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**RESEARCH ARTICLE**

# MAPPING THE IMPACT OF COVID-19 THROUGH CRIME PATTERNS IN UTTAR PRADESH

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**ARTICLEINFO**

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**ABSTRACT**

In this paper, the possible long-term impact of the emerging global crisis on different forms of crime is discussed. The insight provided by the regional data of Uttar Pradesh analyzed in this research brief shows that the unprecedented changes related to the pandemic differ by type of crime over time. The new era of criminal activities in cyberspace is being committed worldwide, irrespective of geographical boundaries. These cybercrime acts may be financially driven actions related to computer content or against computer systems' confidentiality, integrity, and accessibility. Machine learning and data modeling have been used to achieve this analysis.



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# INTRODUCTION

Uttar Pradesh is a diversified state in India with regards to social, and income brackets; therefore, the crime pattern of the state is complicated. The present study aims to understand the crime pattern of Uttar Pradesh, India, under consideration of demographic and geographic areas. Districts with higher crime are named hotspots, and the districts with less crime are named safe zones. Cluster analysis by SaTScan and geographic map representation by ArcView are used to achieve this. The data for all districts from the study is taken from the State Crime Record Bureau, and is scaled based on the criminal behavior in areas. Over the course of just a few weeks during the first few months of 2020, the COVID-19 pandemic radically changed the nature of social interaction and economic activity in all regions across the world. By the first week of April 2020, 3.9 billion people – more than half the global population – were under some form of lockdown. These ongoing changes are affecting all aspects of life, with crime being no exception. This research brief aims to provide initial observations about the impact of the COVID-19 pandemic on different types of crime, including online abuse, domestic violence, house robbery, etc., and mapping the predicted trend of the same.

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Uttar Pradesh was defined as the second biggest contributor among other states in the month of April 2020. And highest in overall crime among other states of India.

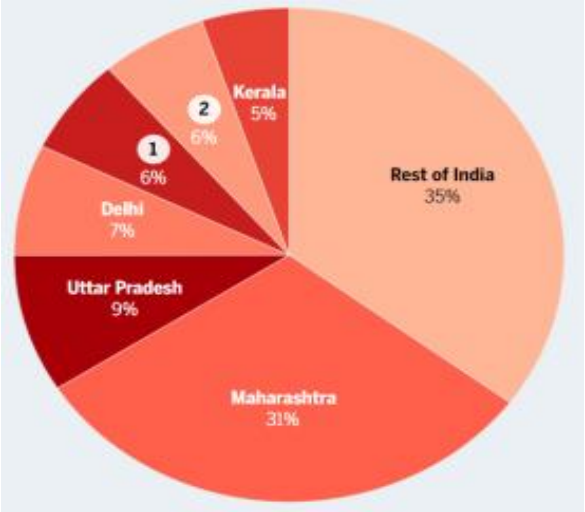


**Fig 1. Covid cases across different states**

The likely longer-term influence of the impending global crisis on the same sorts of crime is also discussed. At the same time, the state government booked 121 people under the NSA this year, a spike of 11.8 percent since last year and an increase of 35.9 percent since 2019.

Overview - Crime Statistics (Year Wise)

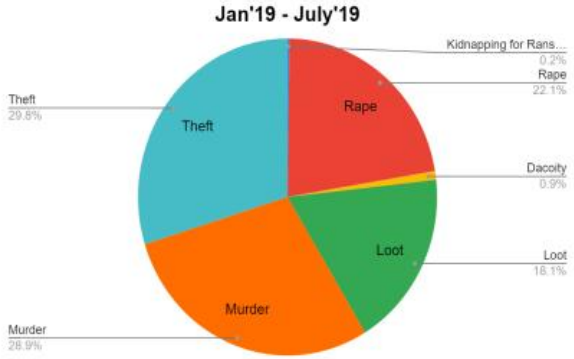


**Fig 2. 1st half of the year 2019 - Crime Statistics**

UP has encountered 29.8% of the total crime in theft and 28.9% in Murder activities.This is the challenge faced by the UP government, which they were unable to control despite arresting approximately 23k+ small-time thieves.

