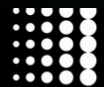


A Modern Crime of Digital Era

Spatio-Temporal prediction of sharp increase of cybercrime in India

Urvee Patel
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AGSRT

.....Where knowledge awakes into reality

CONTENT

Introduction

Aim & Objective of the study

Study Area

Methodology

Result & Discussion

Conclusion



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.**

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.

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

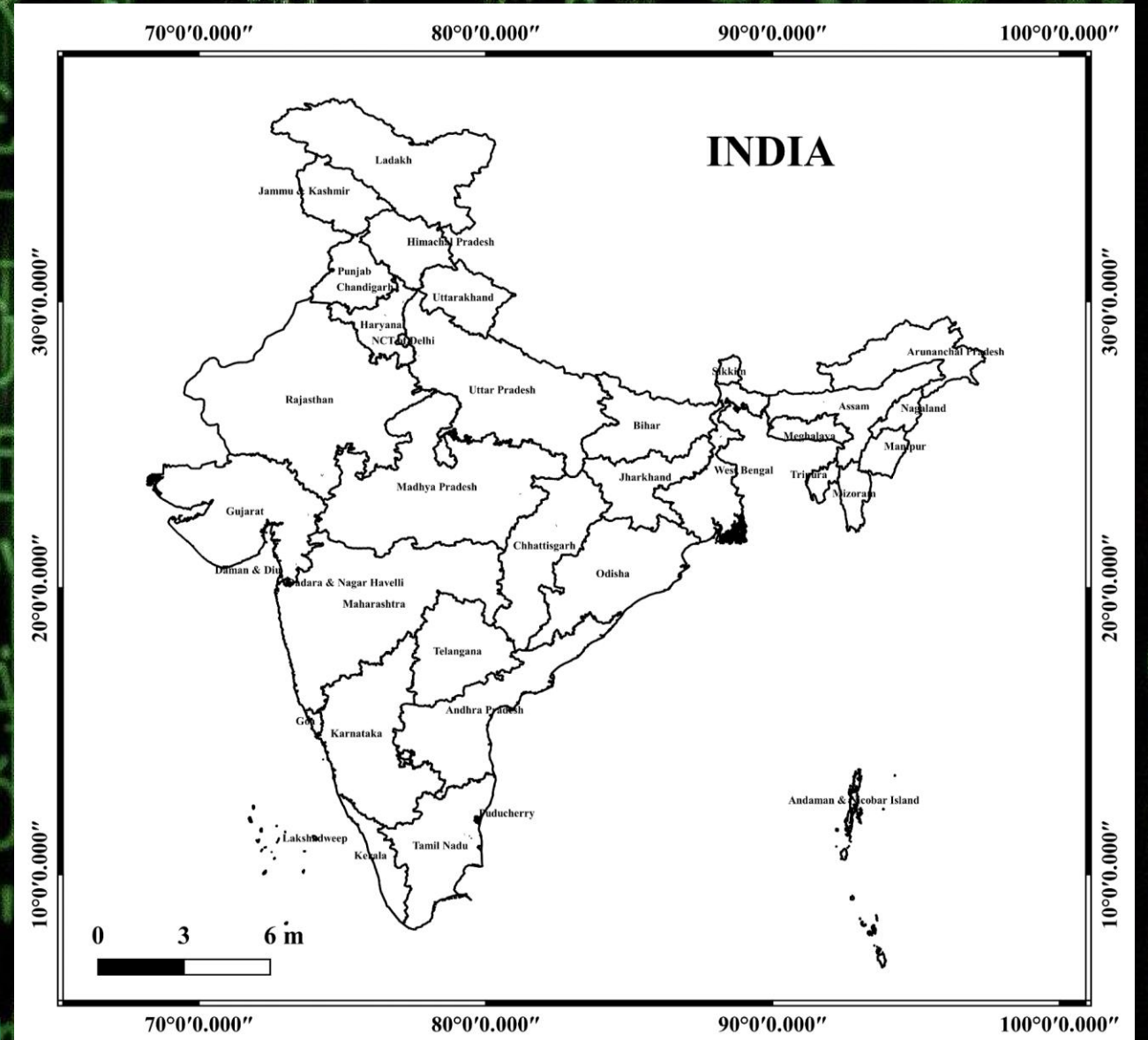
Cyber Intrusions and Attacks have **increased dramatically over the last decade**, exposing sensitive personal and business information, disrupting critical operations, and imposing high costs on the economy

