



A Modern Crime of Digital Era

Spatio-Temporal prediction of sharp increase of cybercrime in India

Urvee Patel
N.N. Salghuna

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INTRODUCTION

The application of GIS in policing is in rudimentary stage



Cybercrime(computer-oriented crime) - offences relating to computers, information technology, internet and virtual reality.

In recent years, with advances in quick and user-friendly software, manual pin mapping has given way to computerized crime mapping.

INTRODUCTION

The Internet Crime Report for 2019, released by USA's Internet Crime Complaint Centre (IC3) of the Federal Bureau of Investigation, has revealed that India stands **third in the world among top 20 countries that are victims of internet crimes.**

In Global ranking for internet users, India stands at **second position after china** worldwide as per latest report by the Internet & Mobile Association of India (IAMAi) 2019

Digital India may have become a soft target for criminals as **country recorded a huge increase of 63.5 percent in cyber crime cases in the year 2019**, showed the National Crime Record Bureau data.

Cyber Intrusions and Attacks have **increased dramatically over the last decade**, exposing sensitive personal and business information, disrupting critical operations, and imposing high costs on the economy

AIM

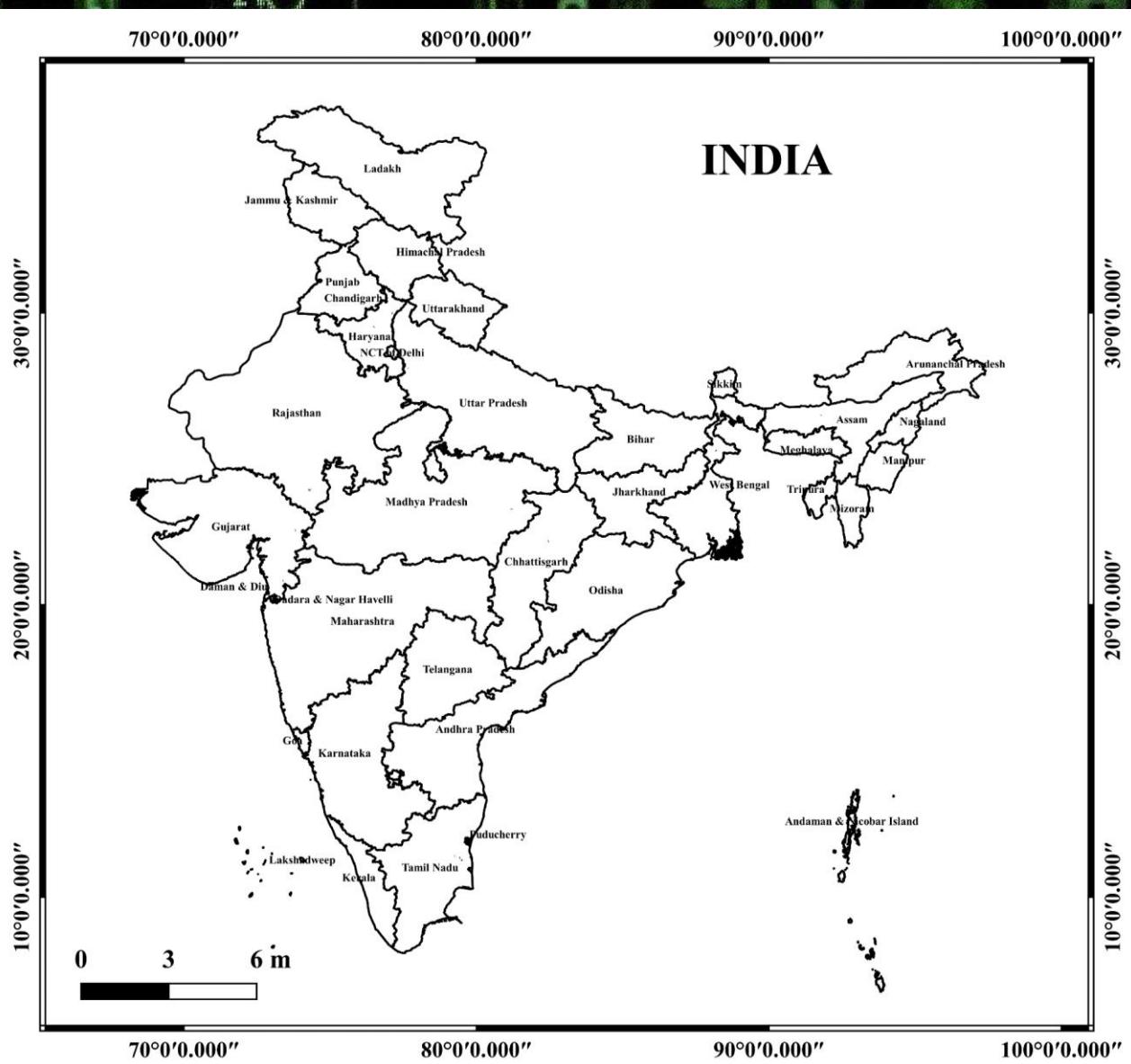
- The study aims to predict a growth in number of cybercrime cases across India in year 2020 based on historical data from 2016-19 using spatio-temporal maps to visualise and further analyse the significant changes.