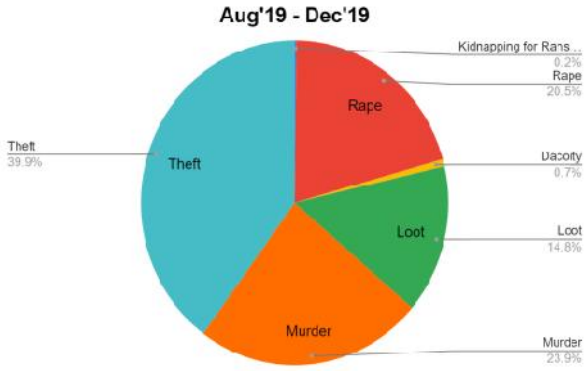


**Fig 3. IInd half of the year 2019 - Crime Statistics**

Instead of a decline in theft activities, the new graph shows an increase of up to 39.9%. Rape is also an alarming factor for the UP government, which is stable in numbers but is high compared to the other states of the country.

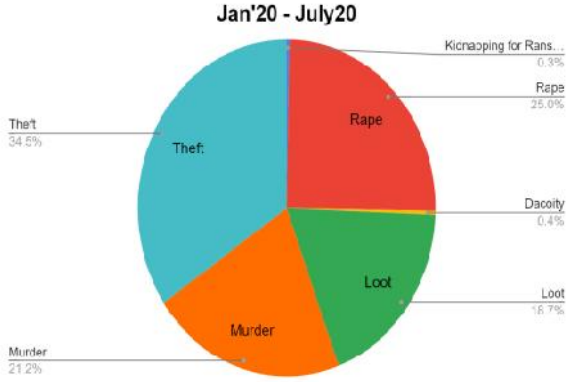


**Fig 4. Ist half of the year 2020 - Crime Statistics**

With the ongoing pandemic, crime remains at the top for UP. All segments for crime shows that the state is showing almost similar trends compared to last year with an increase in a few parameters.

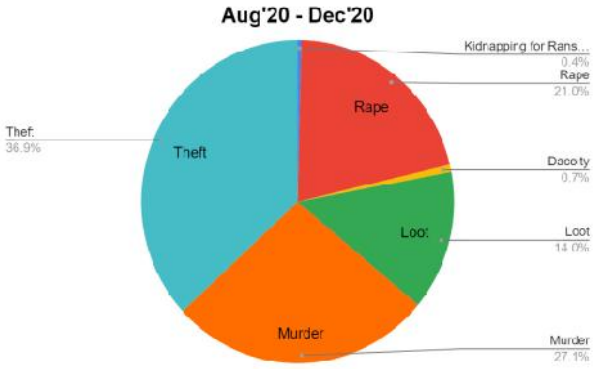


**Fig 5. IInd half of the year 2020 - Crime Statistics**

On 14 September 2020, a 19-year-old Dalit woman was gang-raped in Hathras district, Uttar Pradesh, India, by four upper-caste men. She died two weeks later in a Delhi hospital. With this incident, the government has implemented many precautionary measures to reduce the crime faced by women in the state. Due to the pandemic, unemployment resulting in theft, robbery, etc, has become another alarming parameter in Uttar Pradesh.

