

SUMMER TRAINING REPORT

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UNDER THE GUIDANCE OF:

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PART 1- SECONDARY RESEARCH REPORT

COVID-19 AND INDIA
AN EPIDEMIOLOGICAL CONTEXT

INTRODUCTION

- ***“COVID-19” or “Novel Coronavirus Disease 2019 (nCov-19)” or the “Severe Acute Respiratory Syndrome-Coronavirus-2 (SARS-Cov-2)”.***
- **Originated from the local seafood market of Wuhan district of The Republic of China.**
- **Coronavirus with >70% similarity with the SARS-Cov (2012).**
- **WHO declared Covid-19 as a *“Public Health Emergency of International Concerns”* on January 30, 2020.**
- **Global Pandemic on March 12, 2020.**
- **On May 24, 2020:**
- ✓ **138,536 cases and 4024 nationwide deaths. 53,360,841 active cases and 343,364 deaths worldwide.**

THE 5 Ws and 1H of COVID-19

WHO

Elderly, and people with co-morbidities (*hypertension, heart and lung problems, diabetes, and cancer*).

WHAT

Fever, dry-cough, and muscle pain are the most common symptoms. Other less common symptoms include nasal congestion, headache, sore throat, conjunctivitis, diarrhea, rashes, and loss of taste or smell.

WHY

Beta-coronavirus (*zoonotic origin; primarily bats*)

WHERE

Kerala, a female student who had returned from Wuhan, China.

WHEN

January 30, 2020.

HOW

Animal to human transmission → Human-to-human transmission.

Through droplet (*sneezing or coughing*) or fomite infection, or by coming in direct contact with the infected person

Incubation period: 1 to 14 days, with an average of 5-6 days.

COVID-19 in INDIA

- ✓ 1,38,536 cases, 57,694 recoveries (including 1 migration) and 4,024 deaths in the country, on May 24, 2020.
- ✓ The infection rate 1.27 on May 16, 2020.
- ✓ The recovery rate 41.5%, whereas fatality or death rate is 2.9% of total cases .
- ✓ **GOVT.'s INITIAL RESPONSE:**
 - Preventive measures such as thermal screening and travel restrictions.
 - Setting up of quarantine and treatment facilities across the country.
 - Issuing advisory to adopt preventive measures and practice social distancing.
 - Sample testing and contact tracing.
 - Public health preparedness strategies including infection control and prevention, risk management, health system strengthening and surveillance protocols.
 - A Strategic Health Operations center (SHOC) was set up by The National Centre for Disease Control (NCDC) for operations management and a helpline (+91- 11-23978046) opened for public awareness and queries.

RESEARCH QUESTION:

1. What are the epidemiological characteristics of COVID-19 outbreak in India?
2. What are the Indian government's mobilization and response approach strategies for management of COVID-19 outbreak?

OBJECTIVES:

1. To study the epidemiological characteristics of Covid-19 in India from 30th January to 23rd May 2020 and perform a situational analysis.
2. To enumerate Indian government's mobilization and response approach strategies on “**WHO Health Emergency and Disaster Risk Management Framework**” parameters up to May 23, 2020.

METHODOLOGY:

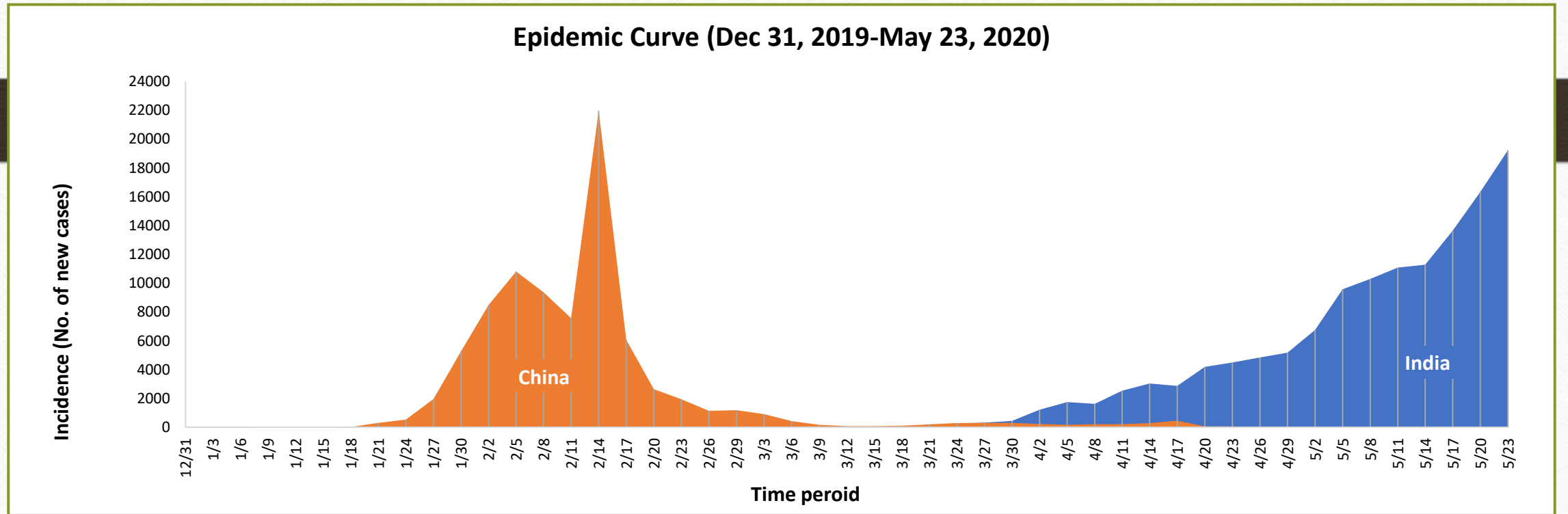
Descriptive secondary research:

1. To illustrate the epidemiological features and perform a detailed situational analysis through a review of databases available on government official sites, relevant articles, and publications.
 2. Taking for the Indian government's mobilization and response approach strategies by a review of e-newspapers and the official online press releases (GOI).
- **Initial search:** Pubmed and Google Scholar.
 - **Keywords:** “*emerging coronavirus*”, “*2019-nCov*”, “*SARS-Cov-2*”, “*COVID-19*”, “*India*”, “*epidemiology*”, “*WHO*” and “*global pandemic*”.
 - **Websites:** Official WHO's website (www.who.org), primary source.
 - Databases from Ministry of Family Health and Welfare (www.mofhw.com).
 - John Hopkins Coronavirus Resource Center (www.coronavirus.jhu.edu).
 - Corona Tracker (www.coronatracker.com).
 - Kaggle (www.kaggle.com).
 - E-newspapers and PIB's (Press Information Bureau) official website (www.pib.gov.in), the major source of updates on measures taken by the Indian government.

RESULTS AND DISCUSSIONS

OBJECTIVE 1: To study the epidemiological characteristics of Covid-19 in India from 30th January to 23rd May 2020 and perform a situational analysis.

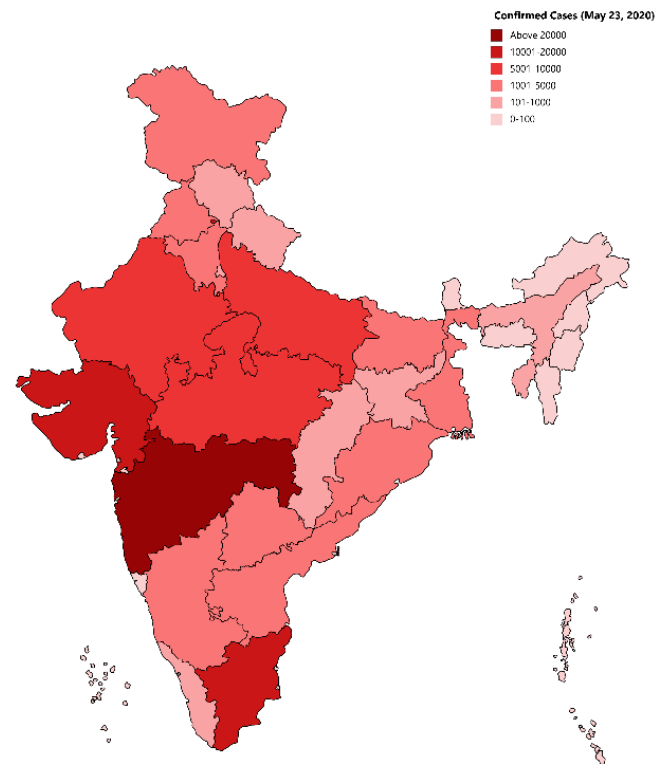
A. EPIDEMIC CURVE: A COMPARISON BETWEEN INDIA AND CHINA:



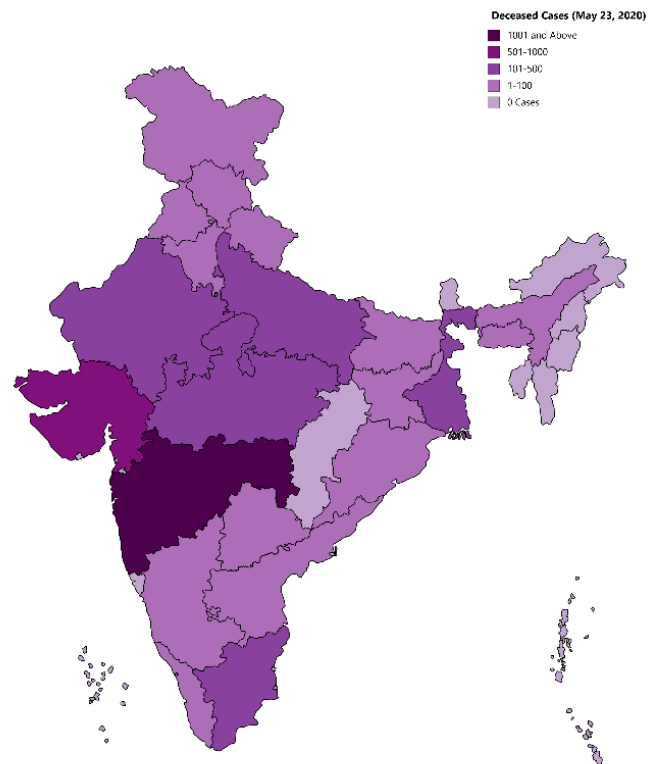
B. EPIDEMIOLOGICAL CHARACTERISTICS OF COVID-19 IN INDIA:

I. STATEWISE DISTRIBUTION OF CASES:

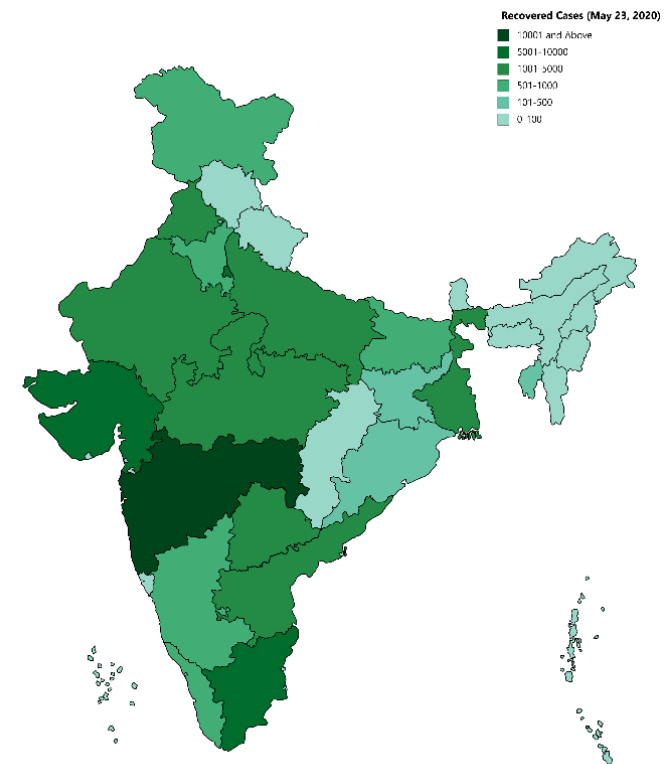
STATES	TOTAL CONFIRMED CASES	TOTAL RECOVERED CASES	TOTAL DECEASED CASES	JHARKHAND	350	141	3
				KARNATAKA	1959	608	42
				KERALA	795	515	5
				LADAKH	49	48	0
ANDAMAN & NICOBAR	33	33	0	LAKHSHADWEEP	0	0	0
ANDHRA PRADESH	2714	1779	56	MADHYA PRADESH	6371	3267	282
ARUNACHAL PRADESH	1	1	0	MAHARASHTRA	47190	13404	1576
ASSAM	347	57	3	MANIPUR	27	2	0
BIHAR	2394	653	11	MEGHALAYA	14	12	1
CHANDIGARH	225	179	3	MIZORAM	1	1	0
CHATTISHGARH	214	64	0	NAGALAND	0	0	0
DADRA & NAGAR HAVELI	2	1	0	ORISSA	1269	497	7
DAMAN & DIU	0	0	0	PONDICHERRY	26	10	0
DELHI	12910	6267	231	PUNJAB	2045	1870	38
GOA	55	16	0	RAJASTHAN	6738	3772	160
GUJARAT	13669	6169	829	SIKKIM	1	0	0
HARYANA	1131	749	16	TAMILNADU	15512	7491	104
HIMACHAL PRADESH	185	58	4	TELANGANA	1813	1068	47
JAMMU & KASHMIR	1569	774	21	TRIPURA	190	152	0
				UTTAR PRADESH	6017	3406	155
				UTTARAKHAND	244	55	1
				WEST BENGAL	3459	1281	269



State-wise distribution of Confirmed cases as of May 23, 2020.

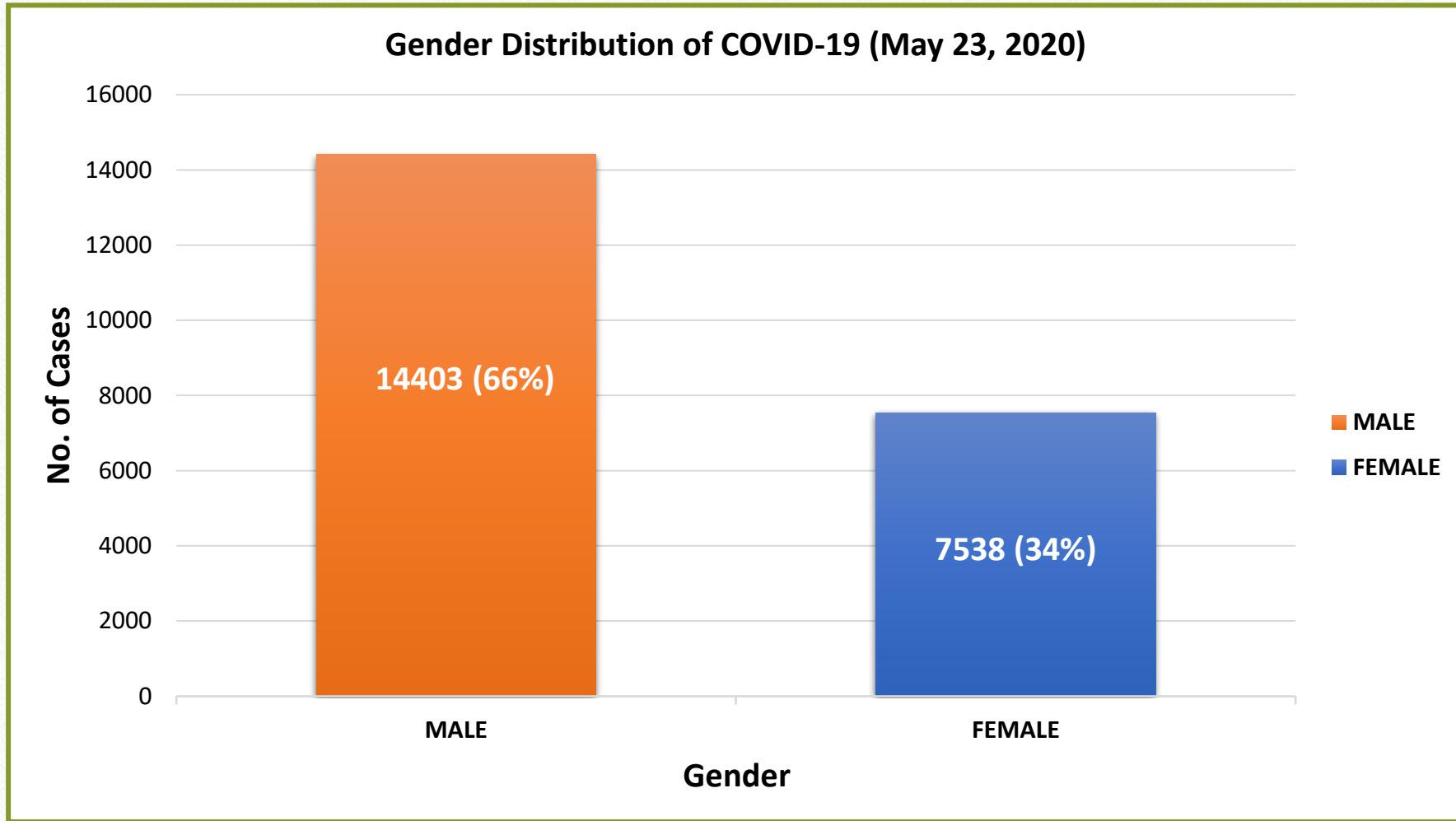


State-wise distribution of Deceased cases as of May 23, 2020.

