Health System Enhancement for Pandemic Preparedness in Indonesia

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Monday, June 30th, 2025

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Pang Junxiong Vincent

Why do we need better preparedness:

Severe impacts of COVID-19 pandemic

COVID-19's impact

- Physical
- Mental
- Social

→ **Disaster**

Physical

- More than 6 million deaths
- More than 700 million cases

Mental

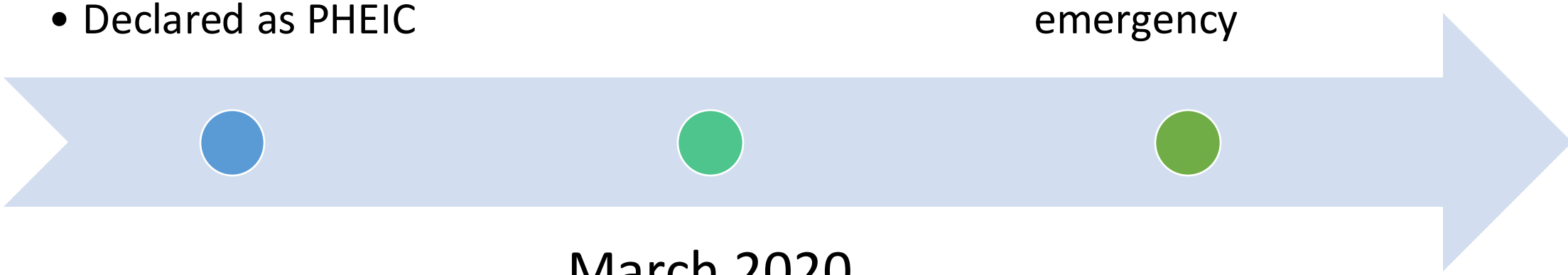
- Lockdown policy triggers a 25% increase in the prevalence of anxiety and depression worldwide

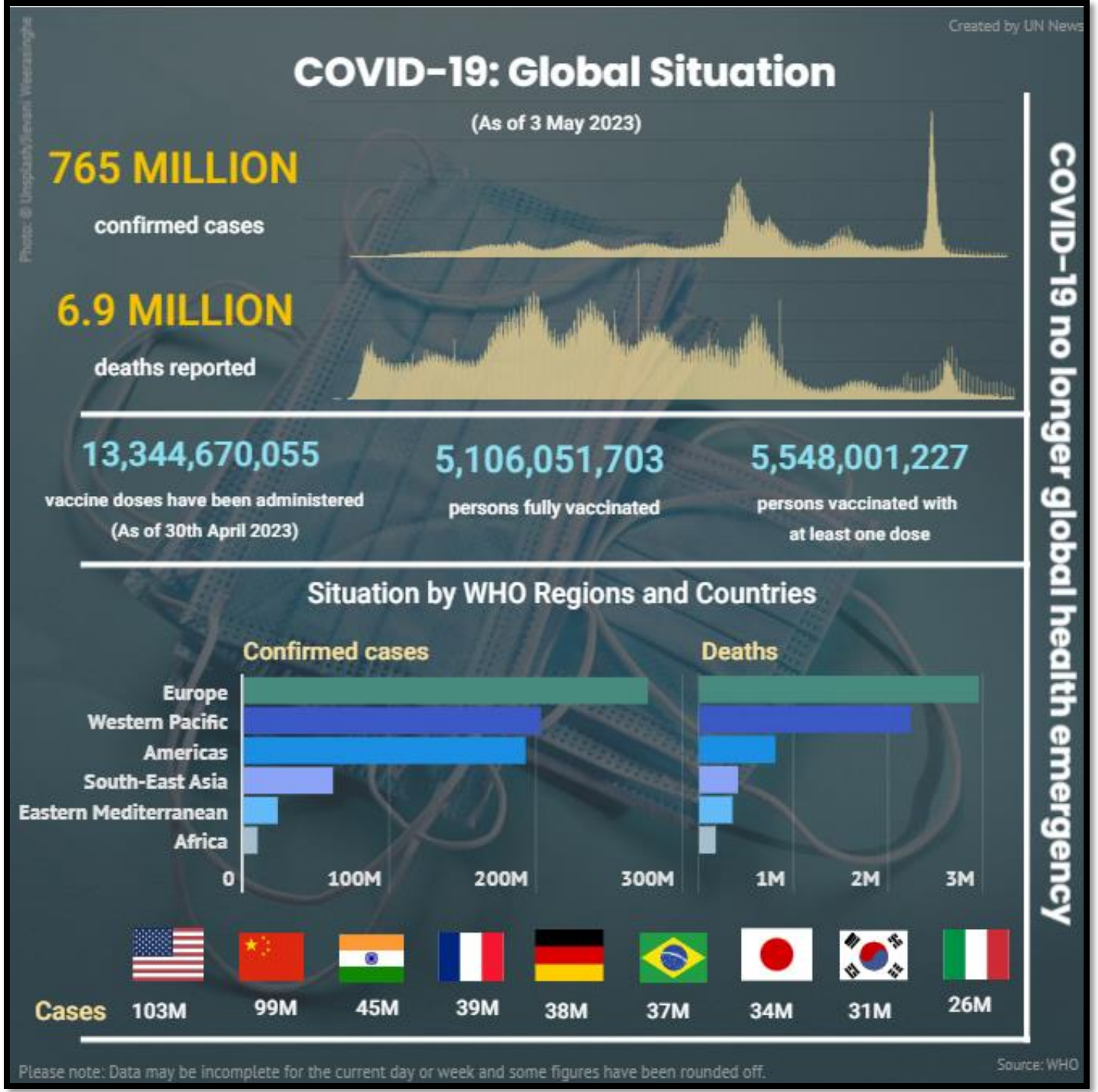
Social

- the poverty rate increased from 7.8% to 9.1%

Why do we need better preparedness:

Delayed response?





https://news.un.org/en/story/2023/05/1136367

Why do we need better preparedness:

Remain highly susceptible to COVID-19

COVID-19 Global Risk Assessment

Date of current assessment: 31 December 2024 Led by: CO ☐ RO ☐ HQ ☒

WHO regularly conducts risk assessments for graded emergencies in accordance with the WHO Emergency Response Framework. Since January 2020, WHO conducted global risk assessments for COVID-19 every three months. With the lifting of the public health emergency of international concern, WHO has shifted to producing COVID-19 risk assessments every six months.