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

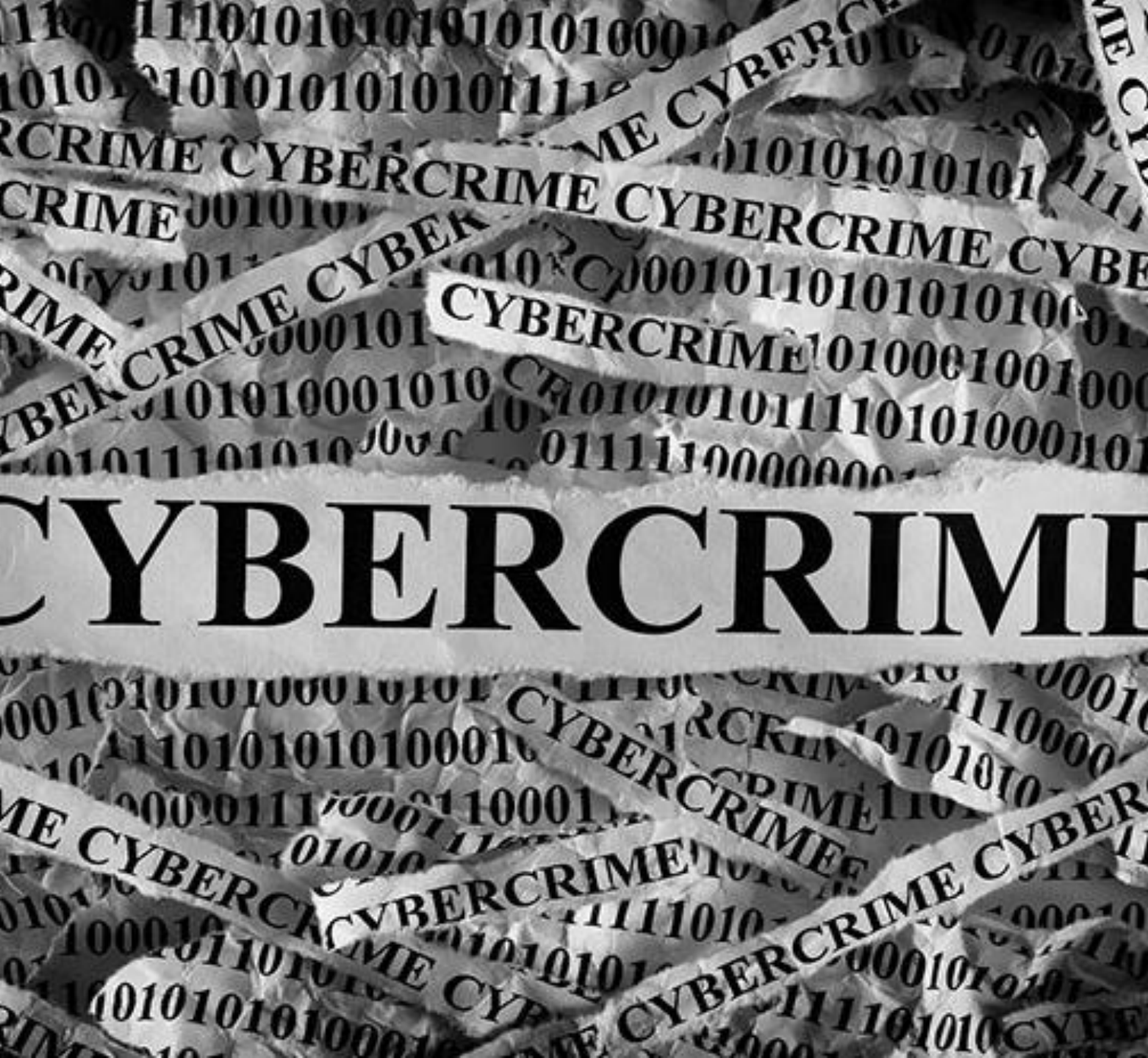
Data Collection

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

2020 Forecast

- IDW Interpolation analysis
- Interpolated GIS maps generation

IDW Analysis



RESULTS & DISCUSSION



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:

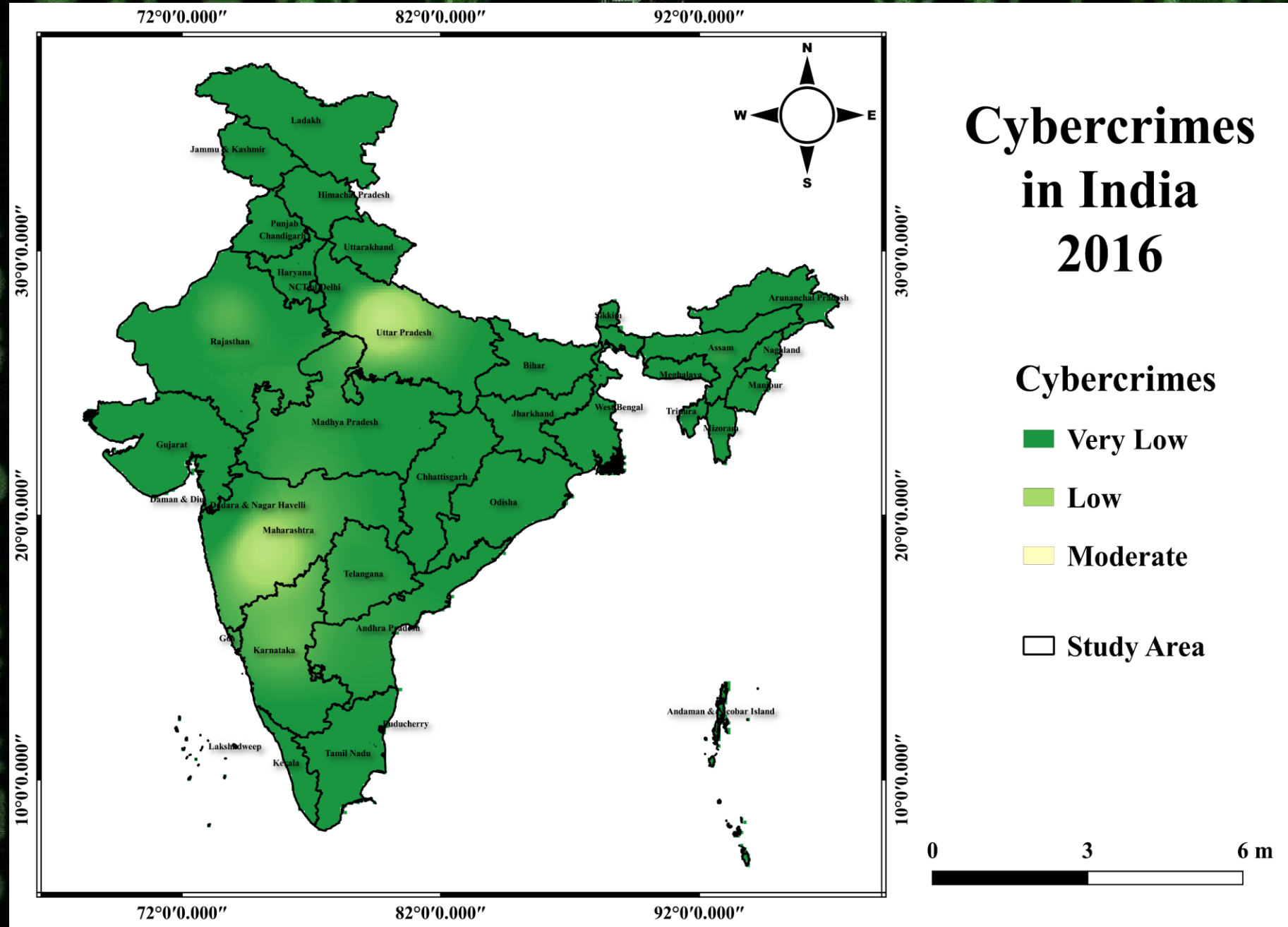
0-500: Very Low

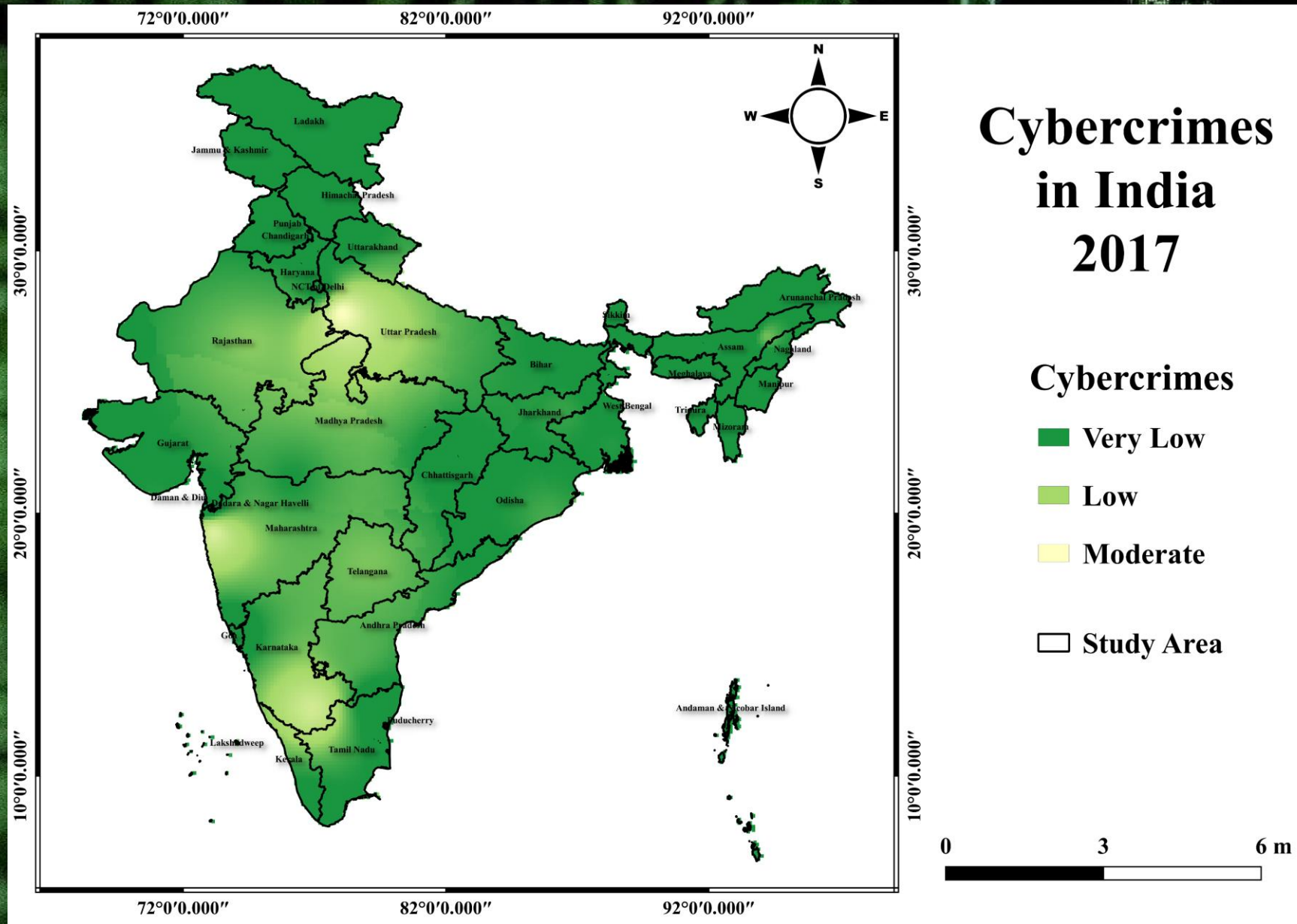
500-1500: Low

1500-5000: Moderate

5000-8000: High

Above 8000: Very High





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:

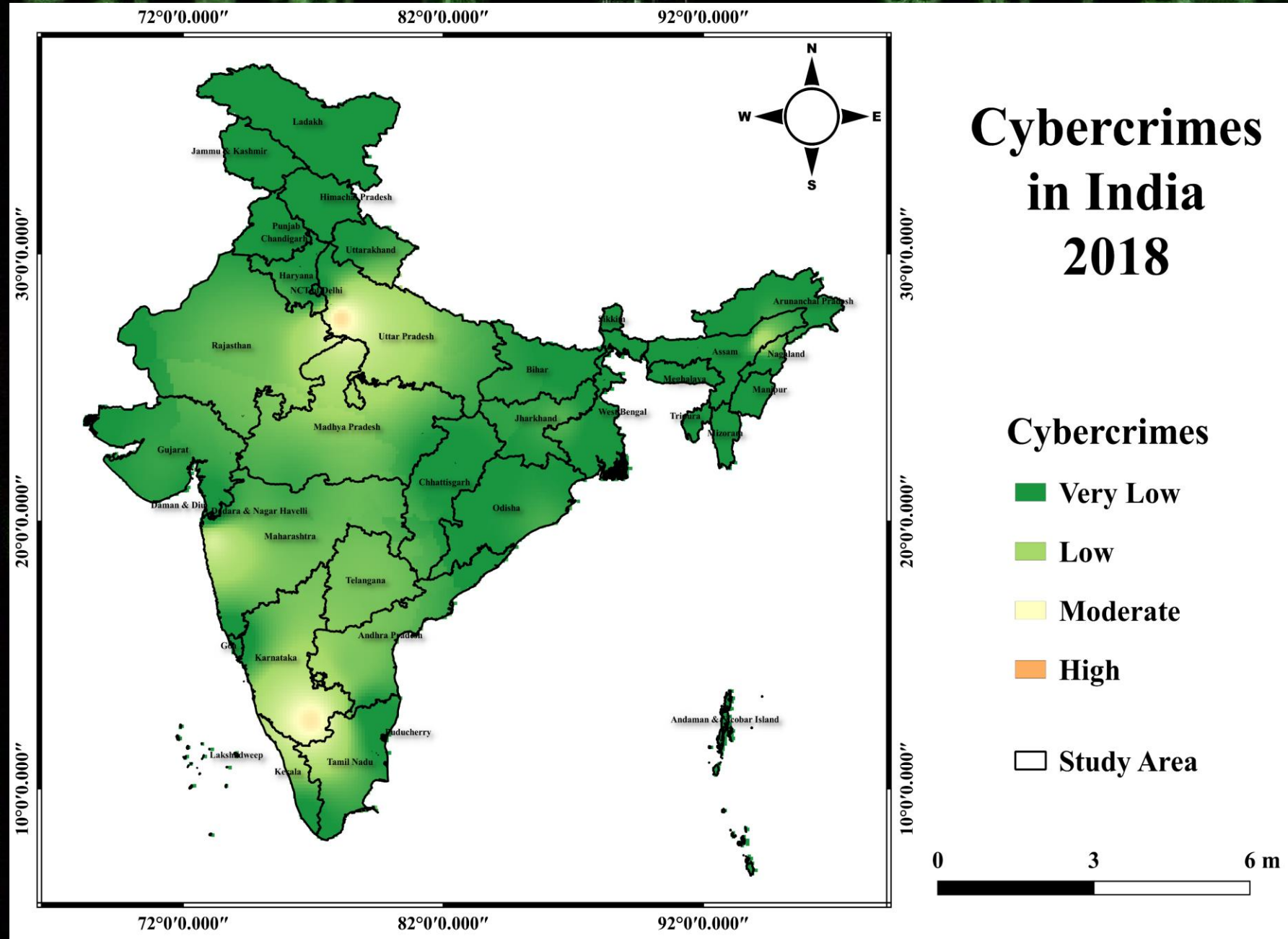
0-500: Very Low

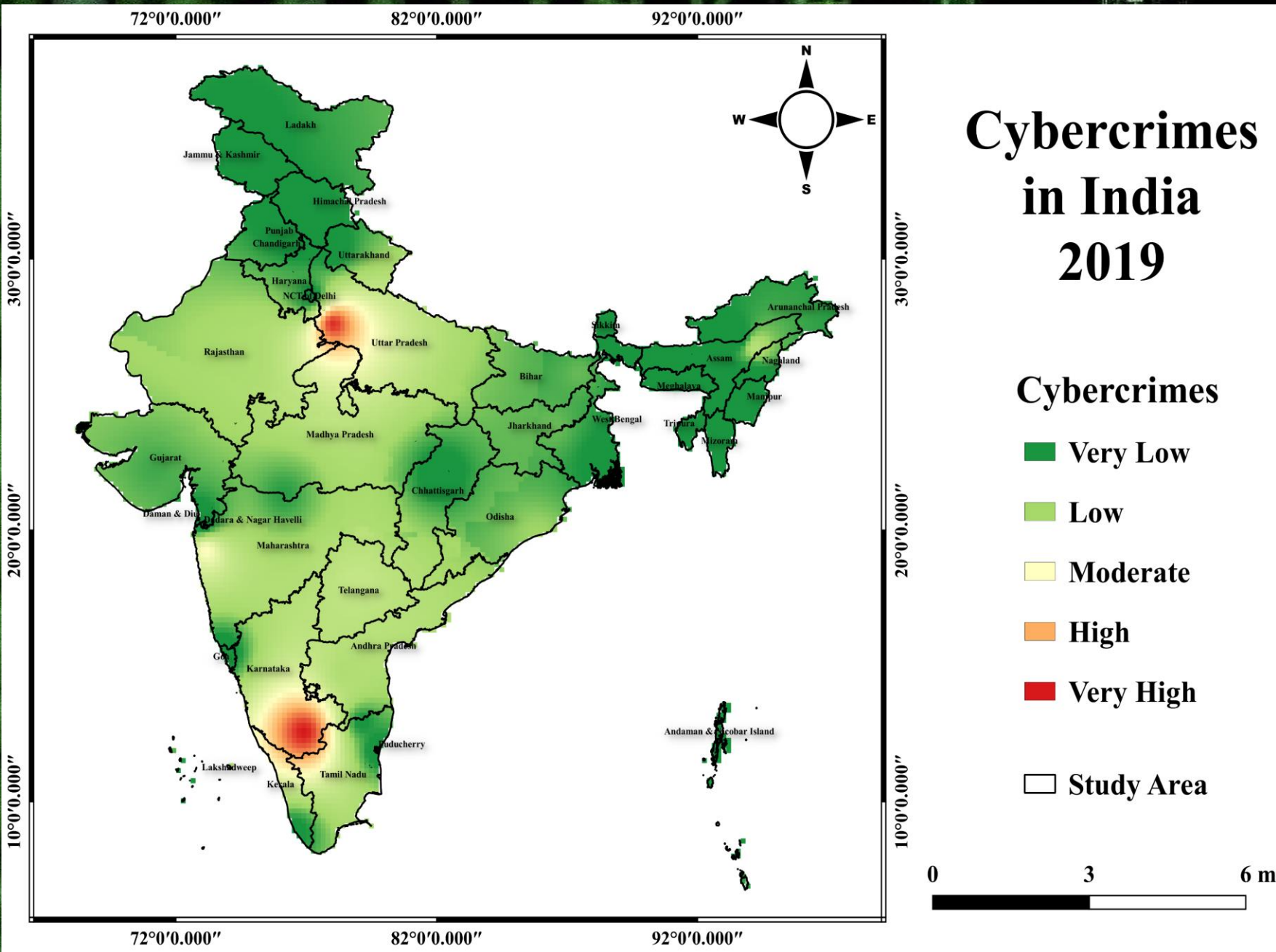
500-1500: Low

1500-5000: Moderate

5000-8000: High