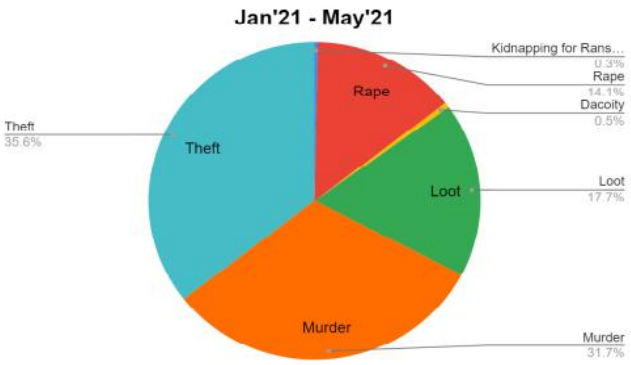


**Fig 6. Ist half of the year 2021 - Crime Statistics**

When the world is fighting against the terror of Covid-19, UP is fighting against both COVID and crime. Ransom murder has jumped to 31.7%, which is the highest in the last three years. According to sources, this will increase further because most of the population who lost their jobs due to the lockdown was working on daily wages. For their survival, they involved themselves in crime for food and survival of their families.

Types of Crime

Cyber Crime - Ongoing Threat for everyone

Cyber Crime is a new class of crimes rapidly increasing due to extensive use of the Internet and I.T. enabled services.

- Phishing – Phishing is the practice of sending fraudulent emails to trick the recipient, usually to obtain money. The elderly are particularly vulnerable to these types of cybercrime.
- Hacking – Digital trespassing is comparable to hacking. Hackers break into online networks to illegally download confidential information, manipulate functionalities, and, in some situations, steal identities that can be used to make fraudulent online purchases.
- Stalking and/or Harassment – Money isn't involved in all sorts of cybercrime. Some cybercriminals utilize the

Internet to conceal illicit activities such as stalking, harassment, and bullying.

The Information Technology (IT) Act, 2000, specifies the punishable acts relating to cyber activity. Since the primary objective of this Act is to create an enabling environment for commercial use of I.T., certain specific omissions and commissions of criminals while using computers have not been included. Several offenses having a bearing on the cyber arena are also registered under the appropriate sections of the IPC with the legal recognition of Electronic Records and the amendments made in several areas of the IPC vide IT Act, 2000.

| Crime Head | Cases Registered | | | Person Arrested | | |
|---|---|---|---|---|---|---|
| | 2019 | 2020 | 2021 | 2019 | 2020 | 2021 |
| Fraud Digital Signature Certificate | 12 | 28 | 18 | 4 | 8 | 3 |
| Hacking of Computer System<br>-Loss/Damage to computer<br>-Hacking | 1723<br>456 | 2165<br>512 | 1546<br>396 | 675<br>138 | 912<br>472 | 431<br>336 |
| Tampering Computer documents | 196 | 248 | 172 | 109 | 173 | 96 |
| Breach of Privacy | 179 | 225 | 203 | 134 | 169 | 115 |
| Transmission in Electronic Form | 586 | 622 | 417 | 443 | 408 | 351 |
| Unauthorized access | 9 | 17 | 7 | 17 | 23 | 9 |
| Privacy break | 53 | 49 | 26 | 134 | 182 | 119 |

**Fig 7. Cyber crime/ case registered and person arrested under IT Act (Source: UP Police)**

Cybercrime (IT Act + IPC Sections) has climbed by 57.1 percent in 2020 compared to 2019 and is expected to continue to rise in 2021. Under the IPC category for Cyber Crimes, Cyber Fraud accounted for 46.9% (392 out of 711), and Cyber Forgery accounted for 43.1 percent (369 out of 711).

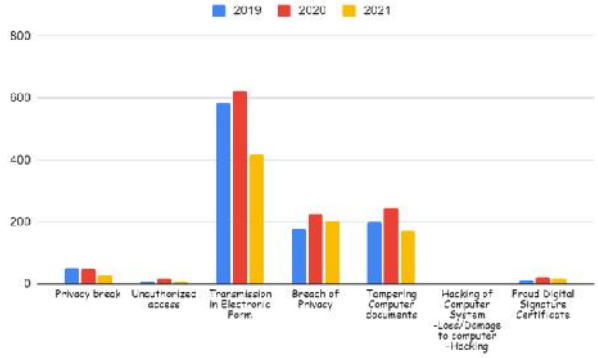


**Fig 8. Analysis of cyber crime based on different parameters**

61.0 percent of offenders under the IT Act (928 out of 1,522) were between the ages of 18 and 30, while 45.2 percent of offenders under IPC Sections were also between 18 and 30 (248 out of 549).