Overall risk and confidence (based on information available as of 31 December 2024)

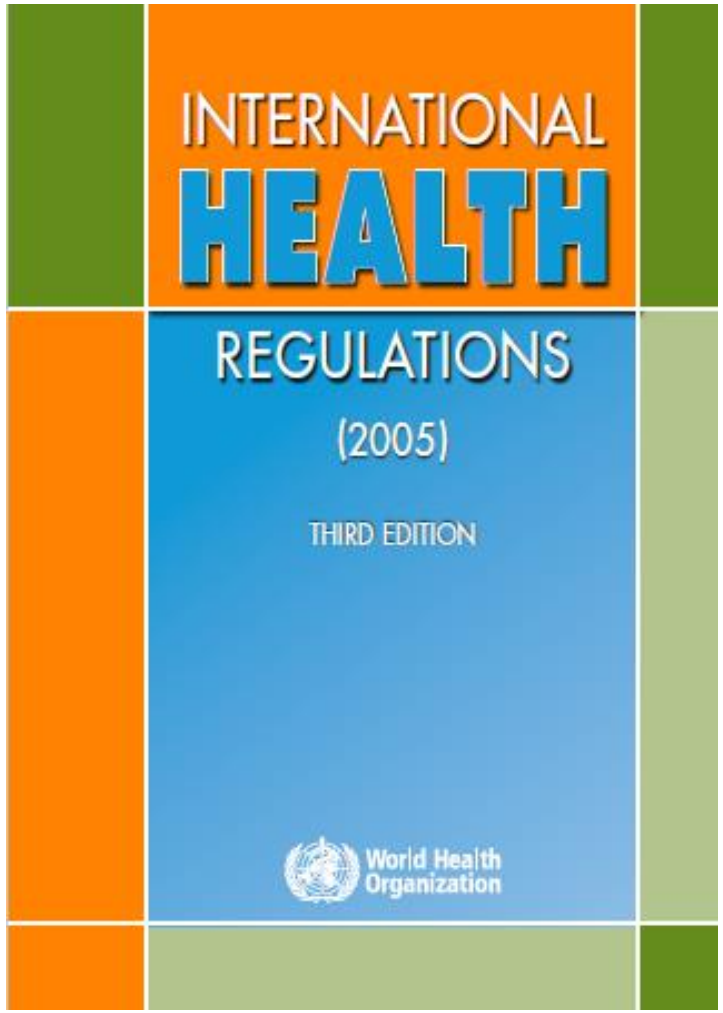
Overall risk
Global
High

Confidence in available information
Global
Moderate

https://www.who.int/publications/m/item/covid-19-global-risk-assessment

Why do we need better preparedness:

The crisis occurred amidst IHR implementation



Before COVID-19

Article 2 Purpose and scope

The purpose and scope of these Regulations are to prevent, protect against, control and provide a public health response to the international spread of disease in ways that are commensurate with and restricted to public health risks, and which avoid unnecessary interference with international traffic and trade.

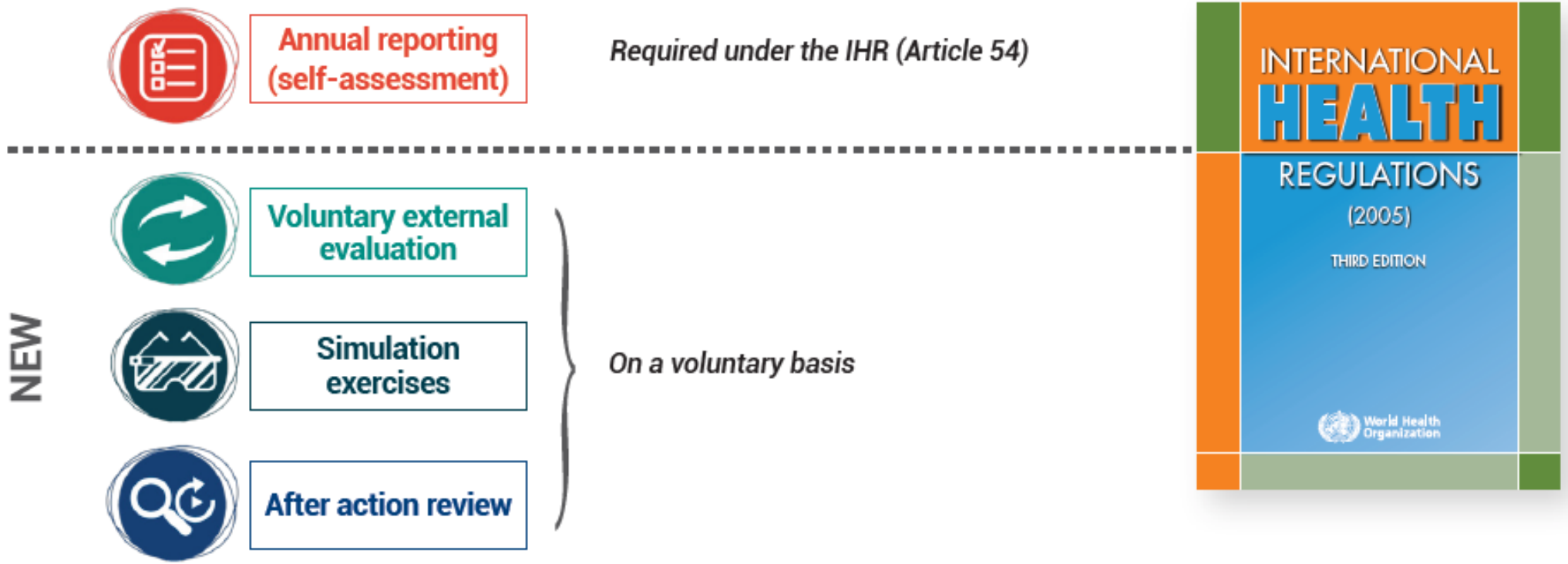
After amendment

Article 2 Purpose and scope

The purpose and scope of these Regulations are to prevent, **prepare for,** protect against, control and provide a public health response to the international spread of disease in ways that are commensurate with and restricted to public health risk and which avoid unnecessary interference with international traffic and trade.

https://www.who.int/publications/i/item/9789241580496

Figure 1.1 IHR Monitoring and Evaluation Framework



IHR Monitoring and Evaluation Framework post-2016:

- follows resolution WHA68.5 of the Sixty-eighth World Health Assembly
- noted by Sixty-ninth World Health Assembly
- endorsed by WHO Global Policy Group.

Is IHR implementation effective?