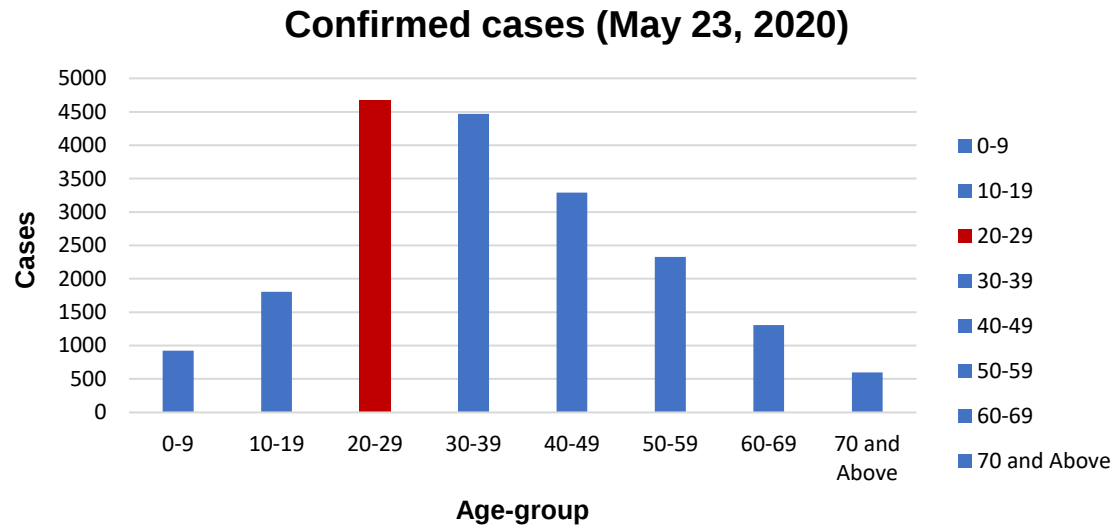


State-wise distribution of Recovered cases as of May 23, 2020.

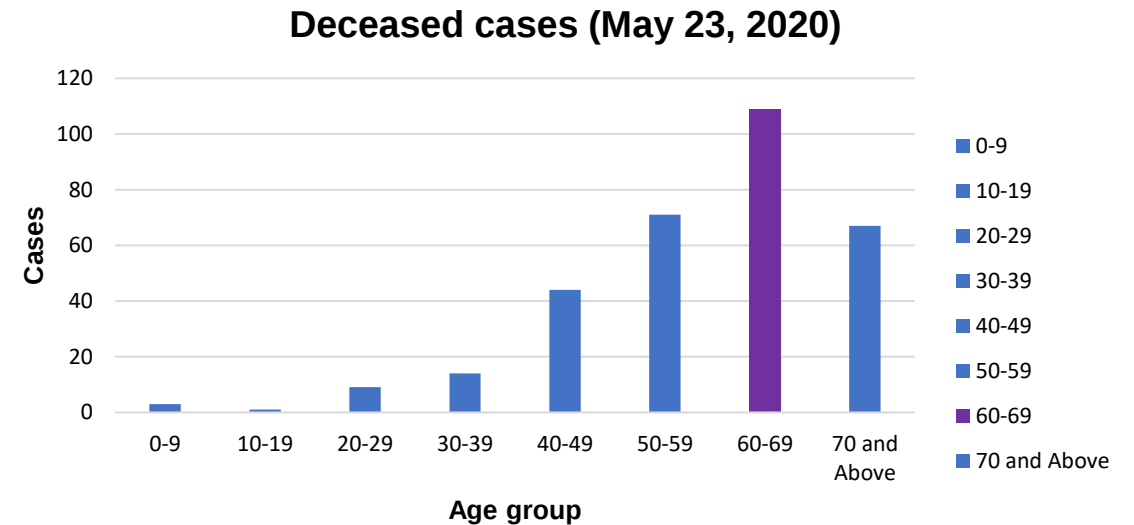
II. GENDER DISTRIBUTION



III. AGE-WISE DISTRIBUTION



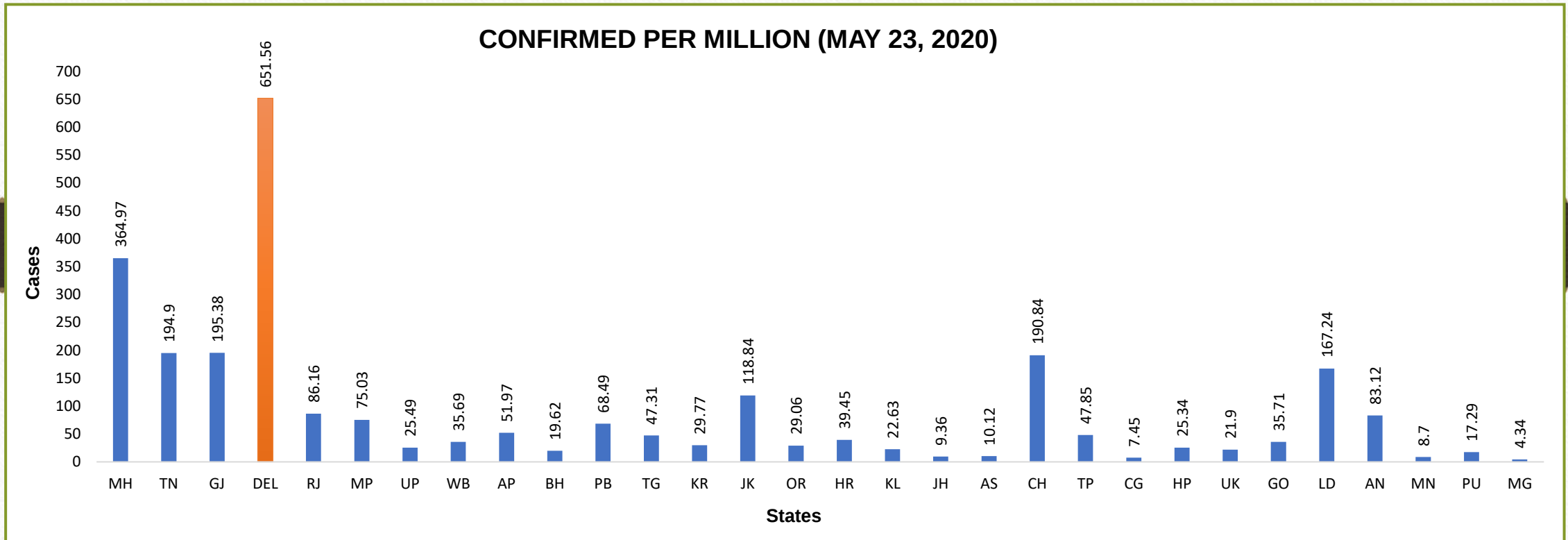
Confirmed cases by age group (May 23, 2020).



Deceased cases by age group (May 23, 2020).

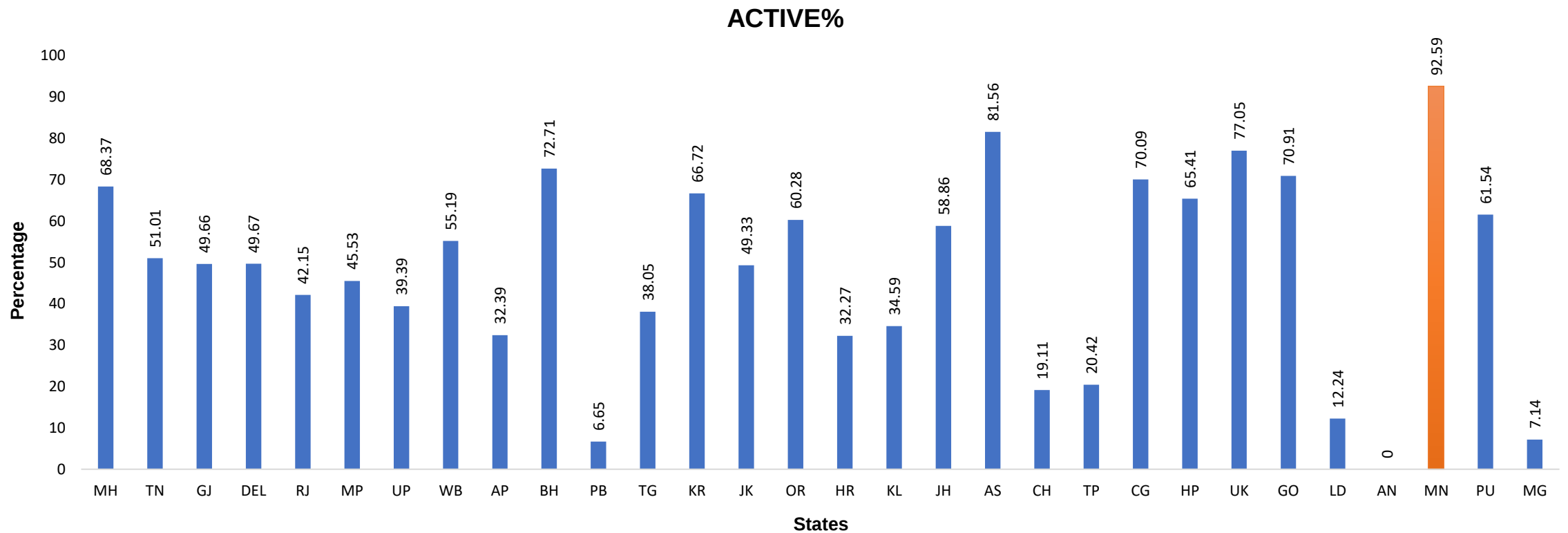
IV. STATE EPIDEMIOLOGY:

1. Cases confirmed per million:



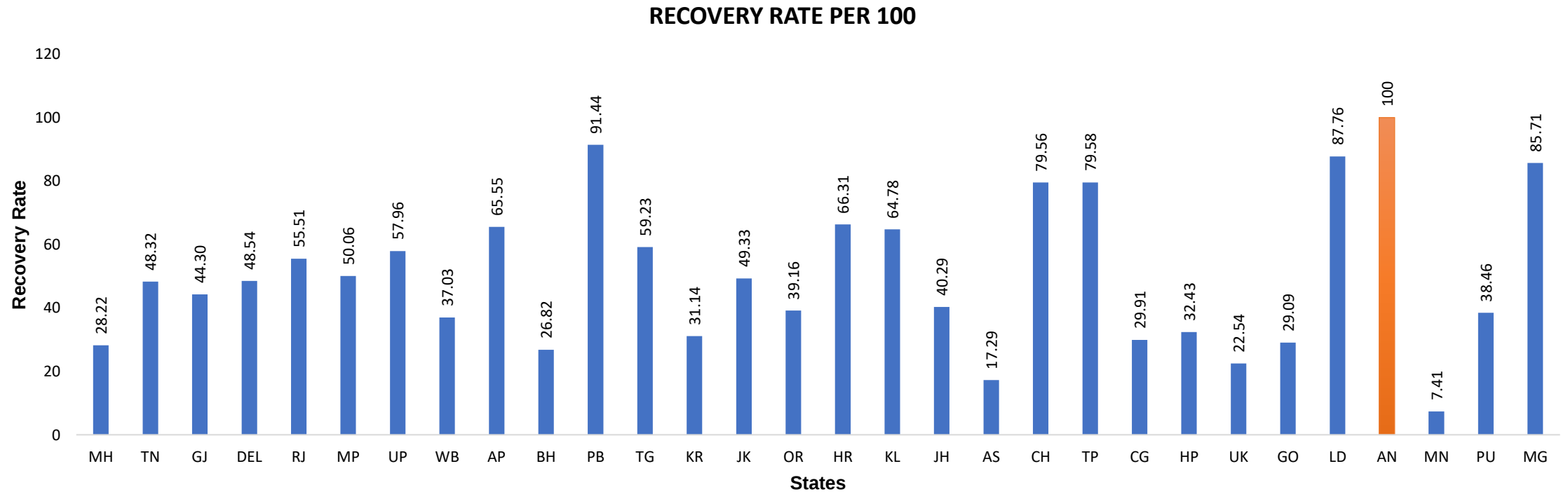
Confirmed/Million (May 23, 2020). "MH=Maharashtra, TN=Tamil Nadu, GJ=Gujarat, DEL=Delhi, RJ=Rajasthan, MP=Madhya Pradesh, UP=Uttar Pradesh, WB=West Bengal, AP=Andhra Pradesh, BH=Bihar, PB=Punjab, TG=Telangana, KR=Karnataka, JK=Jammu Kashmir, OR=Odisha, HR=Haryana, KL=Kerala, JH=Jharkhand, AS=Assam, CH=Chandigarh, TP=Tripura, CG=Chhattisgarh, HP=Himachal Pradesh, UK=Uttarakhand, GO=Goa, LD=Lakshadweep, AN=Andaman-Nicobar, MN=Manipur, PU=Pondicherry, MG=Meghalaya."

2. Percentage of Active cases:



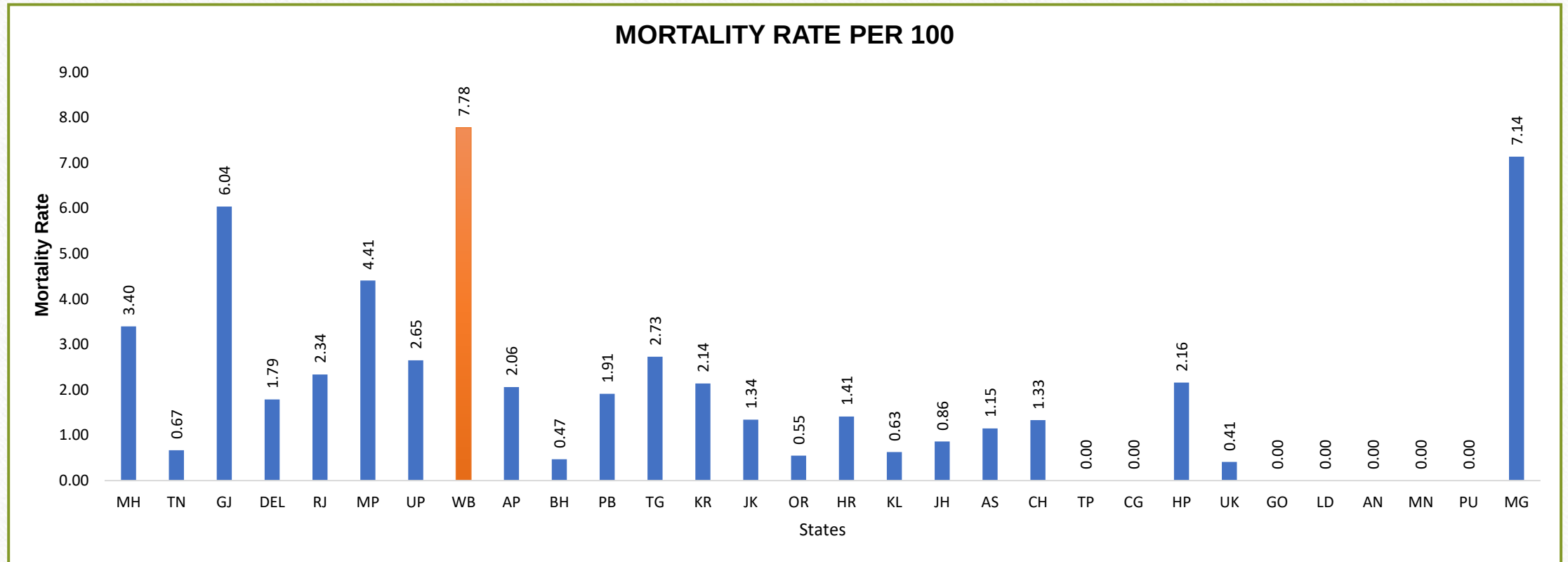
Percentage of Active cases among total confirmed cases (May 23, 2020). "MH=Maharashtra, TN=Tamil Nadu, GJ=Gujarat, DEL=Delhi, RJ=Rajasthan, MP=Madhya Pradesh, UP=Uttar Pradesh, WB=West Bengal, AP=Andhra Pradesh, BH=Bihar, PB=Punjab, TG=Telangana, KR=Karnataka, JK=Jammu Kashmir, OR=Odisha, HR=Haryana, KL=Kerala, JH=Jharkhand, AS=Assam, CH=Chandigarh, TP=Tripura, CG=Chhattisgarh, HP=Himachal Pradesh, UK=Uttarakhand, GO=Goa, LD=Lakshadweep, AN=Andaman-Nicobar, MN=Manipur, PU=Pondicherry, MG=Meghalaya."

3. Recovery Rate per 100 Population:



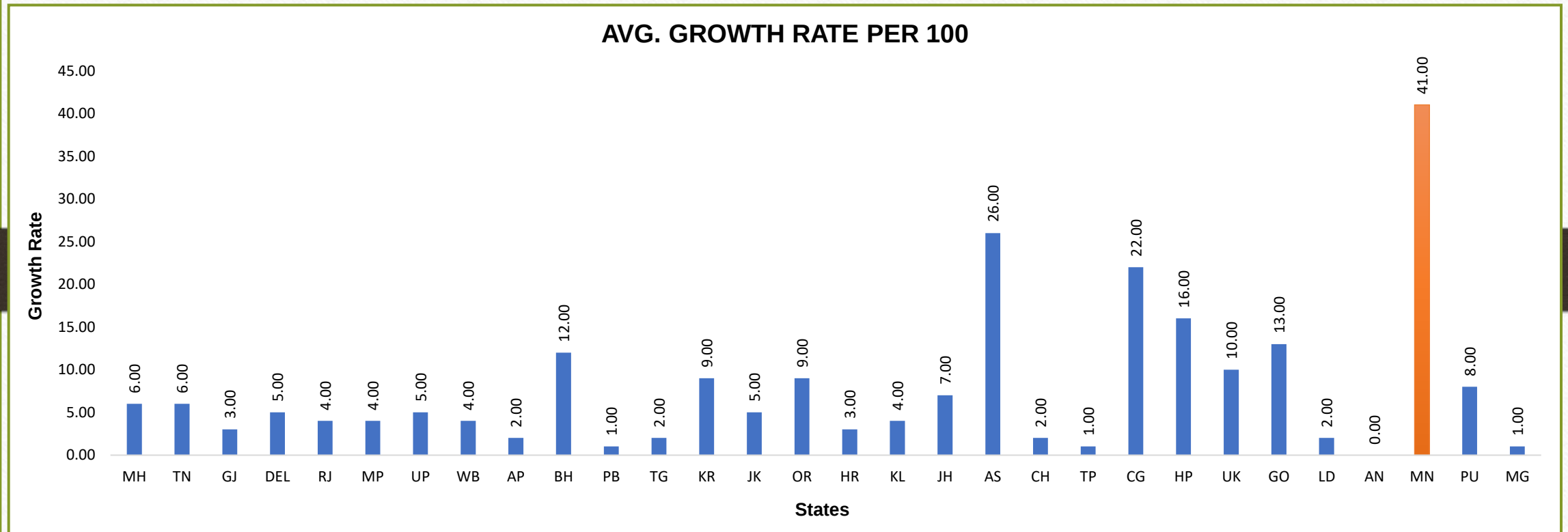
Recovery rate/100 confirmed cases (May 23, 2020). "MH=Maharashtra, TN=Tamil Nadu, GJ=Gujarat, DEL=Delhi, RJ=Rajasthan, MP=Madhya Pradesh, UP=Uttar Pradesh, WB=West Bengal, AP=Andhra Pradesh, BH=Bihar, PB=Punjab, TG=Telangana, KR=Karnataka, JK=Jammu Kashmir, OR=Odisha, HR=Haryana, KL=Kerala, JH=Jharkhand, AS=Assam, CH=Chandigarh, TP=Tripura, CG=Chhattisgarh, HP=Himachal Pradesh, UK=Uttarakhand, GO=Goa, LD=Lakshadweep, AN=Andaman-Nicobar, MN=Manipur, PU=Pondicherry, MG=Meghalaya."

