic violence crimes against women recorded in this year. 9 rape crimes, 14 sexual harassment crimes, 13 dowry crimes and 4 kidnapping crime cases recorded against women. There it emerges that the incidence of crime is associated with the socio-economic and demographic profile of the locality. So some remedies should be implemented in our society.

#### INTRODUCTION

Women occupy a vital place in the society. They are considered the first architects and future builders of the society being the first teachers of children. However, women are at the most vulnerable position too all over the world. Women have been the victims of exploitations since long

time in different fields in their life both physically, socially, mentally and economically. Crimes against women are spread across space, ethnic and socio-economic background, educational level, etc. The Semantic meaning of 'Crime against Women' is direct or indirect physical or, mental cruelty to women. According to Article 1 of United Nations Declaration, Violence against Women is to be defined

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as “ Any act of gender-based violence that results in, or is likely to result in, physical, sexual or psychological harm or suffering to women, including threats of such acts, coercion or arbitrary deprivations of liberty, whether occurring in public or private life” (UN 1993). According to the Report of the Committee on Crime Statistics of India (CCS, 2016), globally, nearly 60% of women up to six out of every ten experience some form of physical and/or sexual violence during their lifetime. This highlights the pervasive nature of gender-based violence worldwide and underscores the urgent need for comprehensive policies and interventions to address and prevent such violence. Crime against women is a curse for India due to which the women caste is tolerance due to fear with arcane customs like sex being a taboo in India sati and dowry and the overall lower status of women further exacerbates this crime. From the last decade's crime statistics, we see sharp number of crimes registered under 'cruelty' by husband and his relatives. An analysis of crime statistics in India reveals that certain states consistently report the highest number of cases under the category of crimes against women. States such as West Bengal, Andhra Pradesh, Uttar Pradesh, and Rajasthan emerge as major crime hotspots based on the number of registered cases. According to the National Crime Records Bureau (NCRB), Uttar Pradesh is considered the most dangerous state for women, accounting for approximately 12% of the country's total reported crimes against women. These crimes include a wide spectrum of offenses such as rape, domestic cruelty by husbands and relatives, dowry deaths, sexual harassment, and molestation, among others. This growing prevalence and diversification of crimes against women underscores the need for expanded research horizons and targeted policy interventions to address this critical social issue.

This research aims to conduct a spatial-temporal analysis

of crimes against women for the period 2018–2019, with a particular focus on rape incidents through block-level mapping and trend analysis. The study also seeks to examine the relationship between different categories of crimes against women and various geographical, socio-economic, and demographic factors. By integrating spatial and statistical techniques, this research aspires to provide a framework for further studies on the spatial dimensions of crime, contributing to a deeper understanding of patterns and determinants of gender-based violence.

## STUDY AREA

The Study area comprises of Hansi Tehsil (Hansi-I and Hansi-2 blocks) is situated between  $28^{\circ}58'7''$  to  $29^{\circ}0'34''$  N latitudes and  $75^{\circ}47'27''$  to  $76^{\circ}19'16''$  E longitudes in Hisar district of Haryana. Hansi is located around 30 Km away from district head Hisar. Chandigarh is the capital of Haryana and it is far away 198 Km from Hansi. The Hansi-I and Hansi-2 Blocks are connected by NH-9 of the state. Hansi (Hansi-I and Hansi-2 blocks) is a Tehsil in the state of Haryana (Fig. 2.1). According to the 2011 Indian census, this Tehsil has a total Hansi population of 300,020 people, with 160,791 men and 139,229 women. In 2022, the Hansi population is expected to be 384,026. Literate people number 182,901, with 112,370 men and 70,531 women. There are a total of 128,173 workers who rely on multiple skills, with 84,676 men and 43,497 women. A total of 52,095 cultivators rely on agriculture farming, with 39,372 being men and 12,723 being women. In Hansi, 20,729 people work as agricultural labourers, with 15,614 men and 5,115 women.