Measuring Global Health Security: Comparison of Self- and External Evaluations for IHR Core Capacity

Feng-Jen Tsai and Rebecca Katz

Published Online: 17 Oct 2018 | https://doi.org/10.1089/hs.2018.0019

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Abstract

In 2016, the World Health Organization moved from using only a self-assessment to monitor national implementation of the

To cite this article:

Feng-Jen Tsai and Rebecca Katz. Health Security. Oct 2018. 304-310. http://doi.org/10.1089/hs.2018.0019

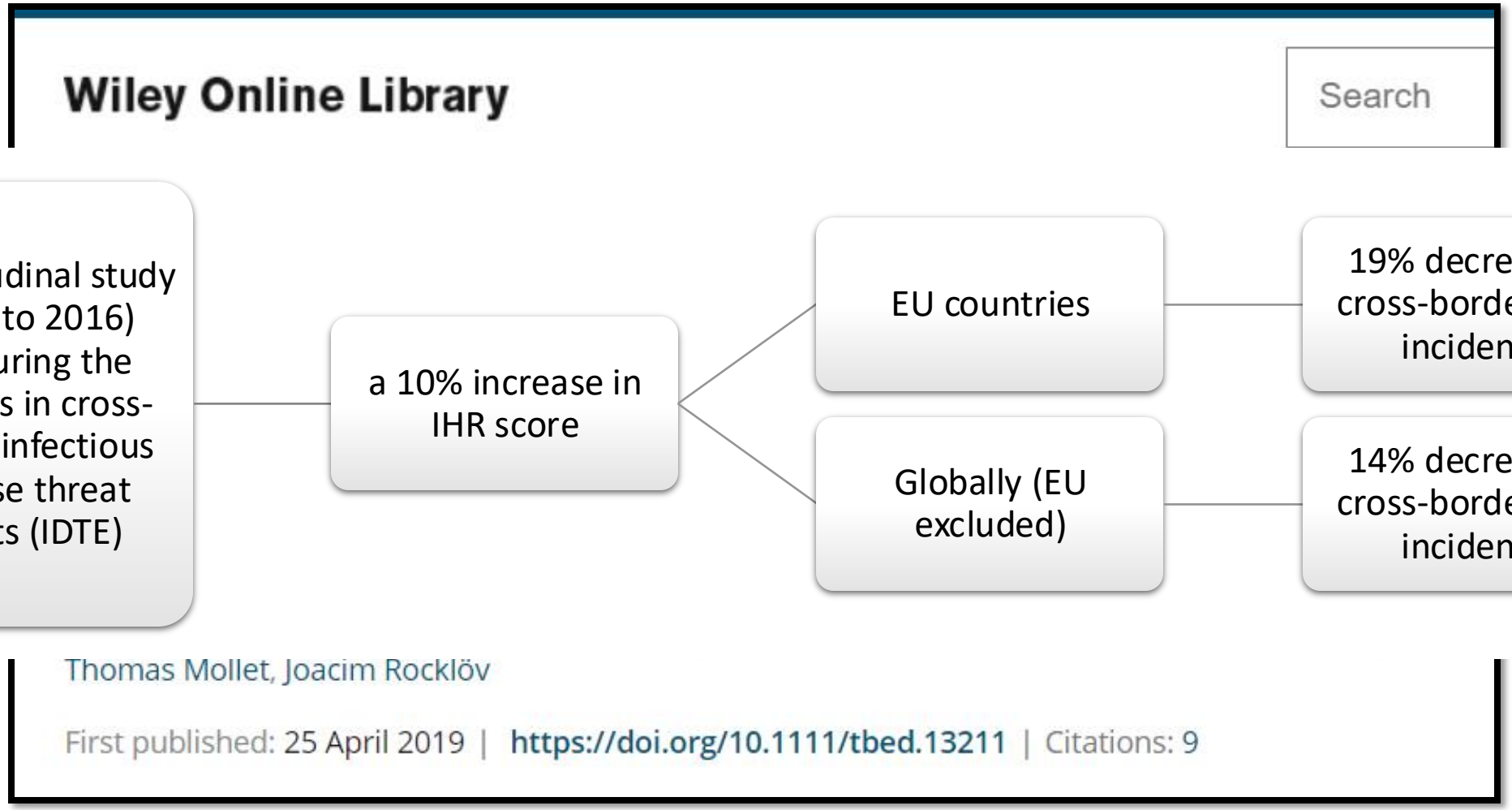
Published in Volume: 16 Issue 5: October 17, 2018

Results:

Of the 32 countries,

the score of **external** assessments is consistently **1 to 1.5 points lower** than **self-assessment** scores

Is IHR implementation effective?



Is IHR implementation effective?

Health security capacities in the context of COVID-19 outbreak: an analysis of International Health Regulations annual report data from 182 countries

Nirmal Kandel, Stella Chungong, Abbas Omaar, Jun Xing

Summary

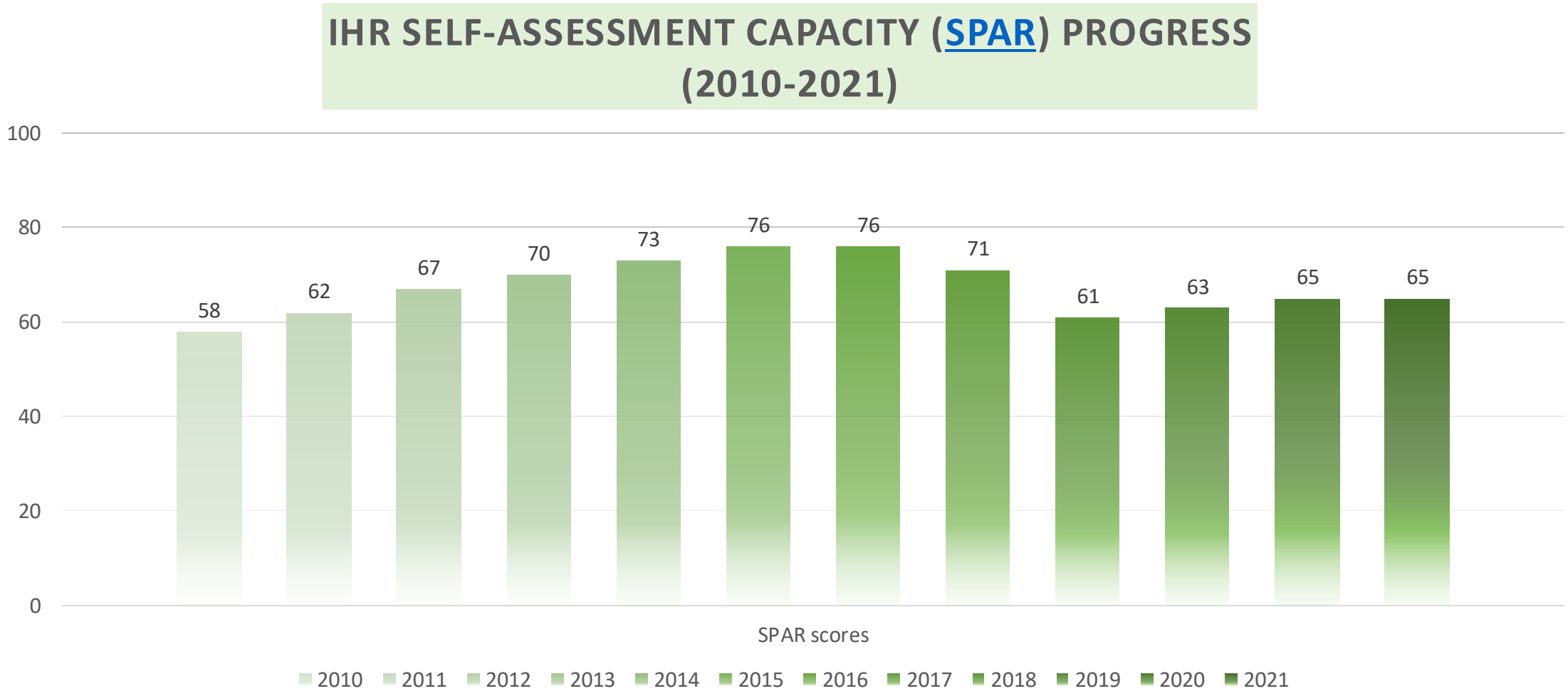
Background Public health measures to prevent, detect, and respond to events are essential to control public health risks, including infectious disease outbreaks, as highlighted in the International Health Regulations (IHR). In light of the outbreak of 2019 novel coronavirus disease (COVID-19), we aimed to review existing health security capacities against public health risks and events.