Above 8000: Very High





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

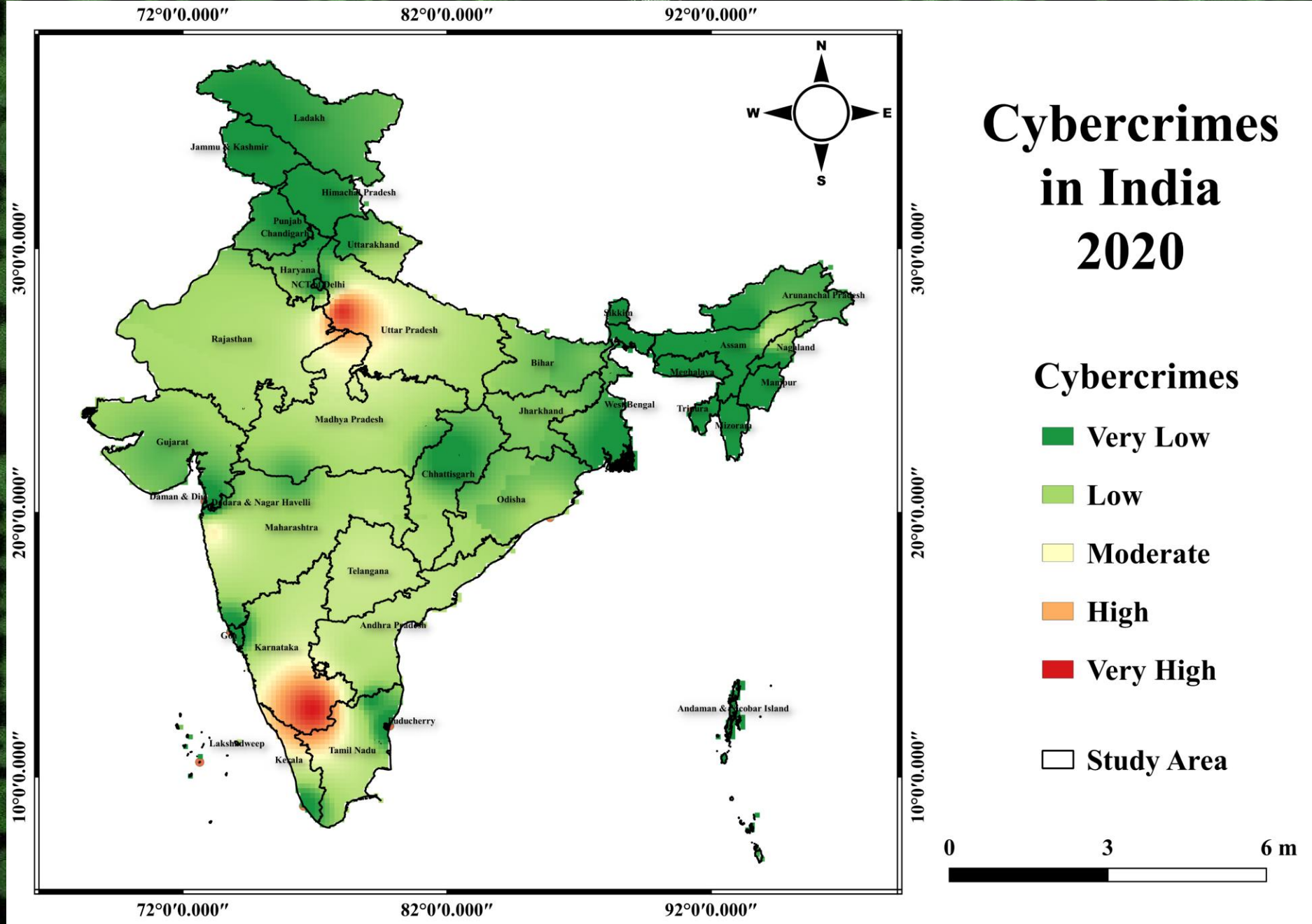
500-1500: Low

1500-5000: Moderate