PURPOSE

- The study can help understand the role of GIS in crime analysis, ultimately benefitting the humankind in long run.
- There is a felt need for the fullest application of GIS technology in law enforcement agencies



Study Area



METHODOLOGY

- Cybercrime data 2016 – 2019
- India administrative shapefile

Data Collection

2020 Forecast

- Calculation of Forecast values using Exponential Triple Smoothening Method
- Preparation of graphs

IDW Analysis

- IDW Interpolation analysis
- Interpolated GIS maps generation



RESULTS & DISCUSSION

Cybercrimes in India 2016

Interpolated map for the year 2016 showing cyber crime values ranging from 0 to 2639

For the purpose of the study, total values were divided in 5 classes as follows:

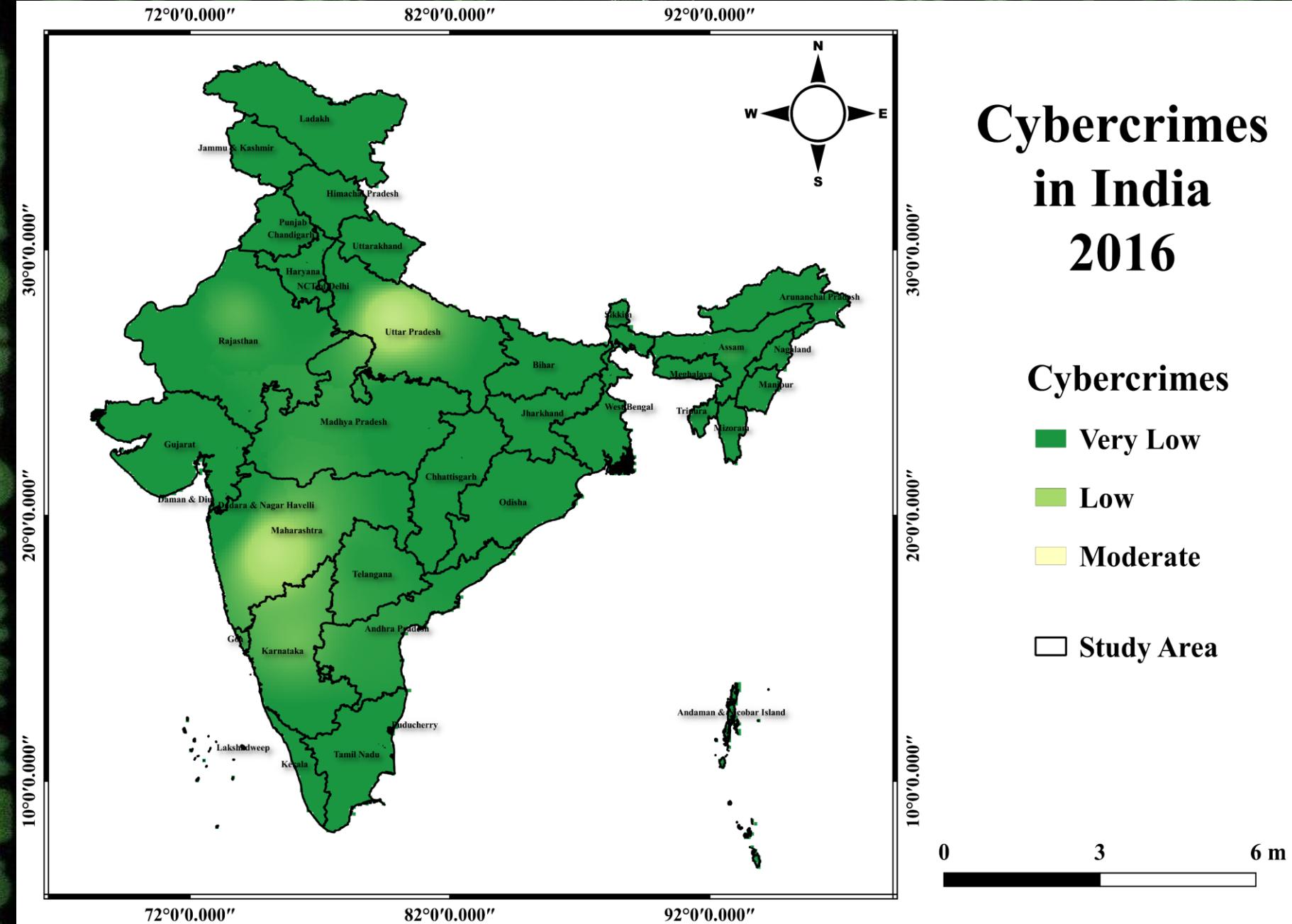
0-500: Very Low

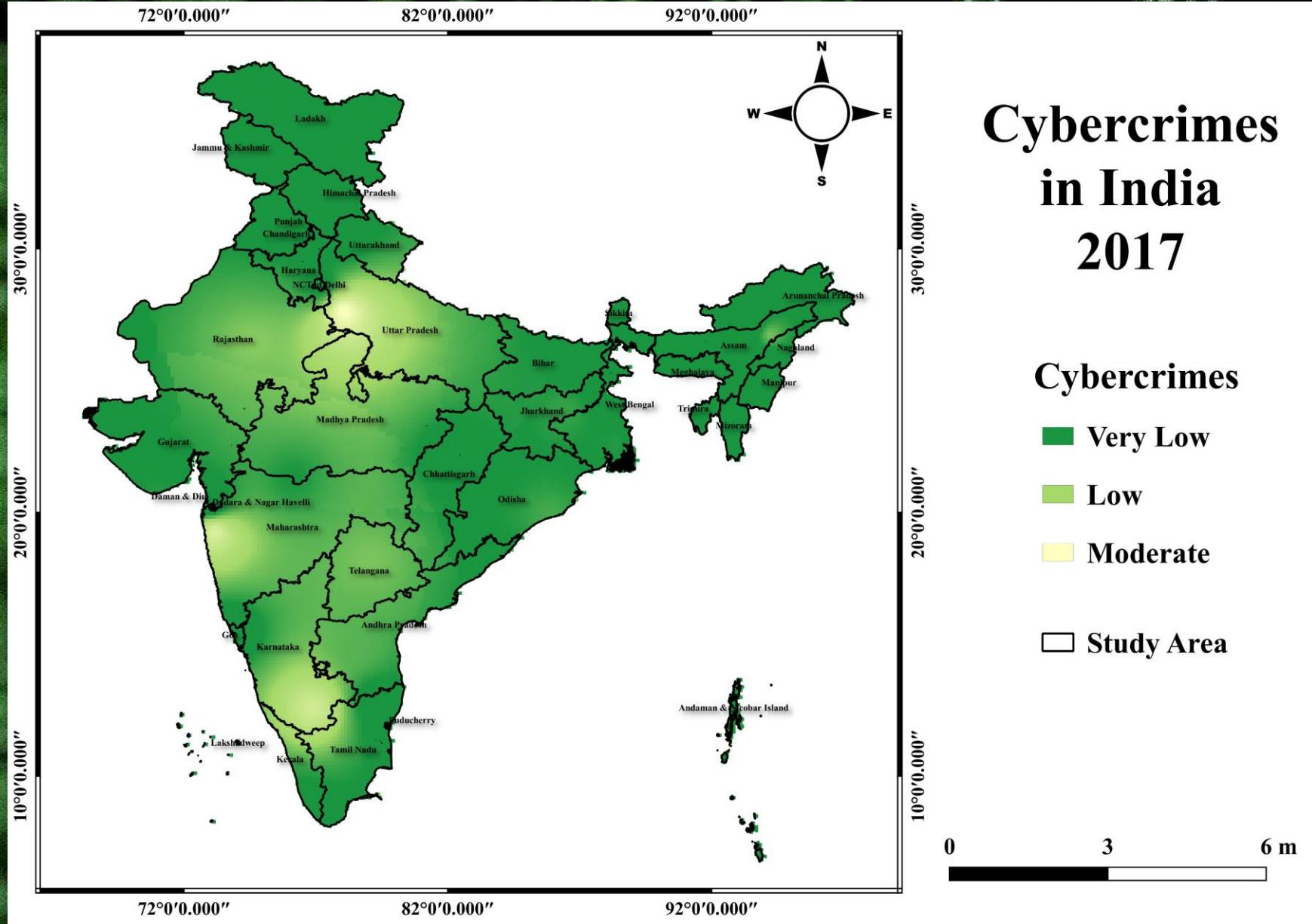
500-1500: Low

1500-5000: Moderate

5000-8000: High

Above 8000: Very High





Cybercrimes in India 2017

Cybercrimes

Very Low

Low

Moderate

Study Area

For the purpose of the study, total values were divided in 5 classes as follows:

0-500: Very Low

500-1500: Low

1500-5000: Moderate

5000-8000: High

Above 8000: Very High

Interpolated map for the year 2017 showing cybercrime values ranging from 0 to 4971

Interpolated map for the year 2018 showing cyber crime values ranging from 0 to 6280

For the purpose of the study, total values were divided in 5 classes as follows:

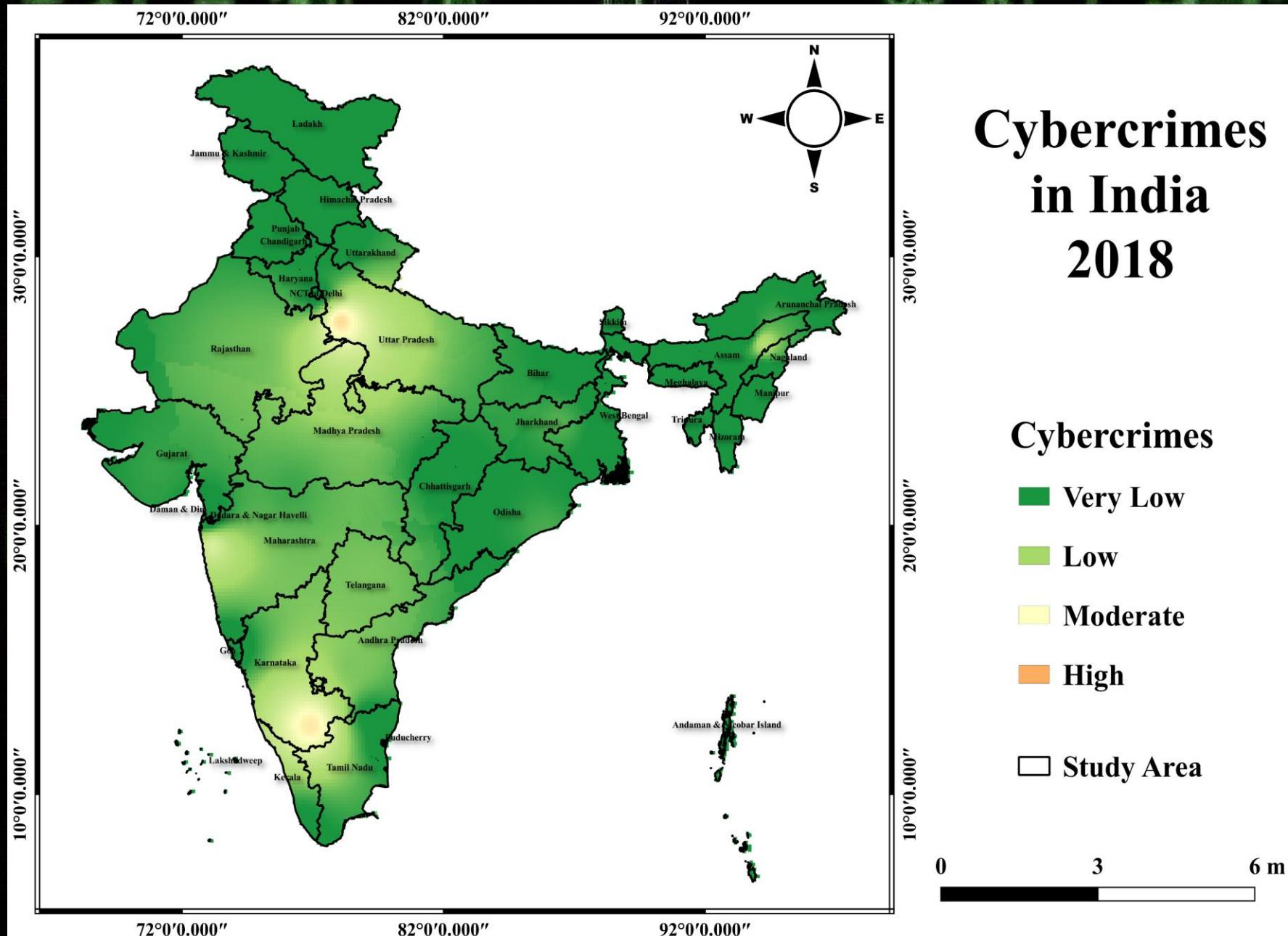
0-500: Very Low

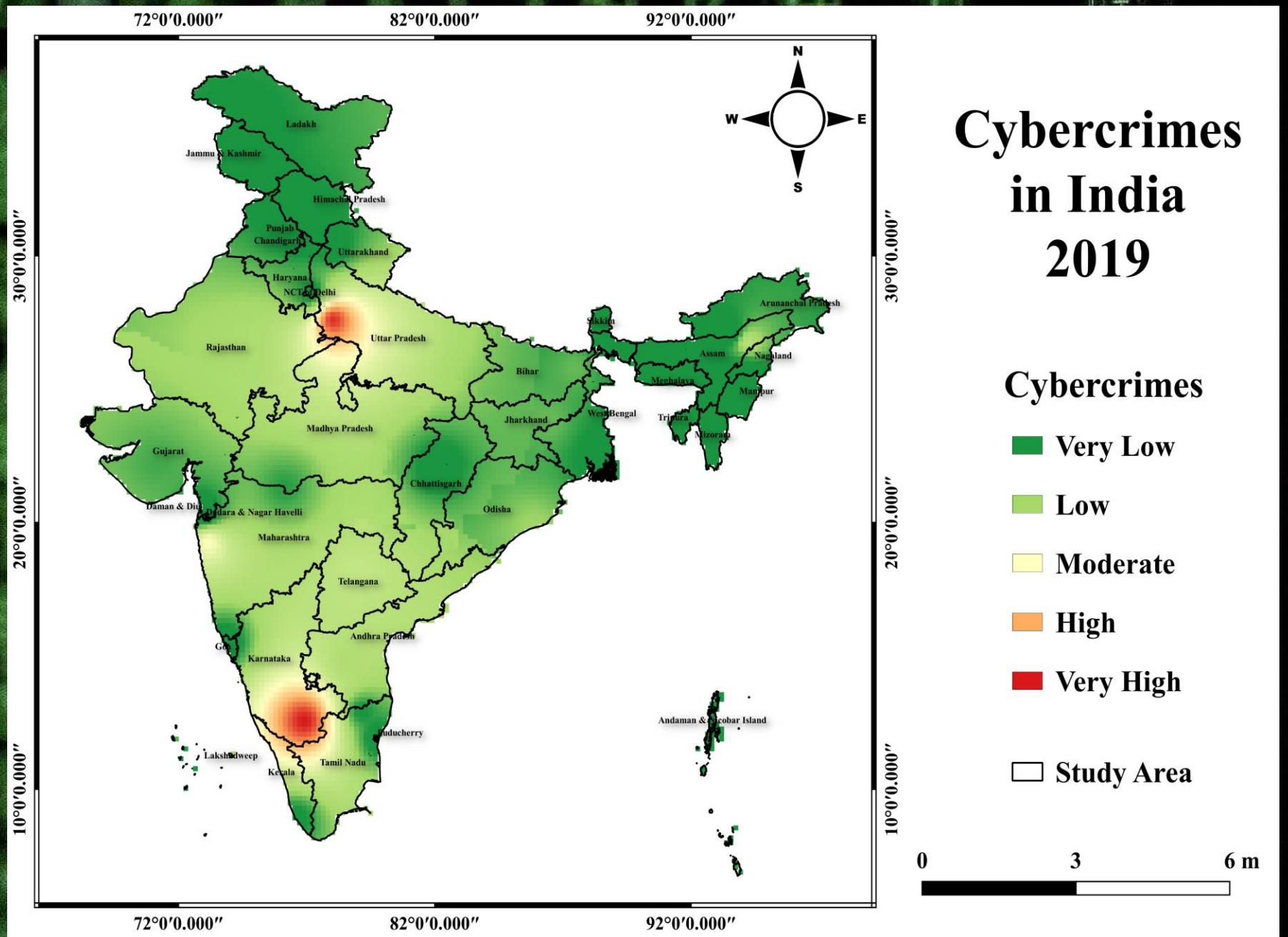
500-1500: Low

1500-5000: Moderate

5000-8000: High

Above 8000: Very High





Cybercrimes in India 2019

Cybercrimes

Very Low

Low

Moderate

High

Very High

Study Area

For the purpose of the study, total values were divided in 5 classes as follows:

0-500: Very Low

500-1500: Low

1500-5000: Moderate

5000-8000: High

Above 8000: Very High

Interpolated map for the year 2019 showing cybercrime values ranging from 0 to 11416

Interpolated map for the year 2020 showing cyber crime values ranging from 0 to 14919

For the purpose of the study, total values were divided in 5 classes as follows:

0-500: Very Low

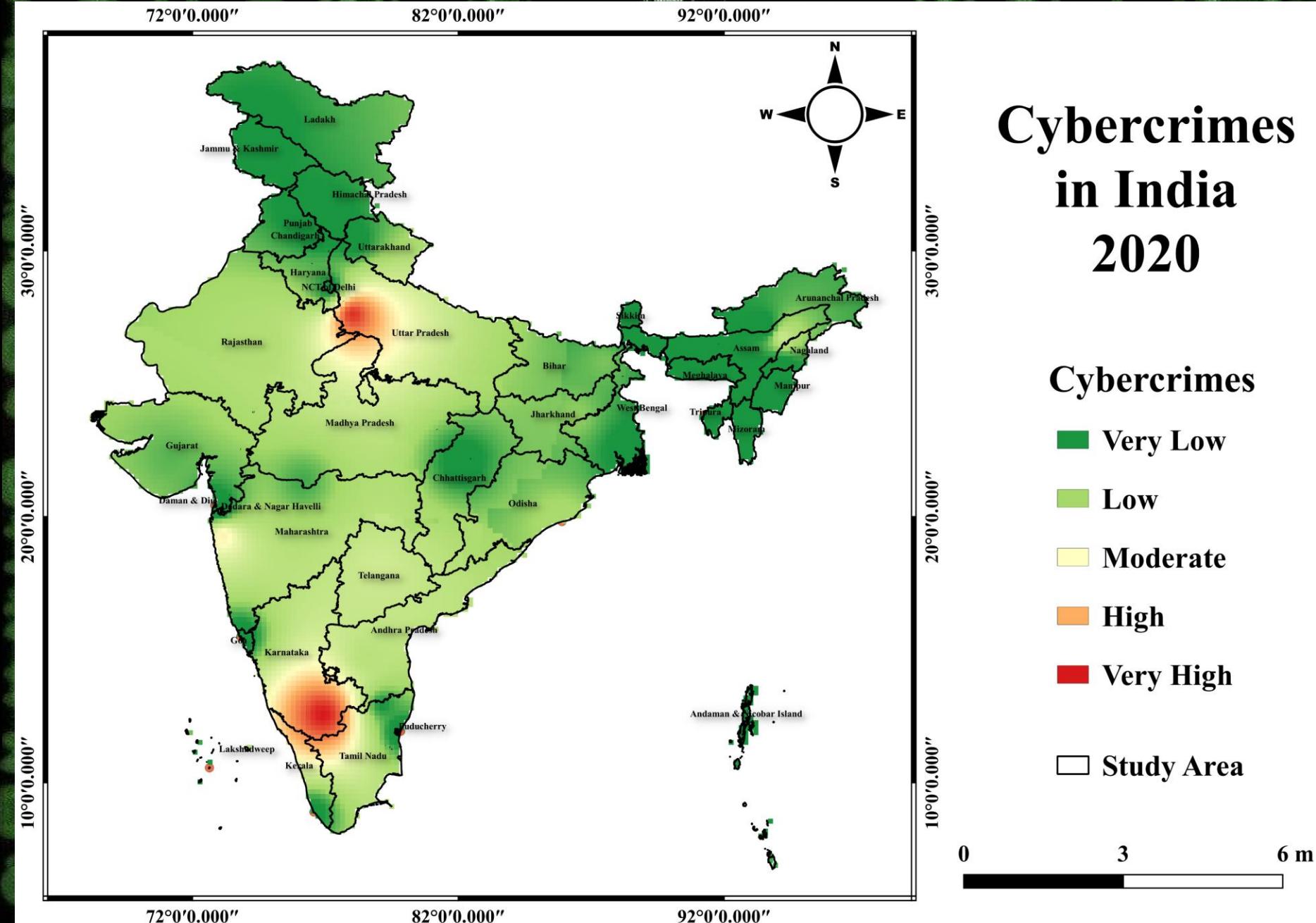
500-1500: Low

1500-5000: Moderate

5000-8000: High

Above 8000: Very High

Forecast shows
Karnataka is leading the
way, followed by Uttar
Pradesh



Cybercrimes in India 2020

Cybercrimes

Very Low

Low

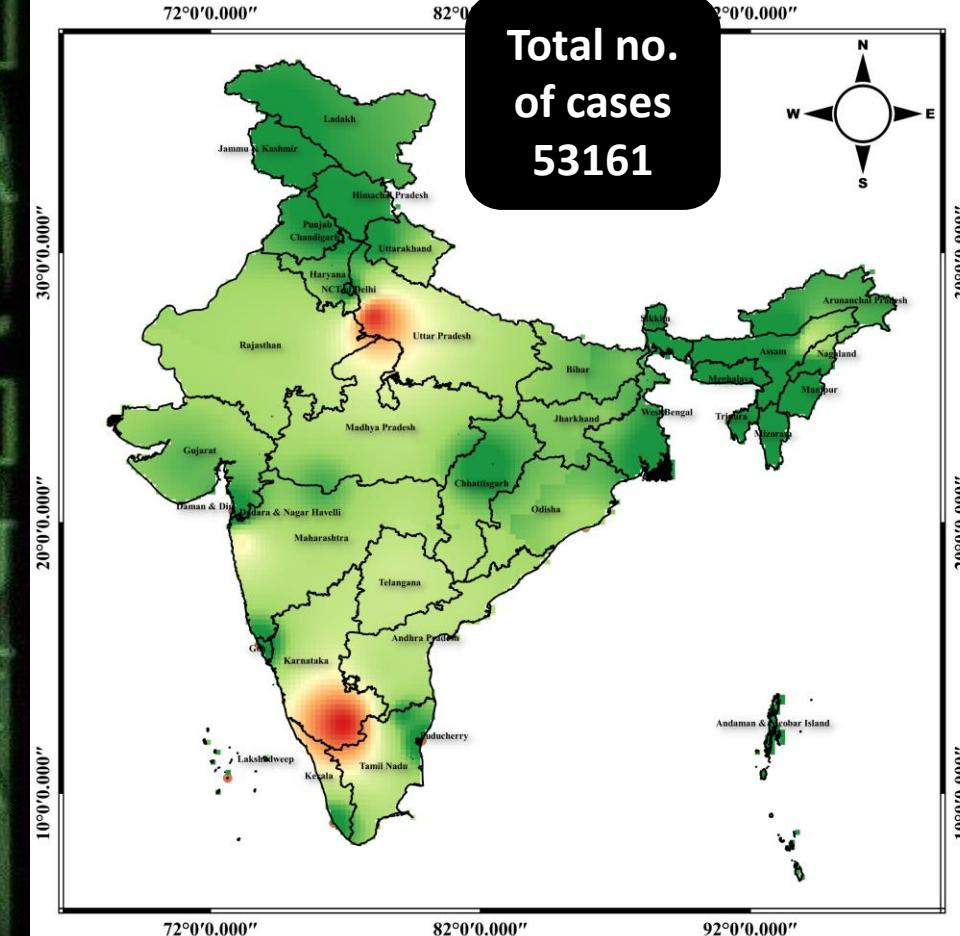
Moderate

High

Very High

Study Area

Total no.
of cases
53161



Rise in no. of
Cybercrime

Total no.
of cases
12317

Cybercrimes in India 2016

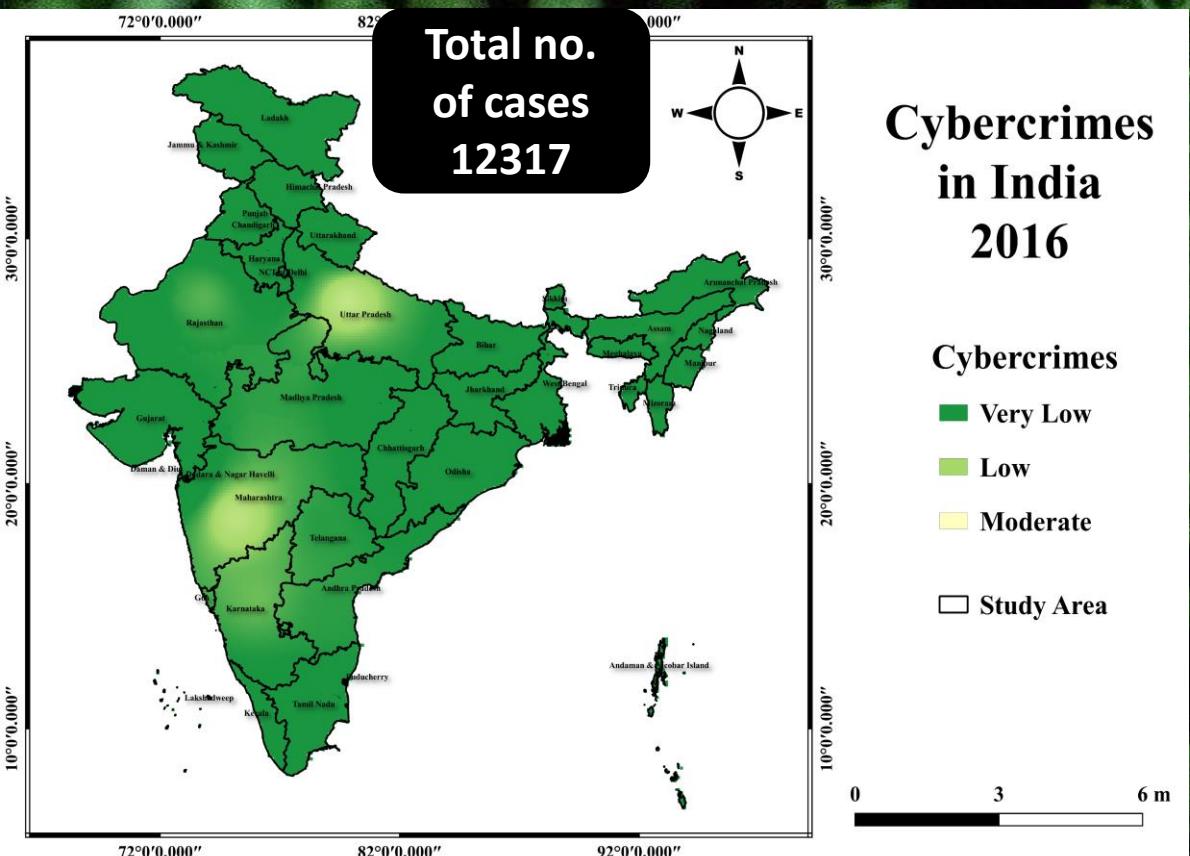
Cybercrimes

Very Low

Low

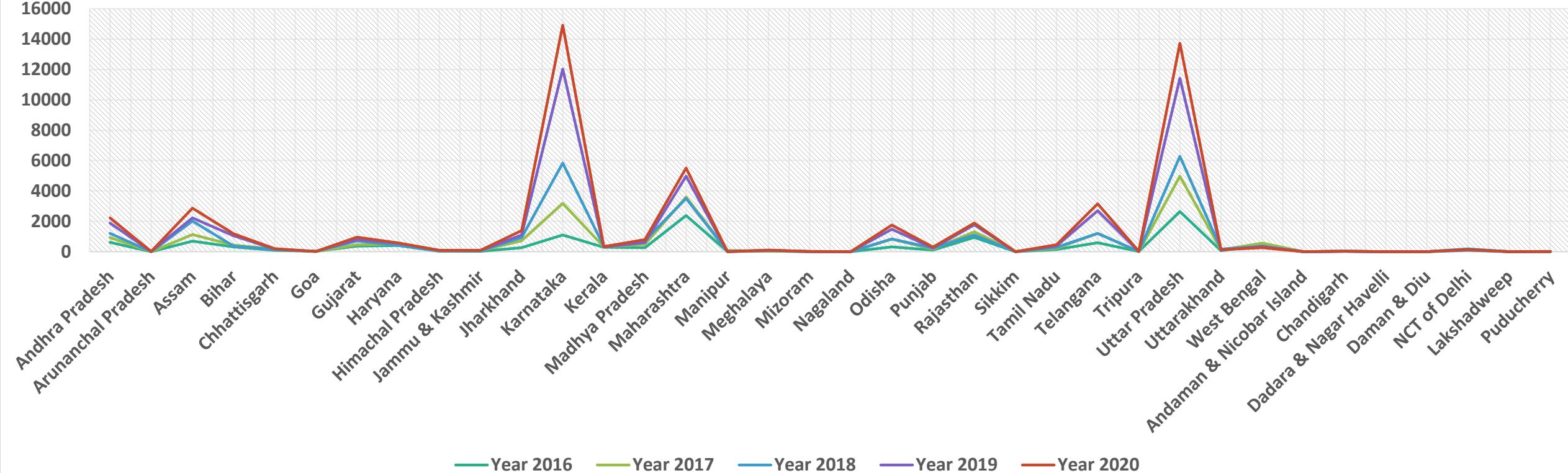
Moderate

Study Area



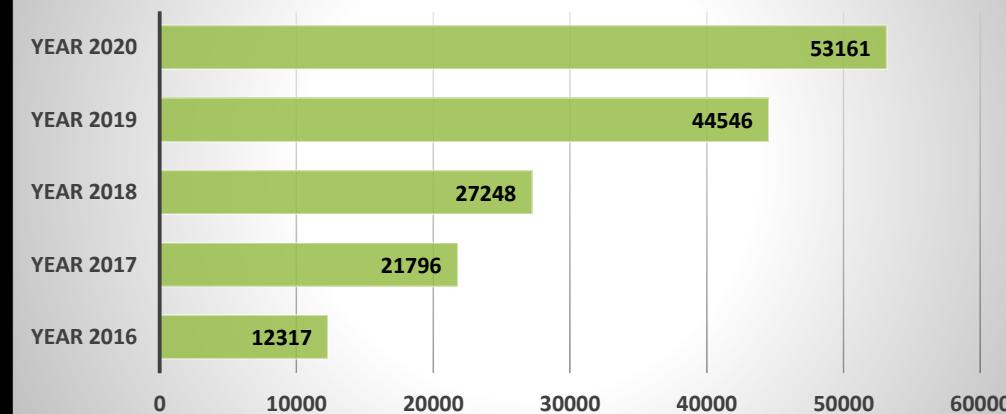