Lancet 2020; 395: 1047–53
Published Online
March 18, 2020
https://doi.org/10.1016/
S0140-6736(20)30553-5

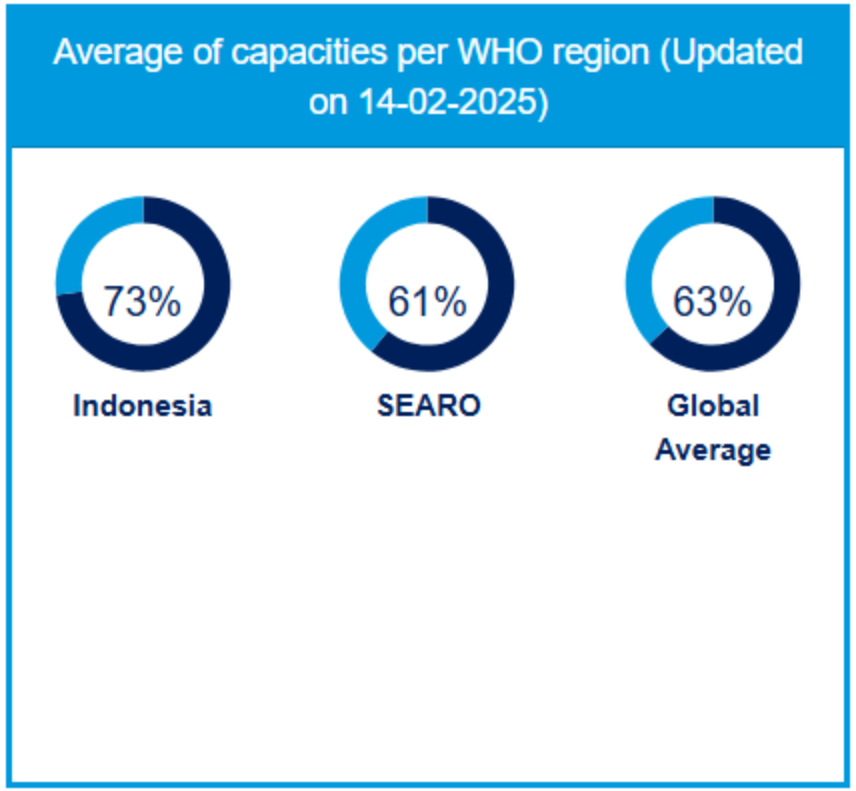
Results:

57% of 182 countries were operationally ready to **prevent, detect, and control an outbreak** of a novel infectious disease

Is IHR implementation effective?



Is IHR implementation effective?



Why do we need to strengthen health system:

It's crucial for preparedness

WORLD BANK GROUP

Trending Data | Around 700M live on less than $2.15 daily, the extreme povert...

News | Events

PAST EVENT

Strengthening Health Systems for Pandemic Preparedness and Other Emerging Challenges

COVID-19 reminded us of the world's vulnerability to communicable diseases, but the burden from non-communicable diseases (NCDs) is also growing. Focusing investments to reinforce health systems that can address both the changing burden of diseases and confront future pandemics will be critical.