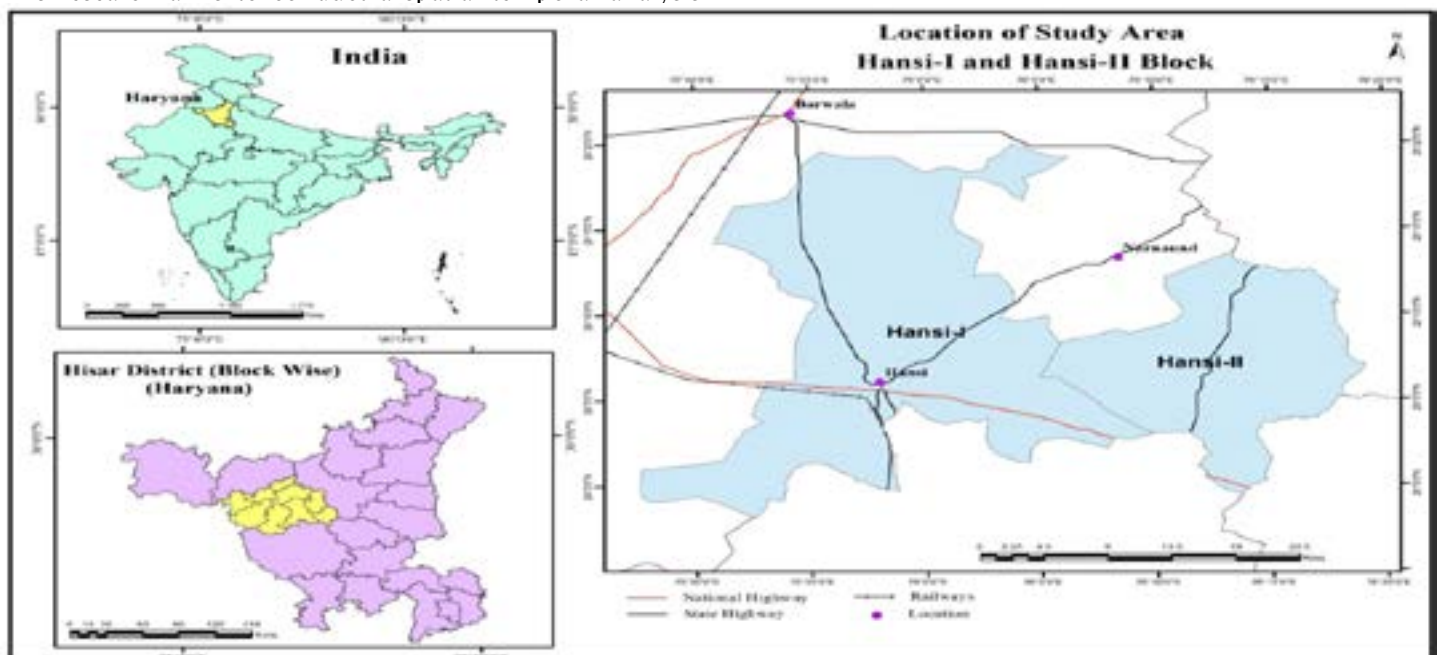


Figure 2.1: Location of the study area

## MATERIALS AND METHODOLOGY

The scope of this study is confined to analysing crimes against women in Hansi Tehsil, specifically covering Hansi-I and Hansi-II blocks. The primary objective is to assess the availability and utilization of secondary data for the study area. Remote sensing (Sentinel-2) satellite data has been employed for the preparation of the base map and for identifying crime hotspots within the region. The study is based on secondary data is collected from civil line police station, Hansi for the year of 2018 and 2019. The first step in the analysis involves evaluating the usefulness and reliability of the available data to ensure its suitability for subsequent spatial analysis. The crime data, categorized into rape, domestic violence, sexual harassment, dowry-related cases, and kidnapping, was compiled and organized in a tabular format using Microsoft Excel. The geo-codes collected village location were stored with the crime against women data subsequently plotted in ArcGIS. The crime data is attributed to the digitized village map of the blocks. All the crime hot spot locations were charted accordingly. In this study choropleth method were used in different color and shadow related to our topic. Choropleth map is a type of thematic map in which area are shaded or patterned in proportion to a statistical variable that represents an aggregate summary of a geographic characteristic within each area. This process

facilitated the visualization of crime distribution and identification of spatial clusters or hotspots, which are essential for developing targeted intervention strategies.