4. Mortality Rate per 100 Population:



Mortality Rate/100 confirmed cases (May 23, 2020). "MH=Maharashtra, TN=Tamil Nadu, GJ=Gujarat, DEL=Delhi, RJ=Rajasthan, MP=Madhya Pradesh, UP=Uttar Pradesh, WB=West Bengal, AP=Andhra Pradesh, BH=Bihar, PB=Punjab, TG=Telangana, KR=Karnataka, JK=Jammu Kashmir, OR=Odisha, HR=Haryana, KL=Kerala, JH=Jharkhand, AS=Assam, CH=Chandigarh, TP=Tripura, CG=Chhattisgarh, HP=Himachal Pradesh, UK=Uttarakhand, GO=Goa, LD=Lakshadweep, AN=Andaman-Nicobar, MN=Manipur, PU=Pondicherry, MG=Meghalaya."

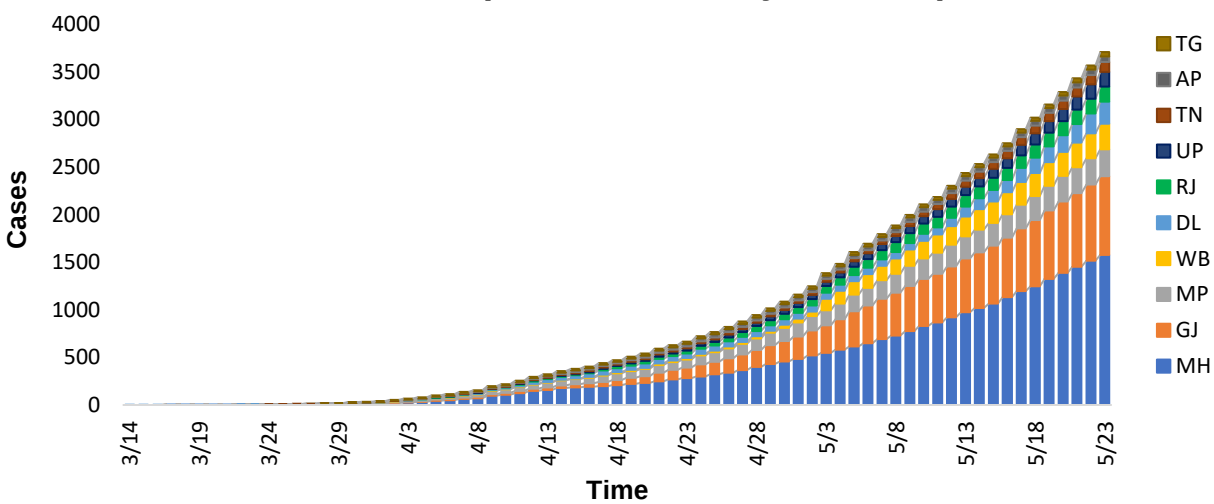
5. Average Growth Rate per 100:



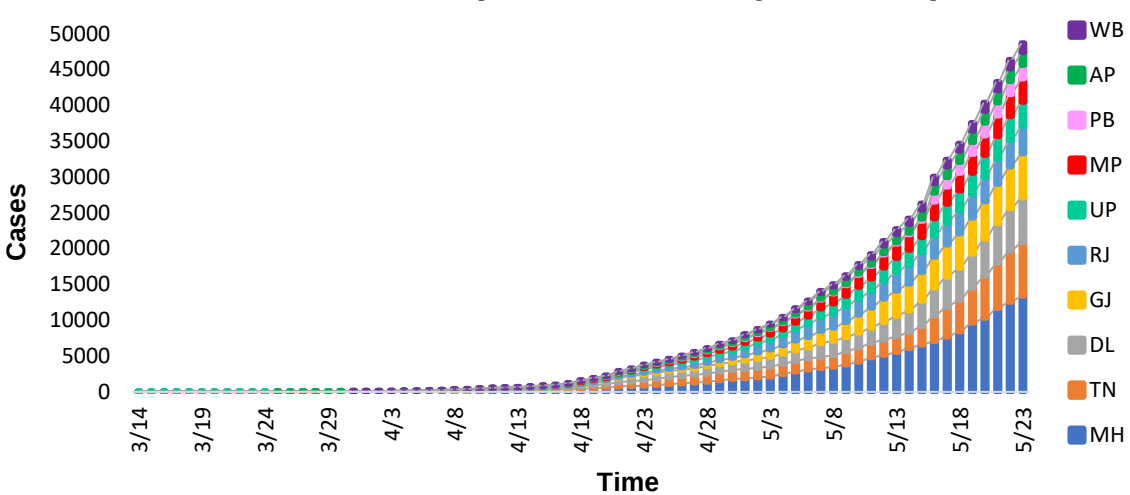
Average Growth Rate over past 7 days (May 23, 2020). "MH=Maharashtra, TN=Tamil Nadu, GJ=Gujarat, DEL=Delhi, RJ=Rajasthan, MP=Madhya Pradesh, UP=Uttar Pradesh, WB=West Bengal, AP=Andhra Pradesh, BH=Bihar, PB=Punjab, TG=Telangana, KR=Karnataka, JK=Jammu Kashmir, OR=Odisha, HR=Haryana, KL=Kerala, JH=Jharkhand, AS=Assam, CH=Chandigarh, TP=Tripura, CG=Chhattisgarh, HP=Himachal Pradesh, UK=Uttarakhand, GO=Goa, LD=Lakshadweep, AN=Andaman-Nicobar, MN=Manipur, PU=Pondicherry, MG=Meghalaya."

V. TRENDS:

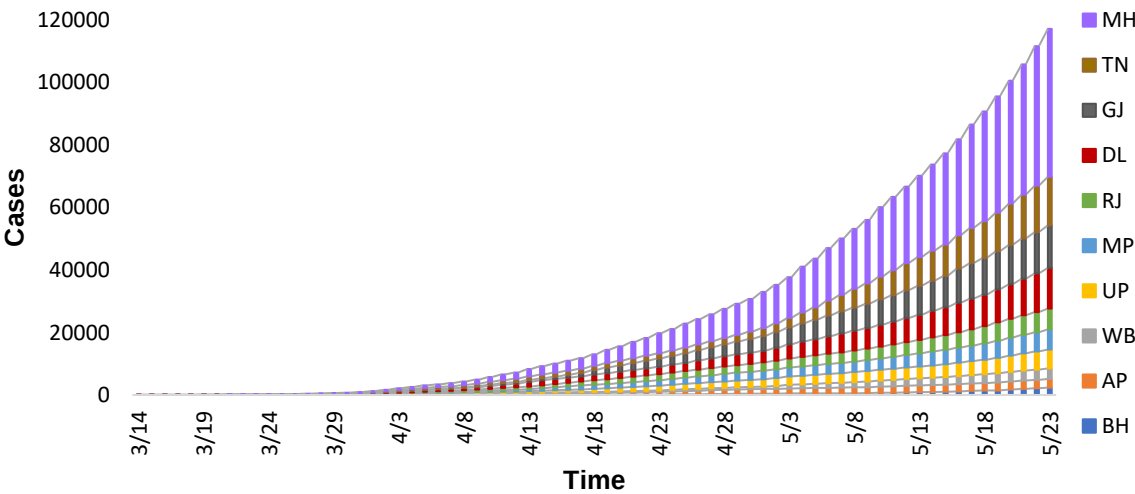
Deceased (March 14 to May 23, 2020)



Recovered (March 14 to May 23, 2020)



Confirmed (March 14 to May 23, 2020)