SSM - Health Systems 4 (2025) 100052

Contents lists available at ScienceDirect

SSM - Health Systems

journal homepage: www.sciencedirect.com/journal/ssm-health-systems

ELSEVIER

SSM-HEALTH SYSTEMS

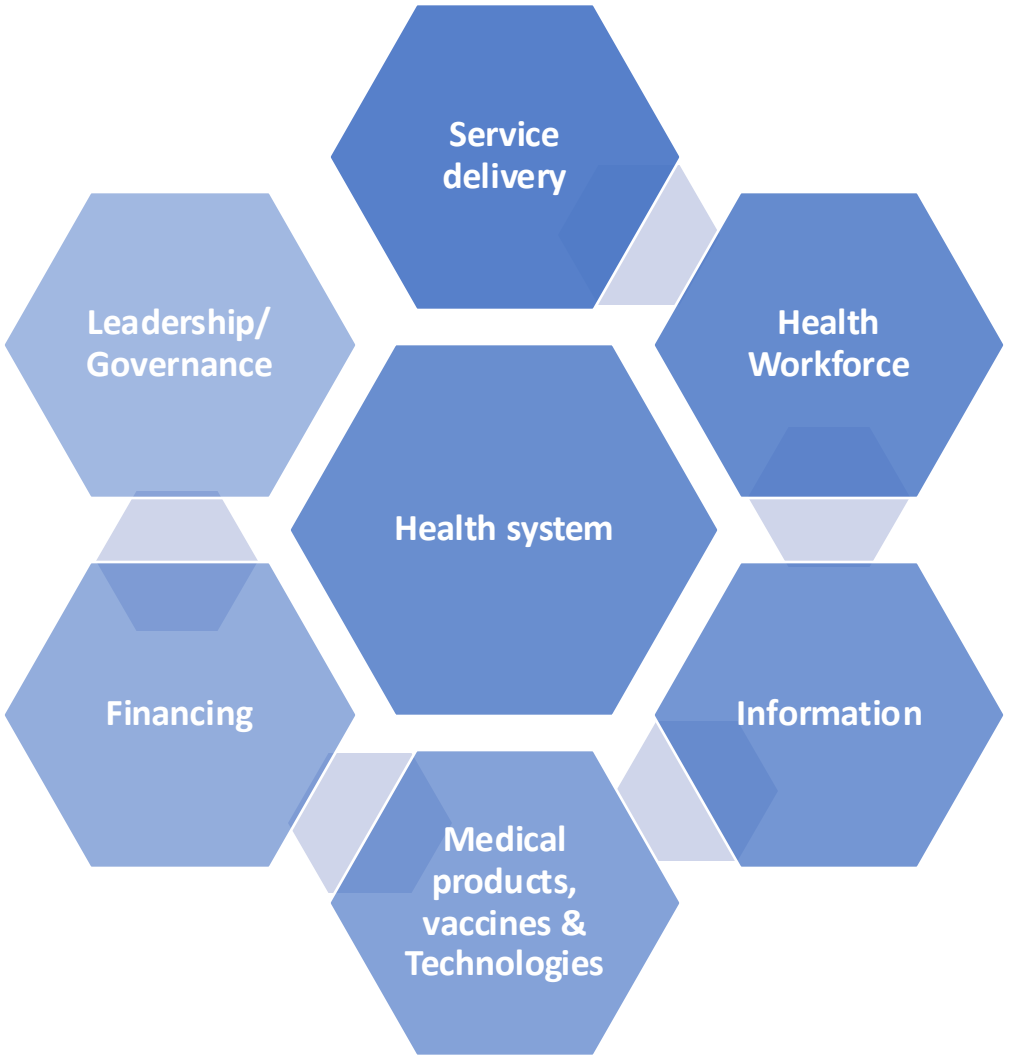
Check for updates

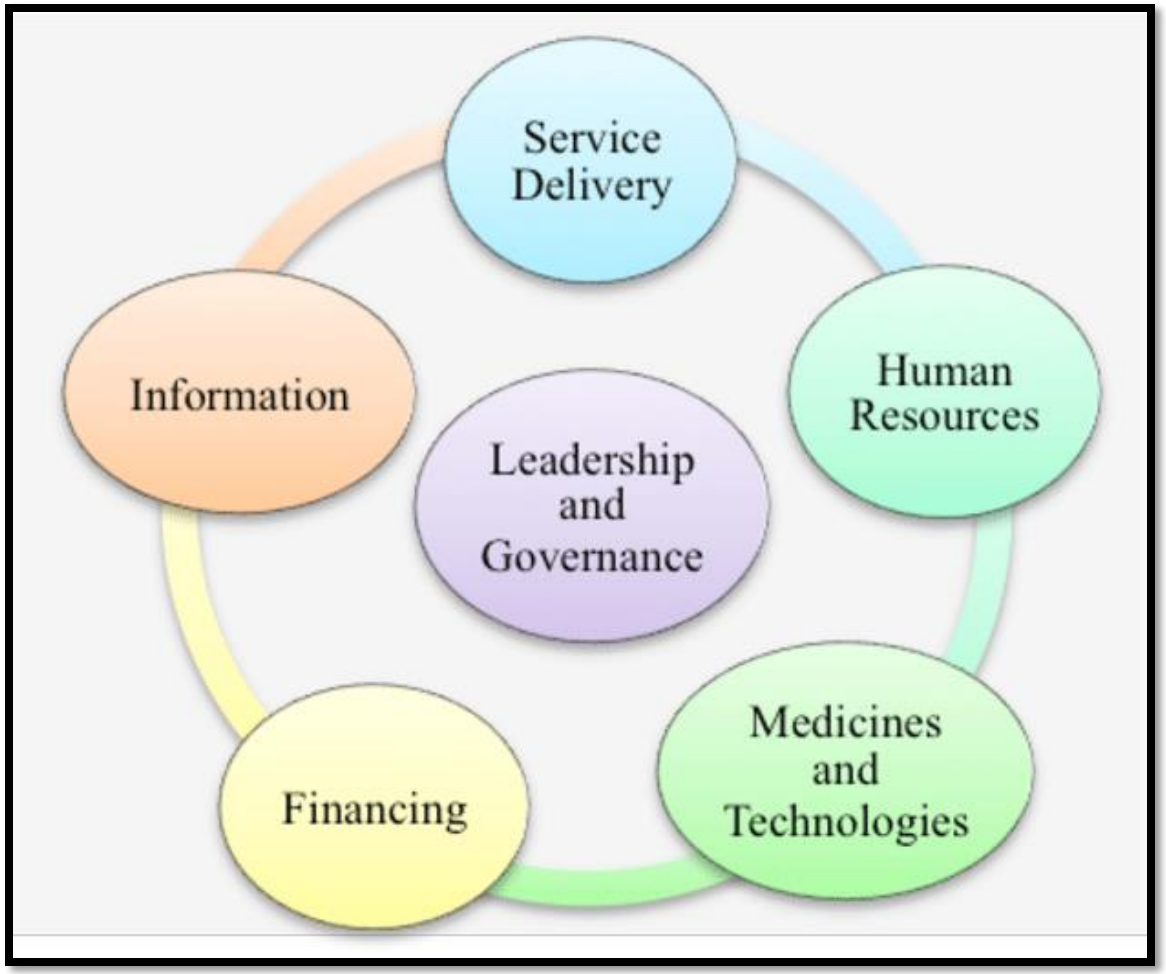
How can health systems better prepare for the next pandemic? A qualitative study of lessons learned from the COVID-19 response in Nigeria

Chinyere Cecilia Okeke[a,*,1], Nkolika Pamela Uguru[b], Benjamin Uzochukwu[a], Obinna Onwujekwe[c]

[a] Department of Community Medicine, College of Medicine, University of Nigeria, Enugu campus, Nigeria
[b] Department of preventive dentistry, University of Nigeria, Enugu Campus, Nigeria
[c] Department of Pharmacology, College of Medicine, University of Nigeria, Enugu Campus, Nigeria