**Domestic Violence:** According to NCRB report'20, Uttar Pradesh tops in crime against women. This number accounts for about 15 percent of the total number of cases reported during this period in the entire country. Trends say that the cases reported during lockdown are just the tip of the iceberg as many women, especially in rural India, have no reporting mechanism available. According to ThePrint publication house, Uttar Pradesh is the most unsafe state for women survival. The pandemic, financial insecurity, stress, and uncertainty have led to increased aggression inside homes. The latest crime data shows that the state recorded the highest increase in crime at 17.2% in 2019, which is rapidly increasing this year. The insight provided by the regional data of Uttar Pradesh analyzed in this research brief shows that the unprecedented changes related to the pandemic differ by type of crime over time.

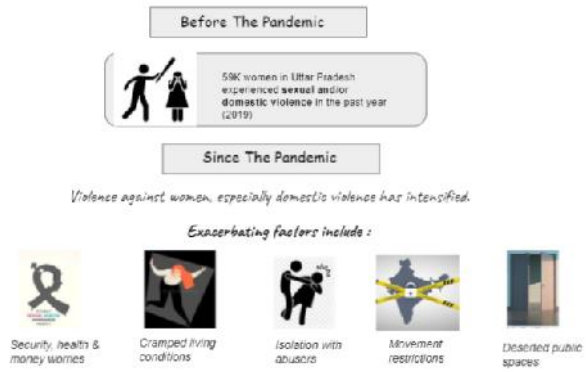


**Fig. 9. Violence against women has intensified during the pandemic**

**Kidnapping For Ransom:** The most likely cluster includes 32 districts of the Central and western region of Uttar Pradesh, whereas 31 districts of secondary clusters are found from mainly Eastern and partly Central Uttar Pradesh. Bareilly, Moradabad, Aligarh, Agra, Ghaziabad, Meerut, Mathura, Lucknow, and Kanpur Nagar fall under the most likely cluster with an average annual case of 4.6 per annum. Thirty-one districts are reflected in the secondary cluster with an average of 1.9 yearly cases.

**Rape:** The most likely cluster includes 19 districts of the central and eastern region of Uttar Pradesh, whereas 37 districts of secondary clusters are found from mainly western and partly Central Uttar Pradesh. Varanasi, Gorakhpur, Faizabad, Azamgarh, etc are the significant districts along with smaller districts like Sant Kabir Nagar, Balrampur, Sant Ravidas Nagar Bhadohi and Shravasti etc., under the most likely cluster. Moradabad, Aligarh, Agra, Ghaziabad, Mathura, Lucknow, Kanpur Nagar, and Bareilly are the significant districts, along with smaller districts like Badaun, Fatehgarh, Banda, Etah, Unnao etc., falling under the secondary clusters. Chitrakoot saw minor cases this year. The average annual instances reported in the eastern region are less than half of the western region.

**Dacoity:** Most of the densely populated districts like Moradabad, Aligarh, Agra, Ghaziabad, Meerut, Lucknow, Kanpur Nagar, etc. are estimated as secondary clusters since the dacoity cases reported during the assessment year have been declared as "not critical" compared to the ratio of the population of the district to the districts with most likely clusters.

**Loot:** The most likely clusters are formed in the districts of the Eastern and Central region of Uttar Pradesh, including significant cities like Faizabad, Gorakhpur, Varanasi, and Allahabad. Secondary clusters are found in 27 districts, including major cities of Central and Western Uttar Pradesh, like Aligarh, Agra, Lucknow, Kanpur Nagar, Bareilly, and Mathura. The most likely clusters and secondary clusters clearly divide the state into two regions. Only a few districts of the Central region of Uttar Pradesh are common.