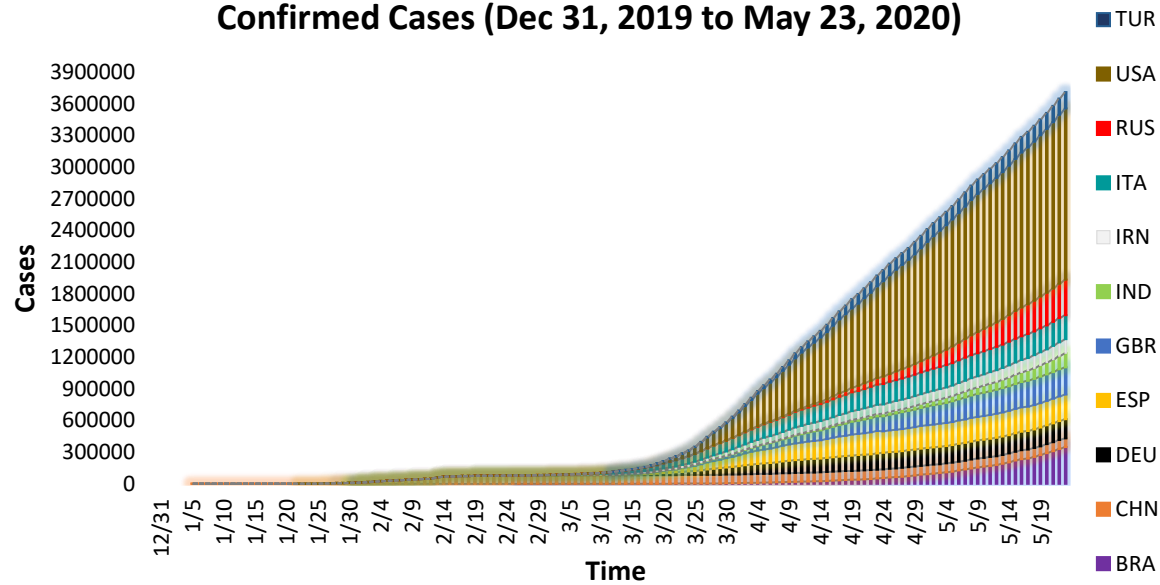


C. INDIA'S GLOBAL SITUATION:

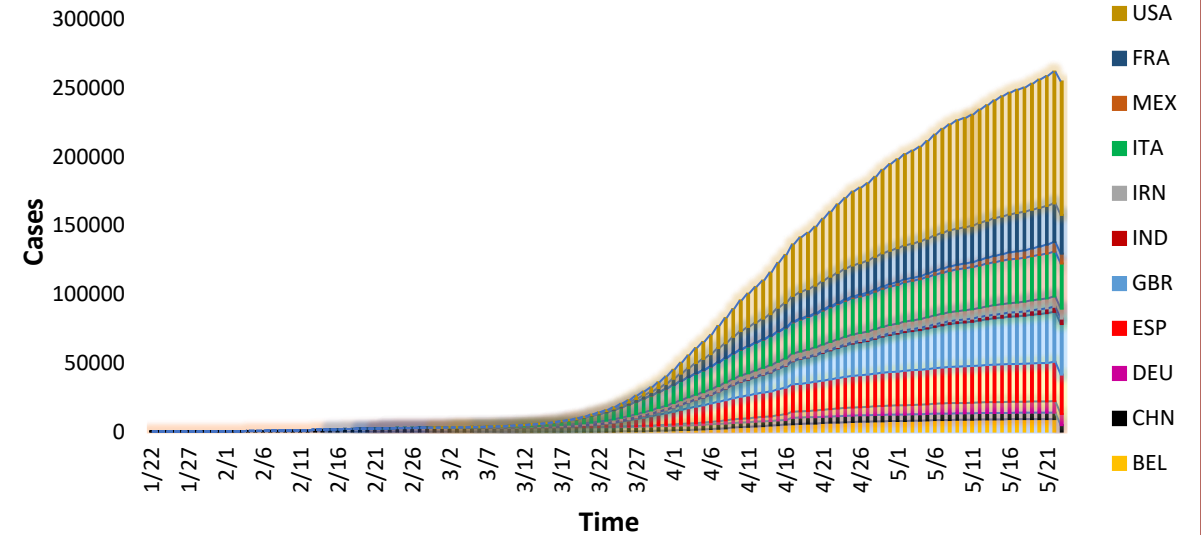
COUNTRIES	CASES PER MILLION	MORTALITY RATE PER 100	RECOVERY RATE PER 100
BRAZIL	1634.36	6.34	41.04
CHINA	58.42	5.52	94.35
GERMANY	2148.22	4.59	88.74
SPAIN	5005.39	12.19	63.91
FRANCE	2788.82	15.50	35.15
UK	3807.91	14.22	0.44
INDIA	95.23	2.94	41.38
IRAN	1589.67	5.51	77.94
ITALY	3792.92	14.27	60.54
RUSSIA	2301.59	1.01	32.14
USA	4902.11	5.98	22.26
TURKEY	1845.95	2.77	75.54
BELGIUM	4901.80	16.26	26.68
MEXICO	510.78	10.90	67.46

D. GLOBAL TRENDS:

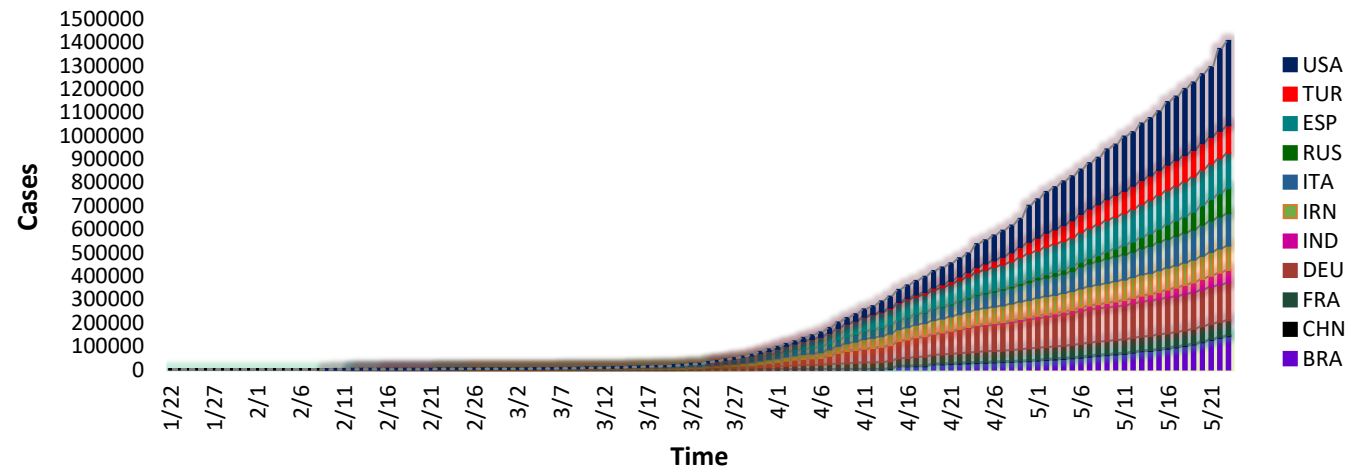
Confirmed Cases (Dec 31, 2019 to May 23, 2020)



Deaths (Jan 22 to May 23, 2020)



Recovered (Jan 22 to May 23, 2020)



OBJECTIVE 2: To enumerate Indian government's mobilization and response approach strategies on "*WHO Health Emergency and Disaster Risk Management Framework*" parameters up to May 23, 2020.

A. POLICIES, STRATEGIES AND LEGISLATION

POLICIES

- Disease containment.
- Intersectoral collaboration.
- Capacity building.
- Information and risk communication.