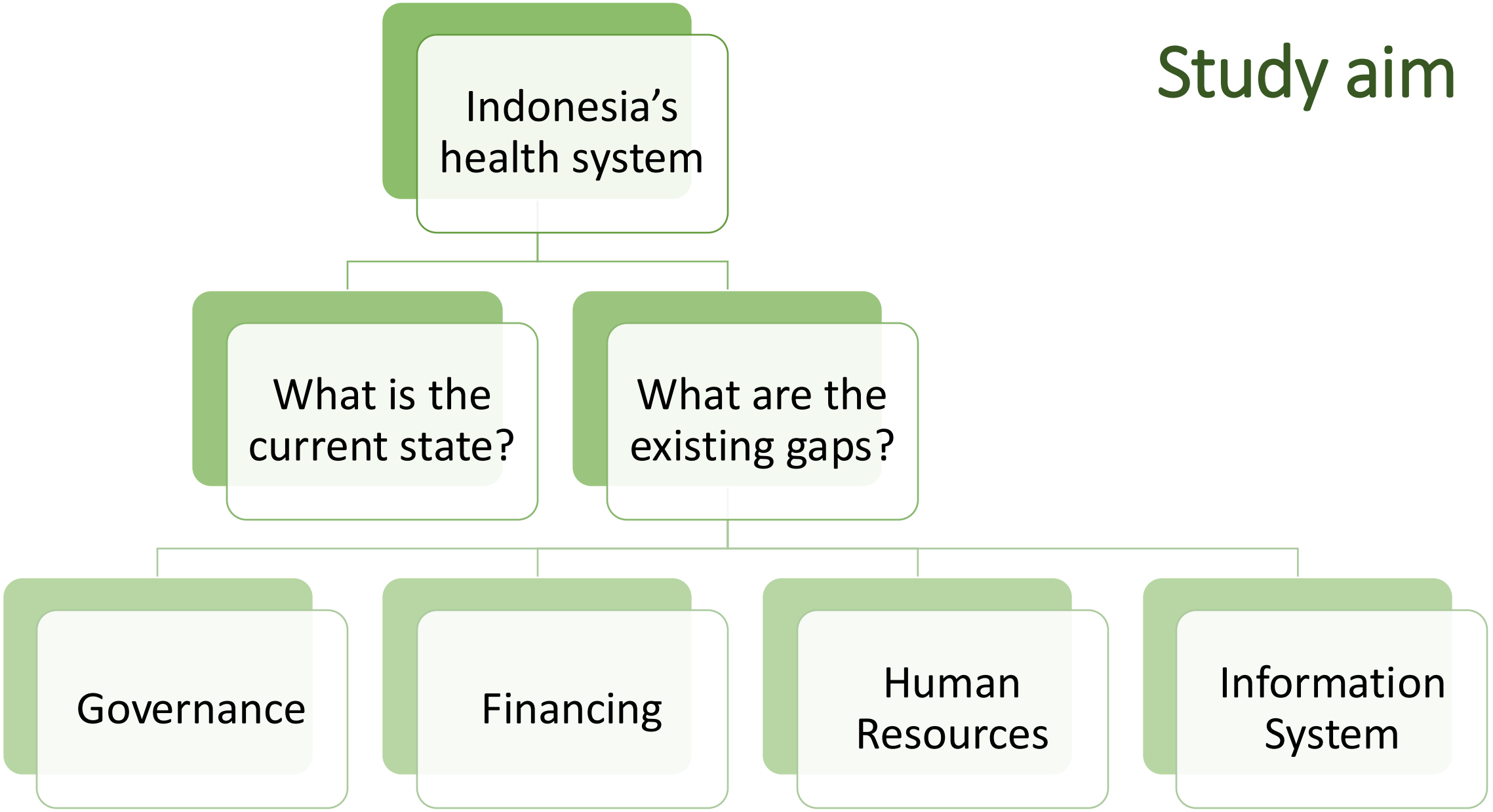
Health System Building Blocks





https://stikbar.org/ycabpublisher/index.php/PHI/article/view/110

Study aim


Indonesia's health system
What is the current state?
What are the existing gaps?
Governance
Financing
Human Resources
Information System

PLOS One

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RESEARCH ARTICLE

Global mapping of epidemic risk assessment toolkits: A scoping review for COVID-19 and future epidemics preparedness implications

Bach Xuan Tran, Long Hoang Nguyen, Linh Phuong Doan, Tham Thi Nguyen, Giang Thu Vu, Hoa Thi Do, Huong Thi Le, Carl A. Latkin, Cyrus S. H. Ho, Roger C. M. Ho

Published: September 23, 2022 • https://doi.org/10.1371/journal.pone.0272037

HEALTH SYSTEM

Financing

Human Resources

Information Systems

Governance

Challenges in Indonesia

Financing

Lack of health expenditure:

- 2.9% of GDP (2023)
- 3.1% of GDP (2016)

Human Resources

Lack of HW:

- 0.4–0.6 doctors per 1,000 population
- WHO's minimum recommendation is 2.3 doctors per 1,000 population

Information Systems

Disparities across regions:

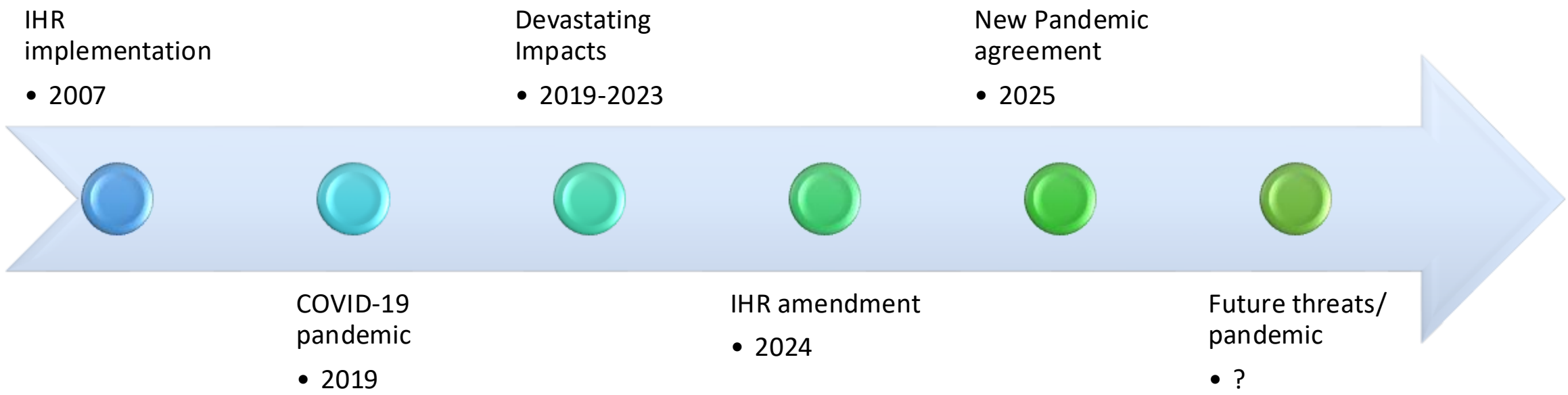
- Java has the most robust health information system infrastructure, followed by the Sumatra region
- Within Sumatra, only three (of 10) provinces are comparable to Java