## RESULT AND DISCUSSION

The prediction of spatial pattern of crime with recorded crime data and Geographical Information System (GIS) is relatively recent and adoptable for further studies. A spatio-temporal analysis of the occurrence of crime against women in the Hansi-I and Hansi-II blocks reveals that many crimes happens such as domestic violence, sexual harassment, honour killing, early marriage, female foeticide but in these crimes many crimes remains unreported. In this study sexual harassment and domestic violence like crimes are reported in the study area. This may be attributed to better reporting of crime, rise of population within the study area or the rise of unsavoury elements within the population. The crime statistics extracted and shown in table 4.1 are the records stored in a table form of Microsoft Word format along with some information about the crime incident. The format of tabular crime data is still commonly adopted by the Hansi Police for their crime analysis. Using GIS technology, the incidence of crime against women in Hansi-I and Hansi-II blocks were mapped for the two calendar years of 2018 and 2019.

**Table 4.1: Crime against women in 2018 and 2019 Hansi Tehsil (Hansi-I and Hansi-2 blocks)**

Year	Rape	Domestic Violence	Sexual Harassment	Dowry	Kidnaping	Total
2018	17	10	22	9	1	59
2019	9	19	13	13	4	58

Source: Police Station, Hansi

The spatial and statistical comparison of crimes against women for the years 2018 and 2019 across the villages of Hansi Tehsil (Hansi-I and Hansi-II blocks) table 4.2 revealed several shifting patterns.