5000-8000: High

Above 8000: Very High

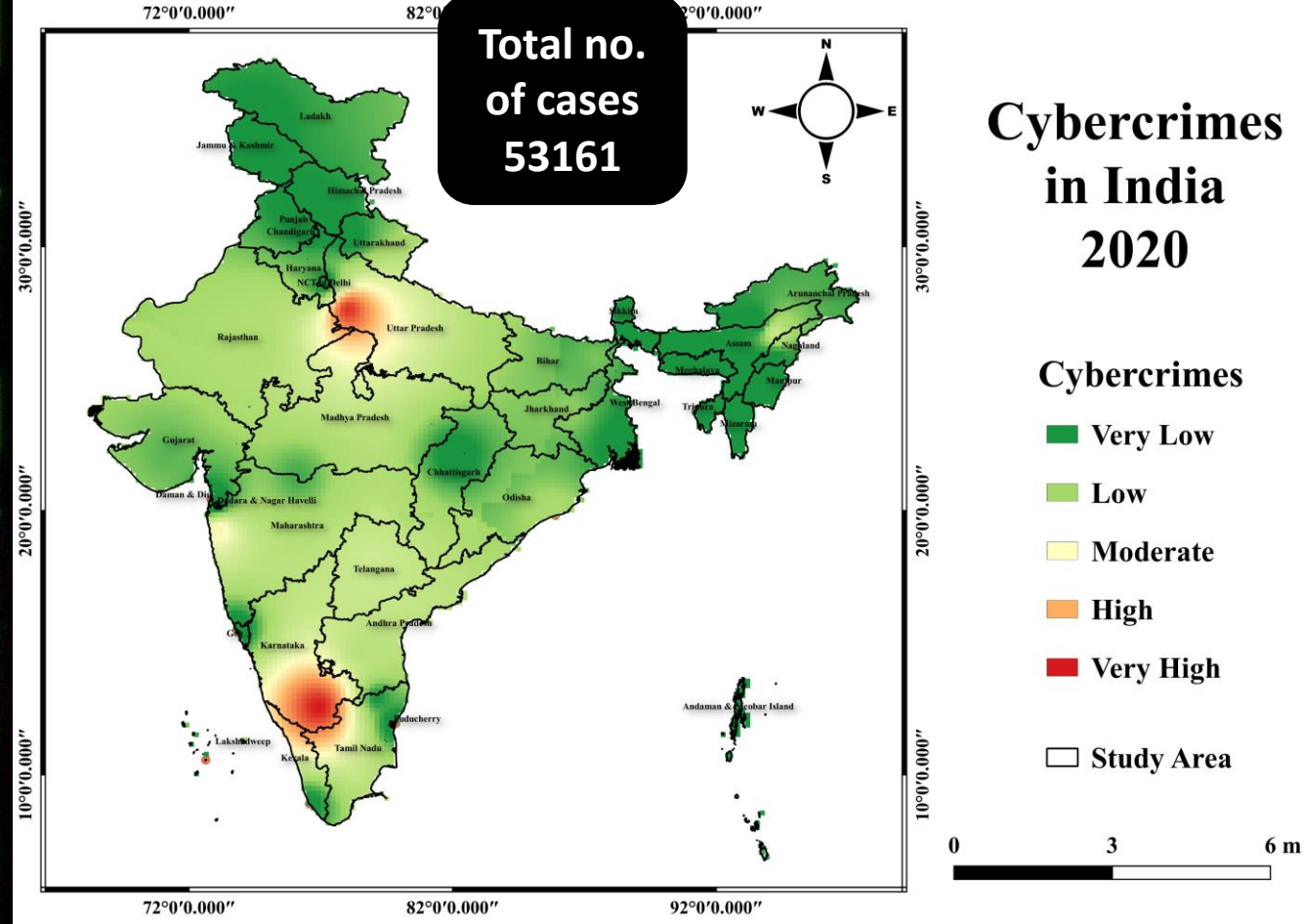
Forecast shows Karnataka is leading the way, followed by Uttar Pradesh