Governance

Weak Governance:

- Indonesia’s government effectiveness scores ranged from -0.1 to 0.1 between 2016 and 2019,
- as the scale ranges from -2.5 (lowest) to 2.5 (highest)

Study Relevance



Study Methods

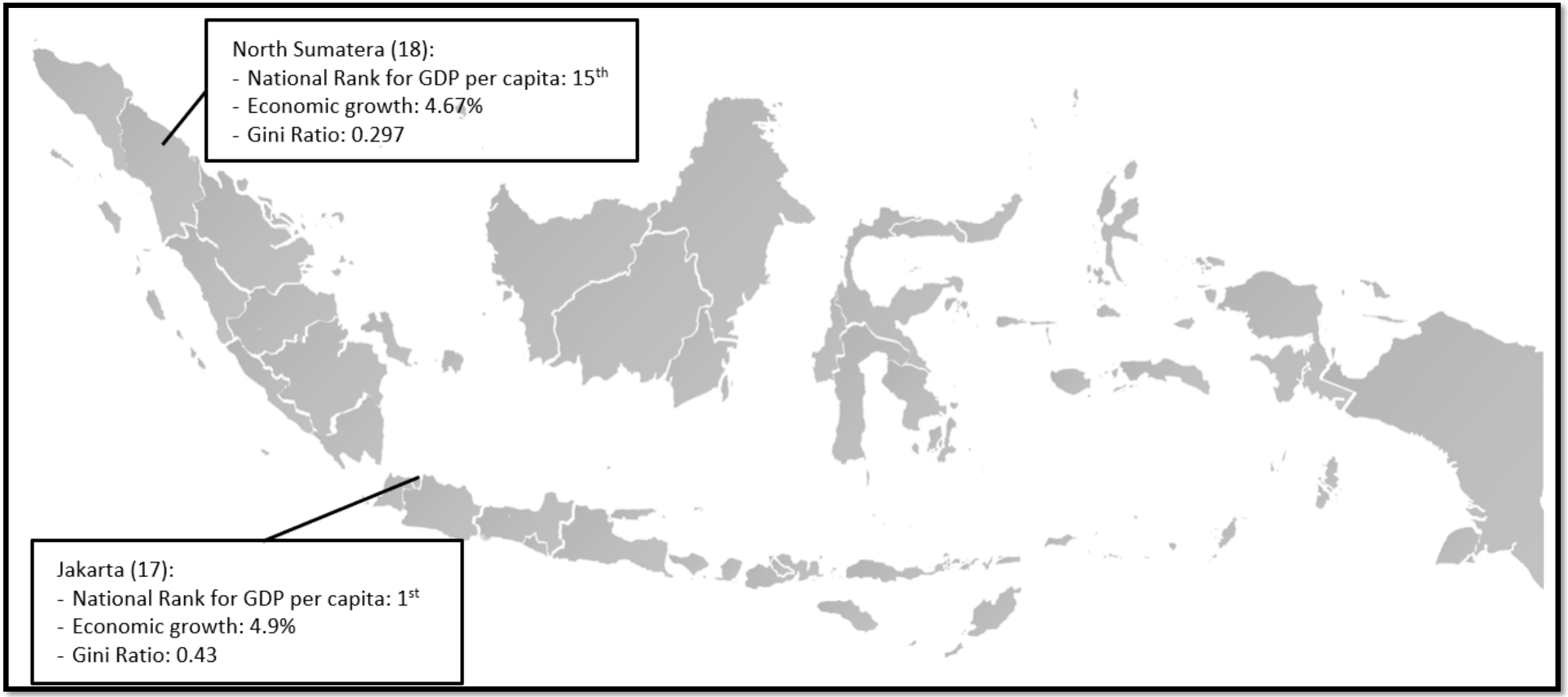
MIX-METHOD STUDY

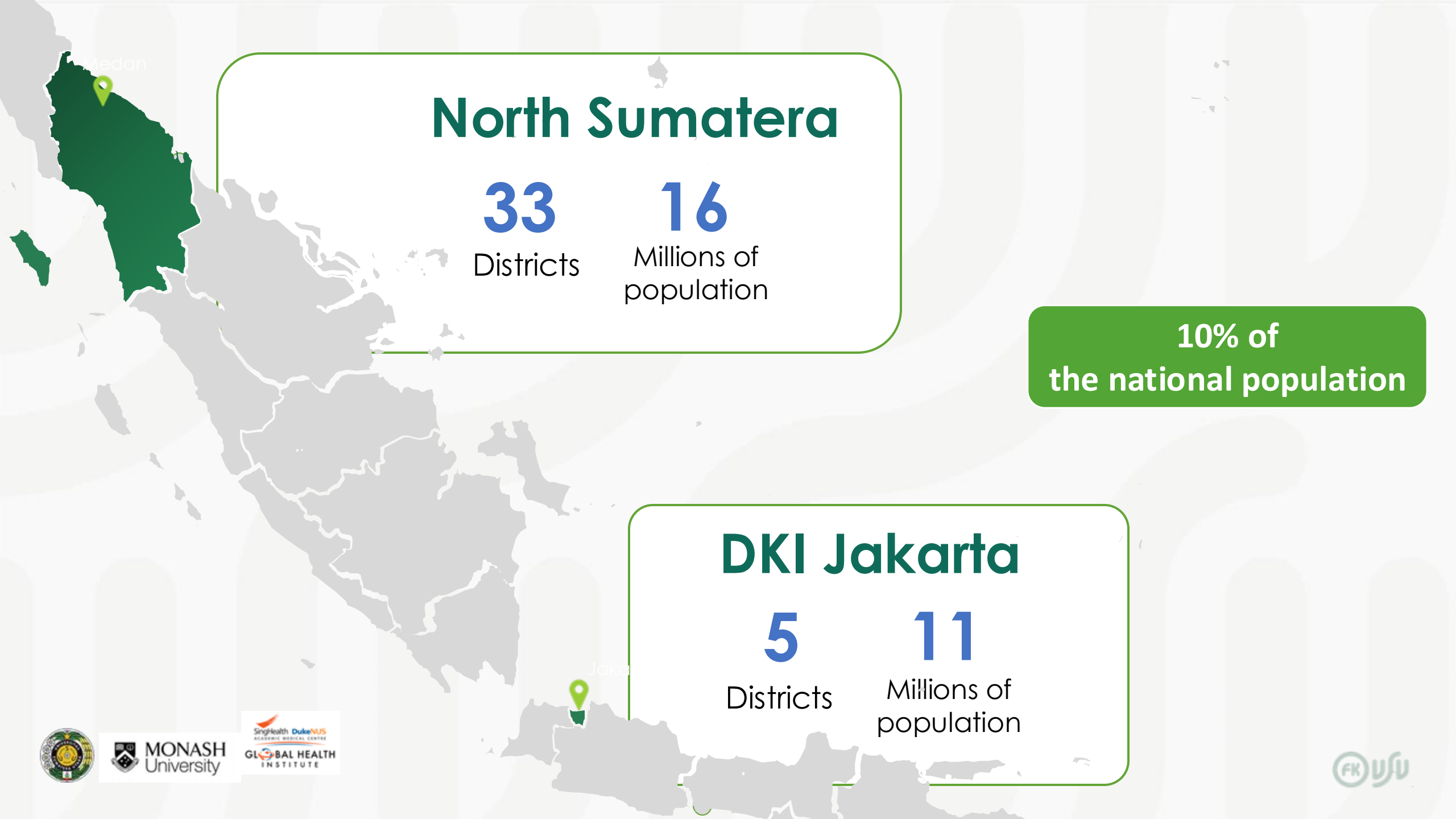
GUIDANCE INSTRUMENTS FOR FGD & INTERVIEW

RELEVANT INSTITUTIONS

Table 1. Tools for data collection across indicators	
Governance	**Financing**
- Public Health Vulnerability Assessment - Risk assessment and countermeasures for incidents with public health consequences - Trust in medical and health advice - Health system governance structure - Legal instruments (to implement IHR) - Coordination between health sectors and non-health sectors - Risk communication	- Total expenditure on health (THE)/capita - Total expenditure on health (THE) as % GDP - General government health expenditure/ General government expenditure - National financing for epidemic preparedness - National financing for public health emergency response - National financing for public health emergency response - Financial support to multilateral financial mechanisms
Human Resources	**Information System**