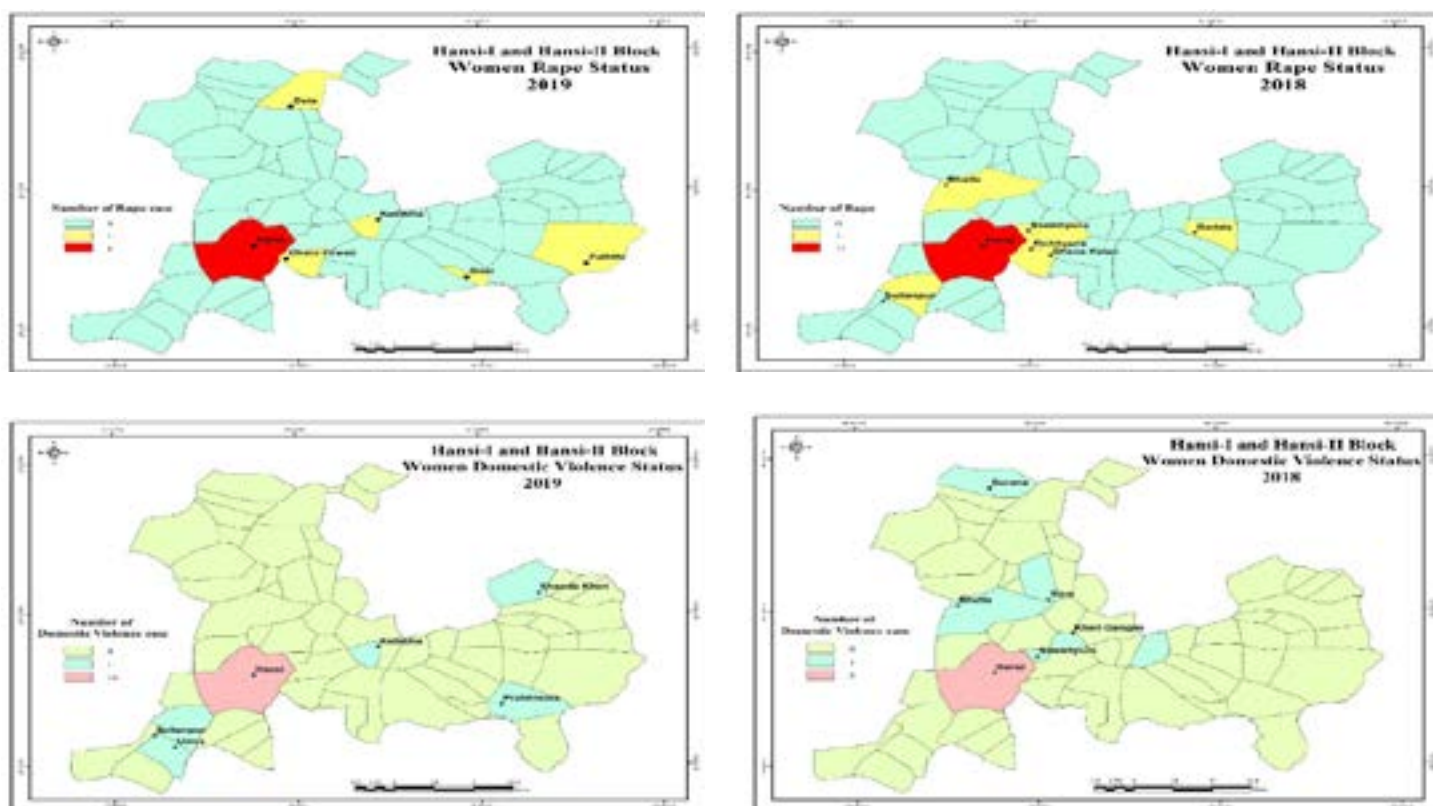
**Table 4.2: Crime against women data in Hansi-I and Hansi-II Blocks (2018 and 2019)**

Village Name	Rape		Domestic Violence		Sexual Harassment		Dowry		Kidnaping	
	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019
Badala	1	0	0	0	0	0	0	0	0	0
Badchhaprar	0	0	0	0	0	0	1	0	0	0
Bhatla	1	0	1	0	2	0	0	0	0	0
Chanaut	0	0	0	0	0	0	1	0	0	0
Data	0	1	0	0	1	1	0	0	0	0
Dhani Pirwali	0	1	0	0	0	0	0	0	0	1