**Murder:** The scanning for clusters is done from high to low rates using discrete Poisson distribution. Maharajganj, Siddharthnagar, Kushinagar, Sant Kabir Nagar, Ambedkar Nagar, Balrampur, Shravasti, Chanduali, Sant Ravidas Nagar, and Mirzapur are the districts with lower crime rates as far as the reported murder cases are concerned.

Whereas, Gorakhpur, Varanasi, etc., are districts of significantly higher ranking in reported murder cases. All these districts fall under the most likely clusters. This is simply because the crime rate ratio is related to the population and the area of the district. The study shows that the number of cases in the districts mentioned above is more and thus is denoted as worst affected districts or ranges, but when we see through the population ratio, we do not conclude the same. Similarly, considering the reported cases, Mirzapur and Jhansi are the least affected ranges, but the study again concludes otherwise, as revealed above.

**Violence against Medical staff and Police:** Medical staff and police were attacked by villagers while trying to enforce a lockdown in Meerut and Muzaffarnagar. In Moradabad, a mob attempted to stop a medical team from taking a coronavirus-infected man into isolation by pelting stones at the ambulance while damaging a police vehicle. Five of the seventeen arrested stone pelters tested positive in COVID-19 tests. Locals in Aligarh also pelted stones at police as they tried to enforce a lockdown, while in Bahraich, people attacked a police team for refusing to offer namaz in a mosque. Healthcare workers and police were attacked and stone pelted in Kanpur when nine members of a family who had been in close contact with a coronavirus positive patient were being taken to a quarantine facility.

# MACHINE LEARNING

The approach adopted to analyse and predict crime trends. Before analysis, the data values for the year 2021 (jan-june only) were multiplied by 1.6, which is the projected rate for the second half of the year. The NCRB has produced an estimate of the rate.

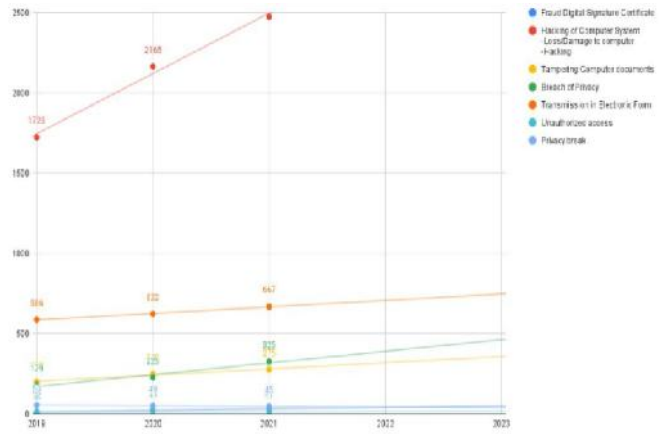

**Fig 10. Trends for online crime**

This graph depicts the anticipated trend in internet crime over the next two years. We employed a machine learning model that implemented a linear regression approach for this investigation. This is the predicted trend for physical crime, showing down trend due to lockdown. However, despite the recent decline in physical crime, the overall trend remains the same. The dataset was processed using the python libraries NumPy and pandas and plotted using the python library matplotlib. The dataset was passed through a machine learning model that implements the linear regression algorithm to derive the predicted values of the coming years' crime rates.

The linear regression model fits the best-suited trend line on the data plot, which helps predict the future crime numbers. Linear regression is a simple yet powerful machine algorithm to use to provide accurate and valuable insights into data.