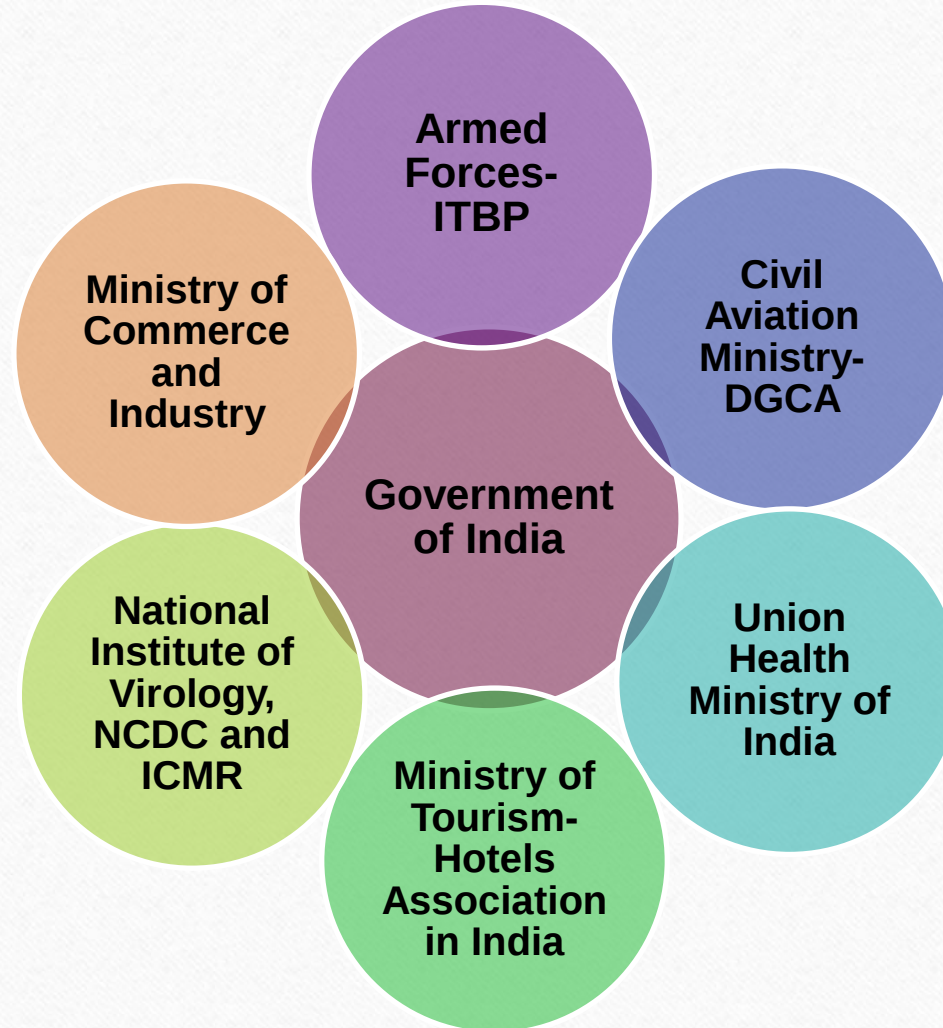
STRATEGIES

- Surveillance and contact tracing.
- Cluster containment through isolation and quarantine.
- Travel restrictions.
- Setting up of additional testing and treatment facilities.
- Closure of public, religious, private, and educational establishments and tourist places.
- Cancellation of exams and religious gatherings.
- Imposing nationwide lockdown in four phases.

LEGISLATION

- Wearing face masks were made compulsory in highly populous cities.
- States invoked provisions of Section 2, Epidemic Disaster Act, 1897.
- COVID-19 declared a "*notified disaster*" under Disaster Management Act, 2005.
- Essential Commodities Act, 1995, declaring facemasks, and hand sanitizers as essential commodities upto 30th June.

B. PLANNING & CO-ORDINATION



Organizational Level:

- Sensitizing Gram Panchayats.
- Reinforcing Professional Bodies.
- Specialized Panels.
- Public-Private-Partnerships.

Frontline Workers:

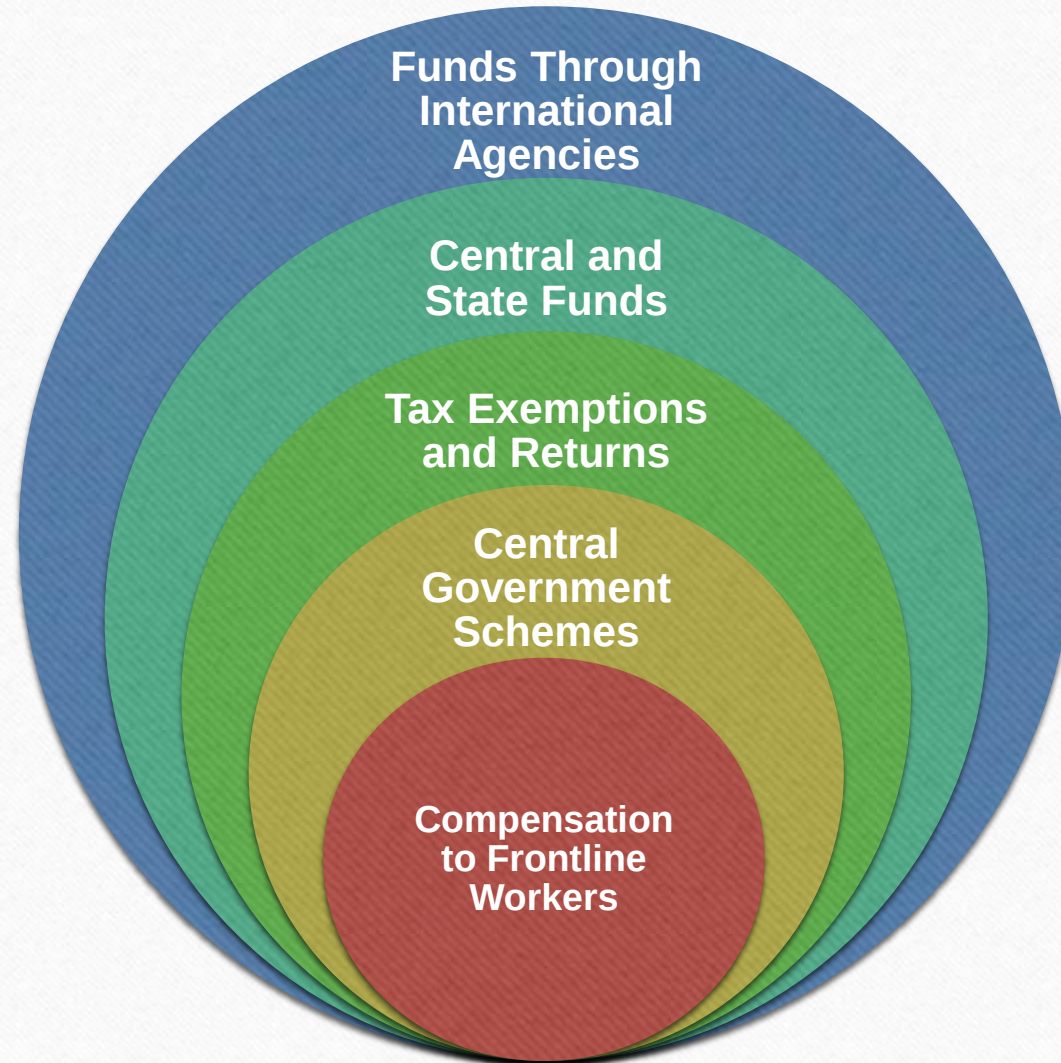
- Nodal Officers
- Ex-Servicemen Community
- Deployment of Central Manpower
- Deployment of Indian Railways Health Staff
- National Cadet Corps