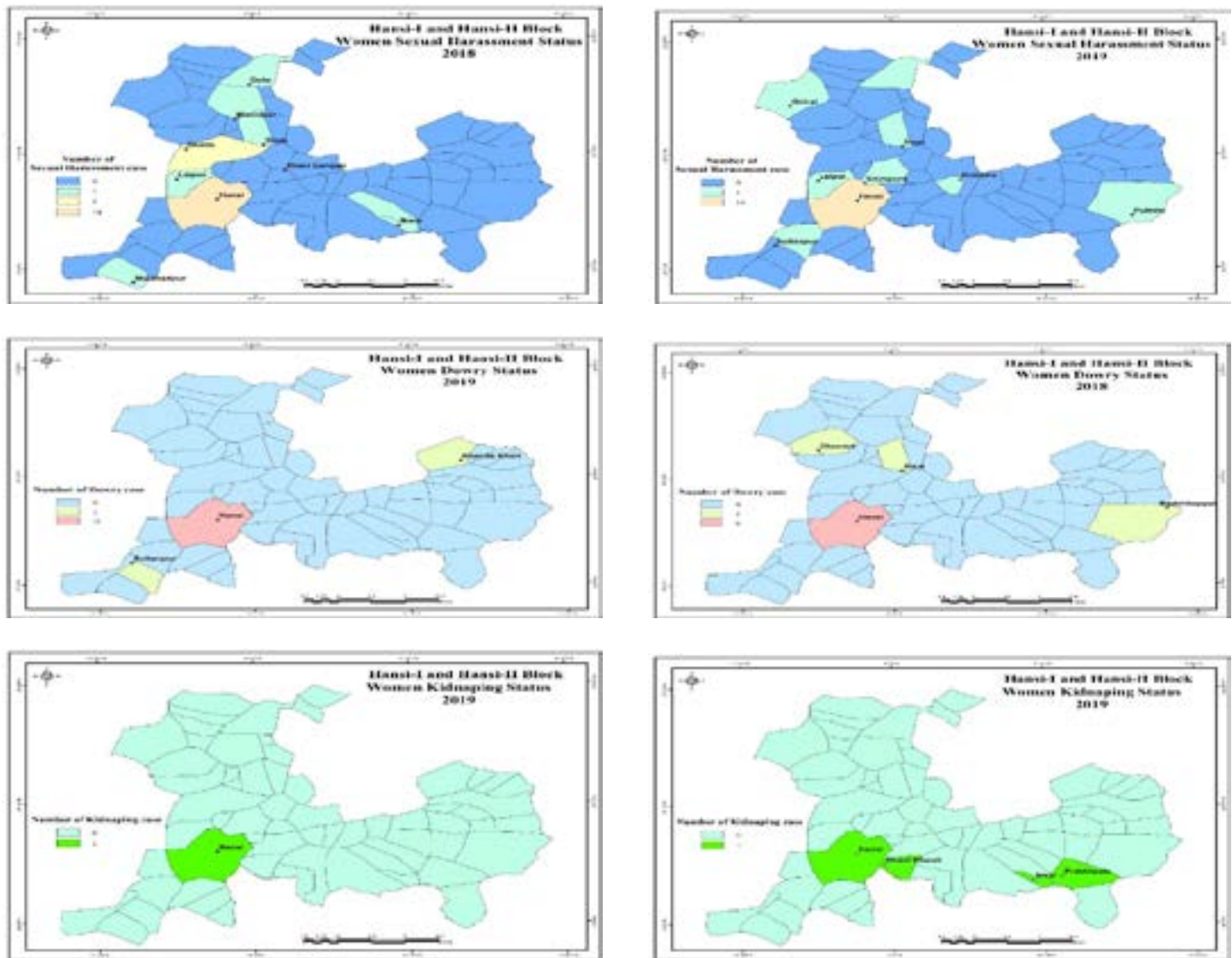
Dhanakalan	1	0	0	0	0	0	0	0	0	0
Ghirai	0	0	0	1	0	0	0	0	0	0
Gurana	0	0	1	0	0	0	0	0	0	0
Hansi	11	4	5	14	12	6	6	11	1	1
Khanda Kheri	0	0	0	1	0	0	0	1	0	0
Kumbha	0	1	0	0	0	1	0	0	0	0
Kherbla	0	0	0	0	0	0	0	0	0	0
Kheri Gangan	0	0	1	0	0	0	0	0	0	0
Lalpura	0	0	0	0	1	1	0	0	0	0
Masudpur	0	0	0	0	1	0	0	0	0	0
Mujadpur	0	0	0	0	1	0	0	0	0	0
Prabhiwala	0	0	0	1	0	0	0	0	0	1
Puththi	0	1	0	0	0	1	0	0	0	0
Richpura	1	0	0	0	0	0	0	0	0	0
Sainipura	0	0	0	0	0	1	0	0	0	0
Shakpura	1	0	1	0	0	0	0	0	0	0
Sisai	0	0	1	0	1	1	1	0	0	0
Sisar	0	1	0	0	1	0	0	0	0	1
Sultanpur	1	0	0	1	0	1	0	0	0	0
Umra	0	0	0	1	0	1	0	1	0	0
Total	17	9	10	19	21	14	9	13	1	4

Source: Police Station, Hansi

Figure 4.2: Crime against women from 2018 to 2019 (Hansi-I and Hansi-II Blocks)







The data was categorized into five categories of crime: rape, domestic violence, sexual harassment, dowry-related cases, and kidnapping in the Hansi Thesil. After cleaning and merging village-level records from both years, a comprehensive year-wise and village-wise analysis was conducted to identify hotspots and emerging trends.