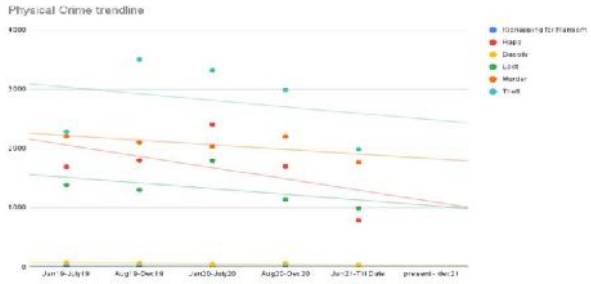


**Fig 11. Trends for Physical crime**

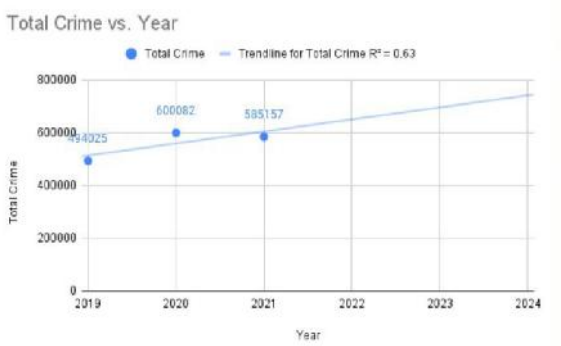


**Fig 12. Trends for Overall crime**

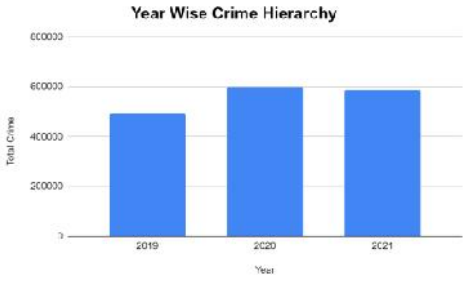


**Fig 13. Year Wise crime in UP**

# CONCLUSION

In our case, the lockdown presented the criminal with a changing environment, which altered the way they behaved. This may also help to explain the significant inequalities in criminal conduct. The presence of police on the streets (guardian) resulted in a decrease in burglaries in several parts of Uttar Pradesh, whereas the absence of owners increased (guardian). Similarly, observing the cases of domestic violence, a pattern can be observed where the offender and target were nearby without the guardian's presence. Even though the theory does not explain the motivation behind the commitment of crime, it still demonstrates the changes in the behavior. The conclusion that can be derived from the aforementioned findings is that the commencement of the COVID-19 pandemic has significantly impacted the rate and pattern of crime. However, the influence has less to do with the pandemic itself and more to do with the consequences that resulted in changes in the social and economic environment. Initially, when lockdown measures were put in place to prevent the disease from spreading, the environment in which a criminal operates changed. The impact varied based on the

type of the crime, the crime pattern, and the governance laws in each location. Commercial burglaries have increased in Uttar Pradesh, but they have also decreased at certain instances due to increased police presence on the roads.

Furthermore, while there was a decrease in crimes such as robbery, burglary, and other types of theft, there was a significant increase in occurrences of domestic violence. Due to the social distancing measures, overall physical crime has decreased. Secondly, the impact of the pandemic on the economy and its effects on crime rates is investigated. Many economists worldwide projected that the pandemic would harm businesses globally and that it would eventually hurt the economy, leading to unemployment and driving individuals to engage in illicit activities and petty crimes like theft to survive.

# REFERENCES

The Indian Penal Code (Amendment) Bill, 2020. Retrieved from http://164.100.47.4/ BillsTexts/RS BillTexts/ asintroduced/IPC-E-13320.pdf

Venkatesh, A. & Edirappuli, S. 2020. Social distancing in COVID-19: what are the mental health implications. The BMJ. Retrieved from https://www.bmj.com/content/369/bmj.m1379

The Indian Criminal Police Organization 2020a. “Covid-19 Pandemic, Guidelines for Law Enforcement Agencies”, 26 March.

Google 2020. “Protecting businesses against cyber threats during COVID-19 and beyond”, 16 April

Johnson, S. D., Guerette, R. T., & Bowers, K. 2014. Crime displacement: What we know, what we don’t know, and what it means for crime reduction. *Journal of Experimental Criminology,10,* 549–571.

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