C. HUMAN RESOURCE

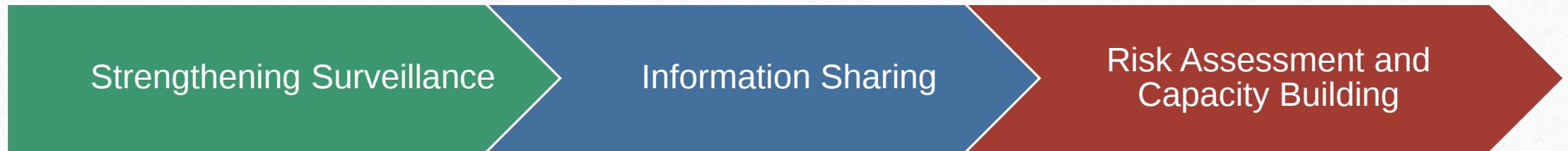
Training of Health Professionals

Ordinance

D. FINANCIAL RESOURCES:



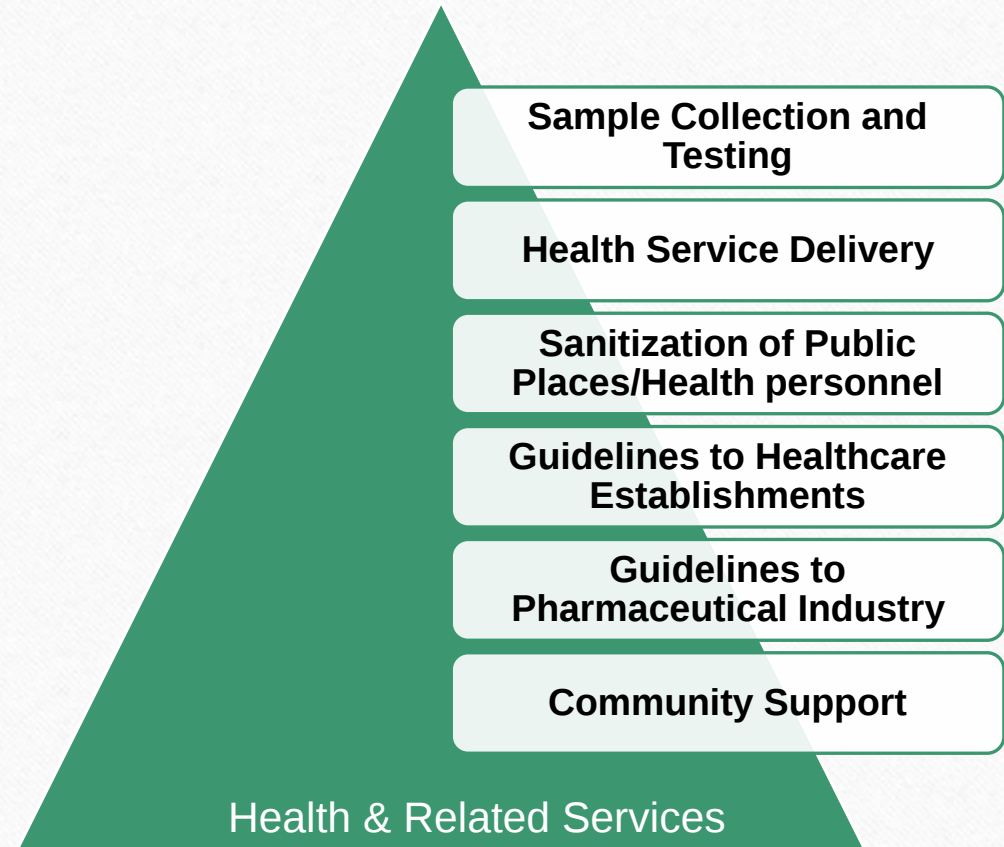
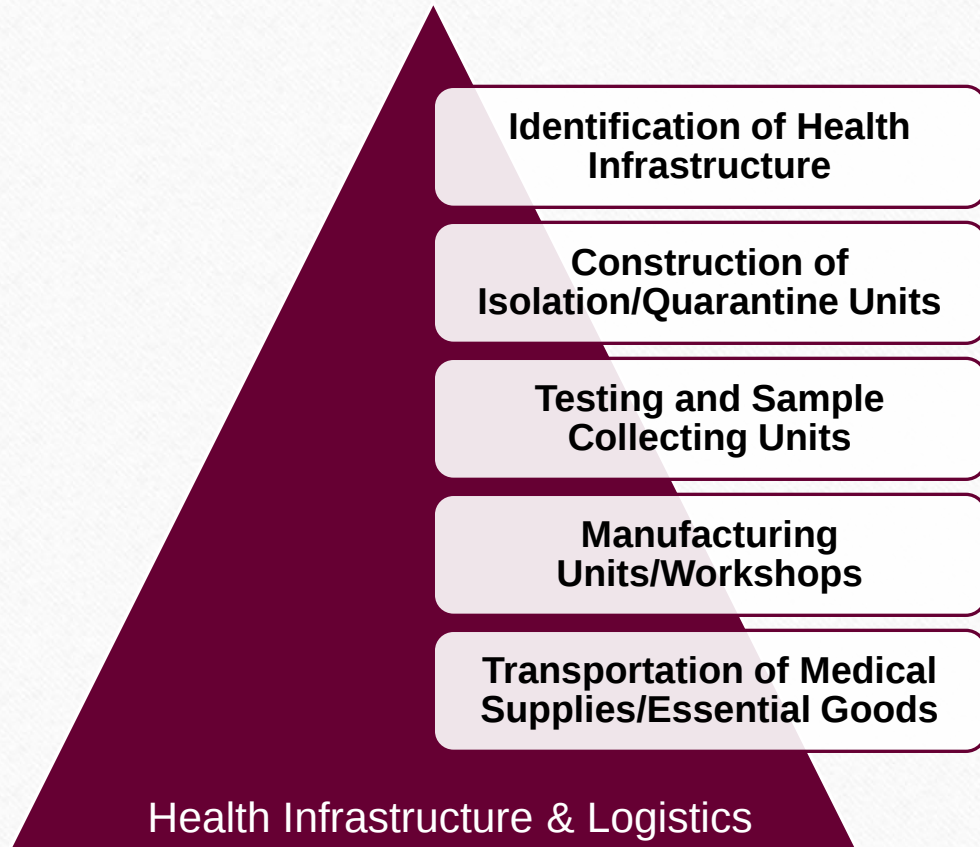
E. INFORMATION AND KNOWLEDGE MANAGEMENT



F. RISK COMMUNICATION



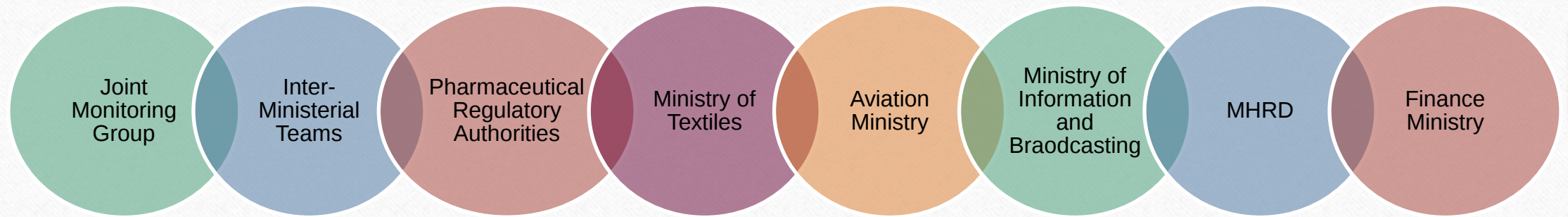
G. HEALTH INFRASTRUCTURE AND LOGISTICS & HEALTH AND RELATED SERVICES



H. COMMUNITY CAPACITIES FOR HEALTH EDRM



I. MONITORING & EVALUATION



CONCLUSION AND RECOMMENDATIONS

- Rapid disease progression with high casualties point towards the gap in implementation of the preparedness and response plan on some level.
- A comparison of India's epidemic curve with China, also points towards the same observation..
- **Strength:**
 - ✓ Data collected across a relatively long period (Jan 30- May 23).
 - ✓ Attempt for a comprehensive global comparison was also made.
- **Weakness:** Secondary review, therefore, data collection was from secondary sources. The data released was incomplete and accounted for only those details which were disclosed publicly.
- **Recommendations:**
 - Another study be undertaken through primary sources.
 - Evidence-based gap identification must be carried out.
 - Evaluate the social determinants, demographic distribution, and regional influence.
 - Therefore, another study in the light of current situation is highly recommended.

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PART 2- ONLINE COURSE REPORT

ESSENTIALS OF GLOBAL HEALTH

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COURSE DESCRIPTION:

- Designed by Yale University, New Haven, Connecticut, USA.
- Available for enrollment through Coursera (www.coursera.org).
- Covers key concepts and frameworks of global health, focusing on the practical implementation of the theories.
- The course revolves around five major questions:
 1. What causes sickness, disability, and death in people?
 2. What are the factors due to which these people suffer?
 3. What part of the population is affected the most?
 4. Why is it important to address these key issues?
 5. What are the most sustainable, cost-effective, and prompt solutions that can address these key health issues efficiently?
- The primary language of the course was English, 56 hours spread across 32 sessions.
- The course instructor was *“Richard Skolnik, Former Lecturer, Department of Health Policy and Management, Yale School of Public Health and Lecturer in the Practice of Management, Yale School of Management, 2012-2016.”*

OBJECTIVES OF THE COURSE:

- Define global health and outline its importance.
- Major and critical concepts of public health in relation to global health.
- To employ a wide range of perspectives.
- To be able to discuss the burden of disease by region, sex, and age.
- To understand and evaluate major health disparities.
- To understand the roles, responsibilities, functions, and importance of key actors and organizations in global health.
- To highlight the major challenges that have the highest probability of arising in the near future.

COURSE CONTENTS:

- | | |
|--|--|
| I. Introduction. | IV. Cross-Cutting Themes in Global Health. |
| II. The Burden of Disease. | V. Critical Causes of Illness and Death. |
| III. Health Systems and Value for Money in Health. | VI. Looking Forward. |

LEARNING METHODOLOGY: Video lectures, Interview Clips and Readings (Required and Essential), followed by assessment quizzes

KEY LEARNINGS FROM THE COURSE:

1. Introduction:

Course overview and getting started

- “Global health is an area for study, research, and practice that places a priority on improving health and achieving equity in health for all people worldwide. Global health emphasizes transnational health issues, determinants, and solutions; involves many disciplines within and beyond the health sciences and promotes interdisciplinary collaboration; and is a synthesis of population-based prevention with individual-level clinical care.”

Key perspectives of global health

- Social determinants of health
- Human rights approach
- Ethical consideration
- Global forces

The global health context and who plays

- Consensus building
- Knowledge sharing
- Productions of Public Goods
- Surveillance
- Financial Aid

2. The Burden of Disease

- The State of the World's health
- Demography and global health.
 - ✓ Population growth.
 - ✓ Demographic divide.
 - ✓ Demographic Transition Phase
 - ✓ Health implications.
- The Burden of disease-The DALY.
- What do people get sick, disabled, and die from?
- Key risk factors for Deaths and DALYs.

3. Health Systems and Value for Money in Health.

- Value for money in global health.
- The organization and aims of health systems.
 - ✓ Good health.
 - ✓ Responsiveness to the expectations of the population.
 - ✓ Fairness of financial contribution
- Types of Health Systems:
 - ✓ National Health Service: UK, Cuba.
 - ✓ National Health Insurance: France, Canada, Japan, Germany, Brazil, Mexico, Thailand.
 - ✓ Pluralistic: India, Nigeria, USA.
- Health expenditure, the quest for UHC and Pharmaceuticals.

4. Cross-Cutting Themes in Global Health

Health disparities

The environment & health; and Climate change & health

Nutrition and global health

Women's health

Child health

Childhood immunization

Adolescent health

Complex humanitarian emergencies

5. Critical Causes of Illness and Death

Emerging and reemerging Infectious Diseases and anti-microbial resistance

HIV

Tuberculosis

Malaria

Neglected tropical diseases

Overview of non-communicable diseases, cardiovascular diseases, and diabetes

Cancer and diabetes

Tobacco and alcohol

Mental Health

Unintentional injuries

6. Looking Forward

- Intersectoral approaches to enabling better health.
- Science and technology for global health
- Key challenges for the future:
 - Unfinished agenda.
 - Growing burden of non-communicable diseases.
 - Health system working effectively and efficiently,
 - Collaborating
 - Drugs, diagnostics, and vaccines