**4.1 Rape:** A notable decline was observed in rape cases from 2018 to 2019 in several villages. For example, Hansi reported a drop from 11 to 4 cases. Some villages that had no cases in 2018 reported new incidents in 2019 (e.g., Sisar). This decline may reflect the impact of local law enforcement efforts or increased deterrence, although underreporting cannot be ruled out.

**4.2 Domestic Violence:** The Domestic violence cases nearly doubled from 10 in 2018 to 19 in 2019, with villages such as Hansi and Umra showing sharp increases. The rise could indicate better reporting due to increased awareness, or it may reflect worsening domestic conditions. Further qualitative study is needed to understand the social triggers.

**4.3 Sexual Harassment:** The Cases dropped significantly, with villages like **Sultanpur** and **Sisai** reporting fewer

incidents. A positive trend possibly linked to awareness programs, women safety apps, or stricter surveillance in public spaces.

**4.4 Dowry related cases:** A steady increase was observed, especially in rural villages like **Dhani Pirwali**, **Data**, and **Chaut**. The persistence of dowry cases reflects deep-rooted socio-cultural issues. The increase in reported cases could also mean that women are now more willing to report such crimes.

**4.5 Kidnapping:** Though absolute numbers remain low, cases increased from **1 in 2018 to 4 in 2019**, with villages like **Sisai** and **Prabhiwala** reporting incidents. Even with low totals, the percentage increase is concerning. These incidents require further investigation to understand whether they relate to trafficking, elopement, or forced marriage.

Based on the village data and spatial analysis the villages of both blocks such as Hansi, Dhani Pirwali, and Data emerged as multi-category crime hotspots in both 2018 and 2019 based on the combined crime data and spatial overlay. These villages recorded multiple types of crimes against women including rape, domestic violence, sexual harassment,

dowry-related incidents, and kidnapping with consistently higher frequency compared to surrounding areas. Hansi reported the highest overall crime count, especially for rape and harassment cases in 2018, although a slight decline was observed in 2019. Its status as a semi-urban center with higher population density may contribute to increased reporting or higher exposure to risk. Dhani Pirwali showed a noticeable increase in dowry-related cases and kidnapping in 2019, making it a new area of concern in spatial analysis. Data village remained consistently active across three or more categories in both years, suggesting persistent vulnerability and lack of effective deterrents.

## CONCLUSION

The data on crimes against women for 2018 and 2019 focuses on five major categories: rape, domestic violence, sexual harassment, dowry-related cases, and kidnapping. While the overall number of cases remained almost constant (59 in 2018 and 58 in 2019), there were notable category-wise shifts. Rape cases fell by 47% (from 17 to 9), and sexual harassment cases declined by 41% (from 22 to 13), which could indicate the impact of awareness campaigns or stricter law enforcement in public spaces. However, domestic violence almost doubled, increasing by 90% (from 10 to 19), and dowry-related cases rose by 44% (from 9 to 13), signalling persistent challenges within domestic environments. Although fewer in absolute numbers, kidnapping incidents surged by 300% (from 1 to 4), raising concern over women's safety. These patterns suggest that while some forms of public crimes against women have reduced, private spaces remain unsafe, calling for targeted interventions such as stronger laws, social awareness, and support systems for victims within families. Furthermore, integrating crime data with geospatial tools such as ArcGIS has proven valuable in visualizing vulnerable locations and identifying crime clusters. Such tools should be adopted for continuous monitoring and localized policy responses. Future research could also incorporate socio-economic and cultural variables to better understand the root causes and drivers of such crimes.

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