Rise in no. of Cybercrime

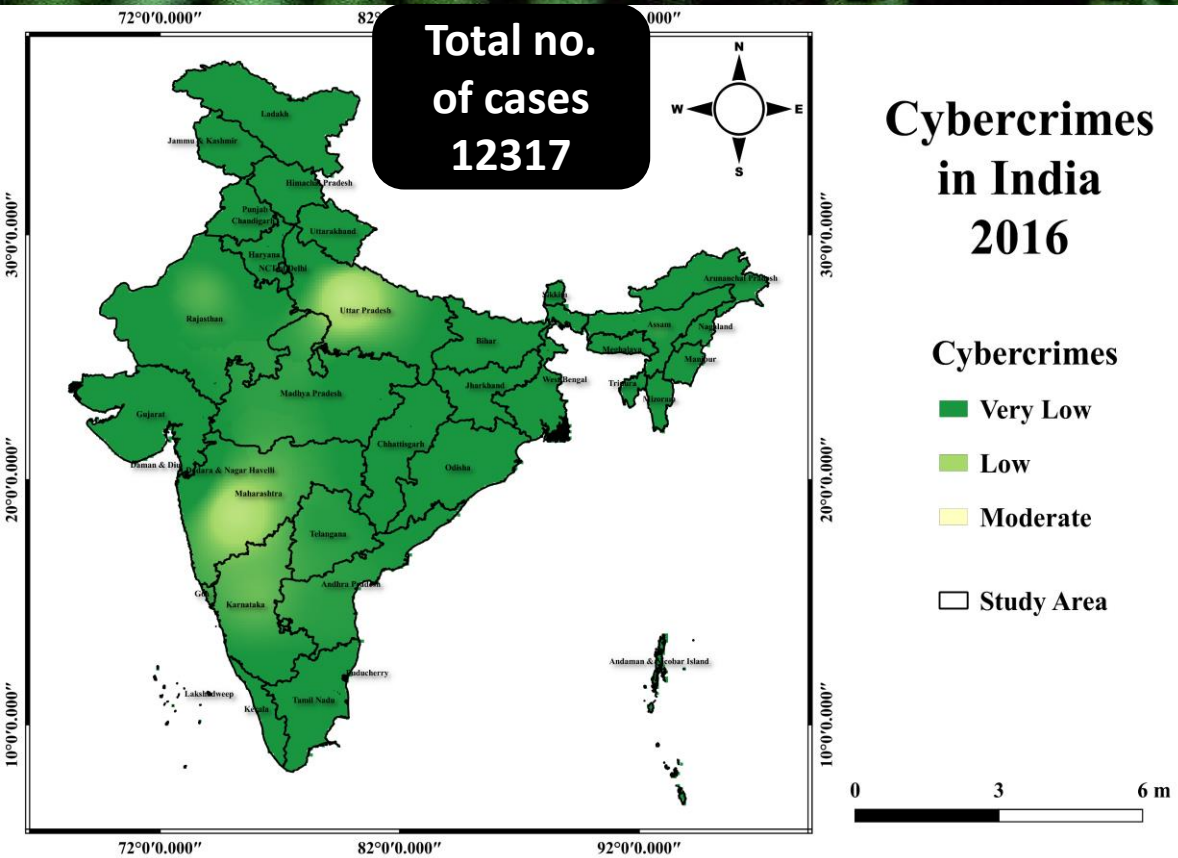
Total no. of cases 53161

Cybercrimes in India 2020



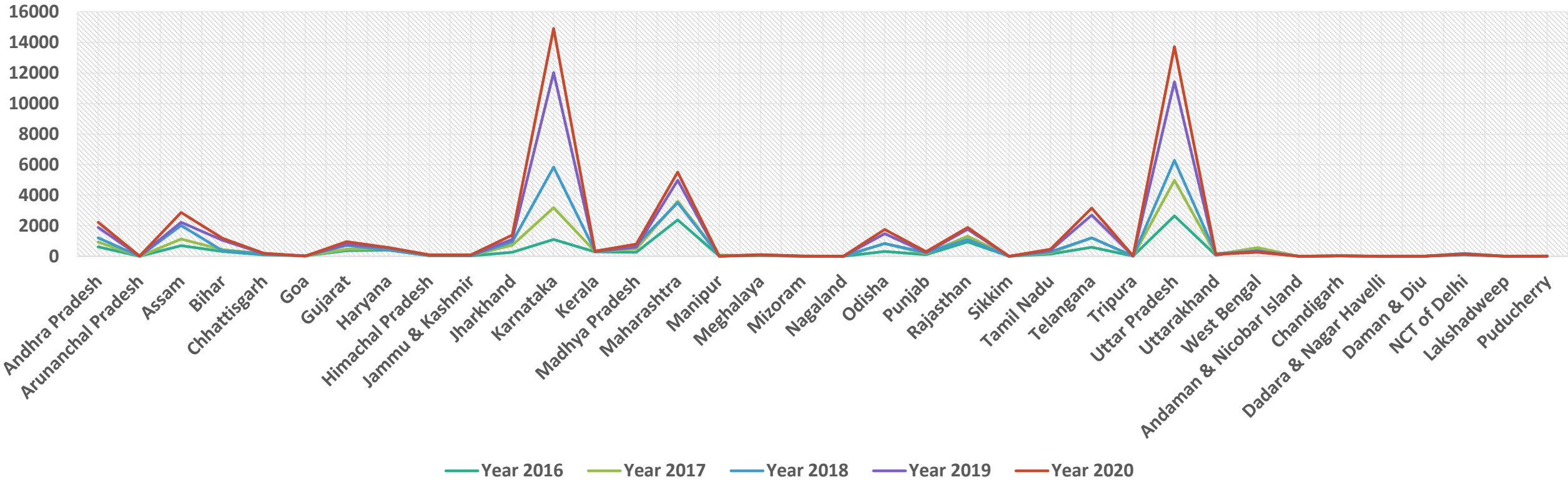
Total no. of cases 12317

Cybercrimes in India 2016

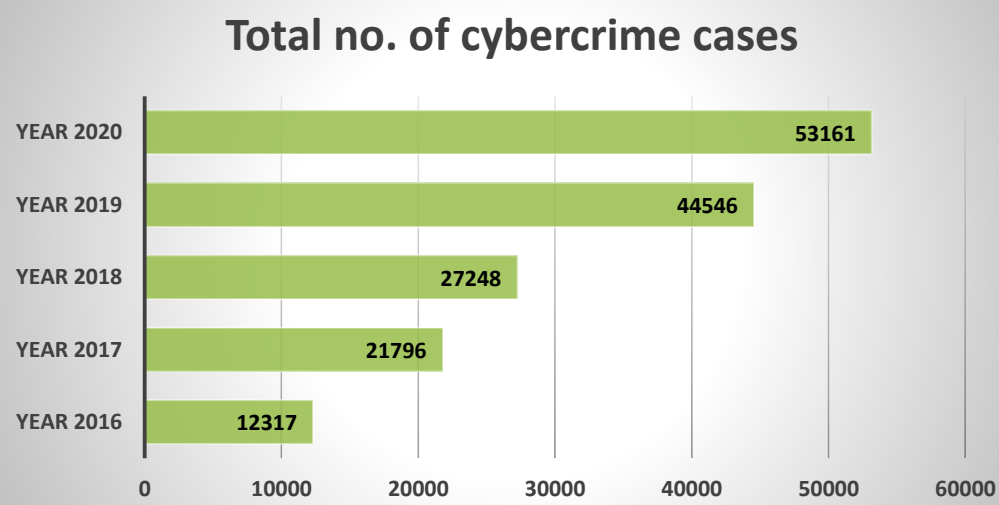


In the year 2016, a no. of states namely, Andhra Pradesh, Assam, Odisha, Telangana are found to be lying in the very low range(0-500), due to increased crime rate, now predicted to lie in moderate range(5000-8000) in the Year 2020.

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).



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