In the year 2016, a no. of states namely, Andhra Pradesh, Assam, Odisha, Telangana are found to be lying in the very low range(0-500), due to increased crime rate, now predicted to lie in moderate range(5000-8000) in the Year 2020.

Cybercrime in India 2016-2020



- All the states except Goa, Kerala, Manipur, Uttarakhand, West Bengal, Puducherry, NCT of Delhi, Andaman & Nicobar islands, Chandigarh, Dadar & Nagar Haveli, and Nagaland show a rising trend .
- The cybercrime no. in India, rose from 12317 (in 2016) to 53161 (in 2020)(as per calculated forecasted values).

Total no. of cybercrime cases



CONCLUSION

The maps accurately show how overall cybercrime cases in India will continue to rise.

Lack of cybersecurity in India

With rise in no. of crimes, for law enforcement agencies, geographic information system continues to prove their efficacy to improve crime analytics, reduce the no. of crimes and better protect mankind.

It is truly said “Modern problems require modern solutions”

ACKNOWLEDGEMENT

Primarily, I would like to thank Almighty for being able to complete this project with success. Next, I would like to express my sincere gratitude to OS Geo Korea for providing me this golden opportunity. Also, thankful to Avakaza Geo-Sciences Research Technologies (AGSRT) through which I was able to connect with a wonderful and inspiring mentor Dr. N.N. Salghuna, who introduced me with this opportunity, supported and guided me throughout this endeavour, to whom I'll be forever grateful.

Thank you