- Number of health workers per 10,000 population - Distribution of health workers - Guidelines for the training related to pandemic response of all personnel involved, including management personnel - Vacancy rate of health service providers at primary health care facilities in the past 12 months - Number of risk communication specialists - Number of social scientists, laboratory scientists/technicians, biostatisticians, IT specialists and biomedical technicians - Human resources for implementation of IHR - Workforce surge during a public health event - Animal health workforce (per 100,000 population)	- Health facility-based health information system - Surveillance system - Risk communication by health professionals - Modelling for incidents with public health consequences - Data integration between human, animal, and environmental health sectors - Electronic health record

Data collection sites





North Sumatera

33
Districts

16
Millions of population

10% of the national population

DKI Jakarta

5
Districts

11
Millions of population

Table 2. Data collection sites and methods

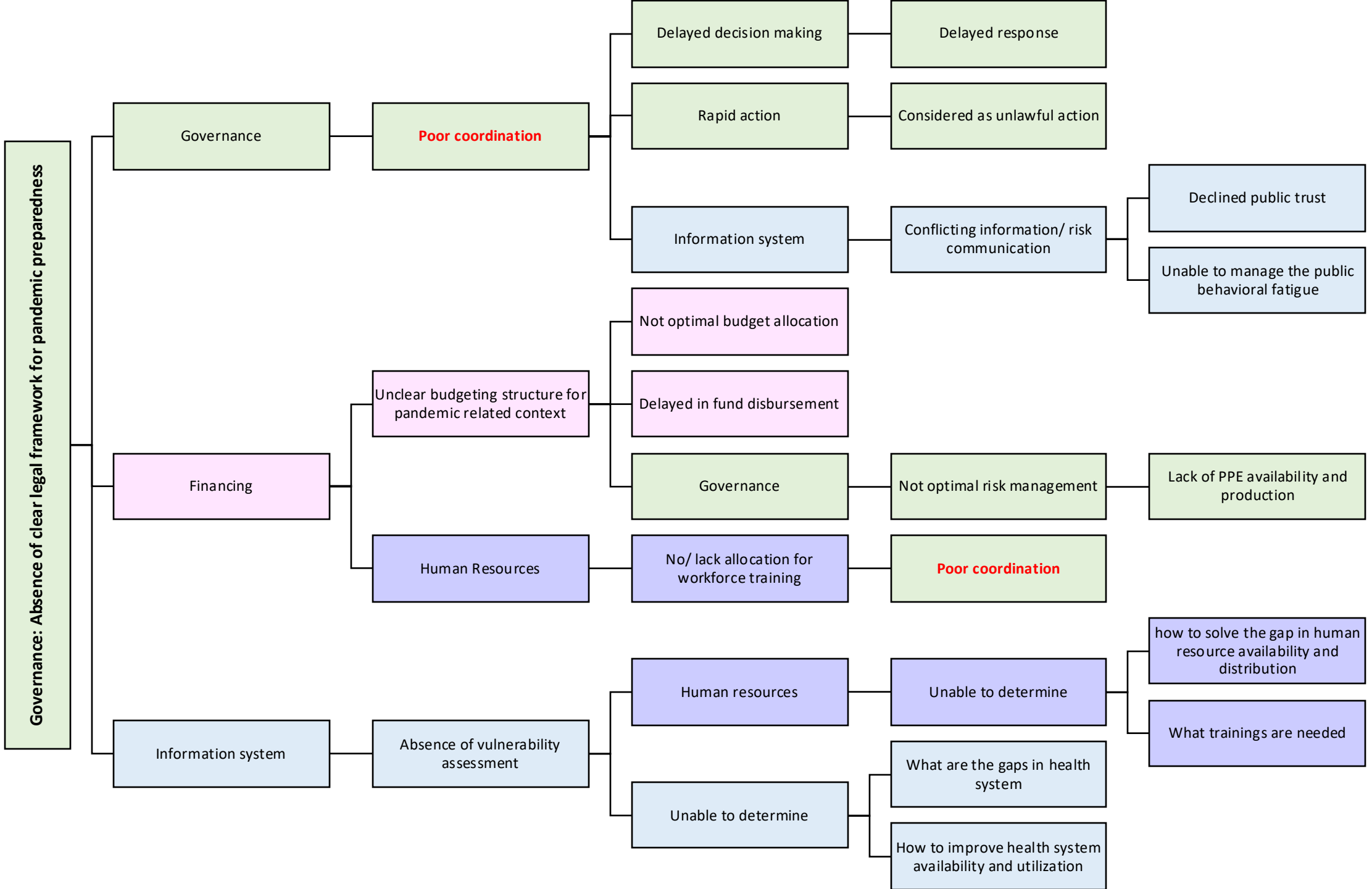
Sector	Jakarta		North Sumatra	
	Method	Number	Method	Number
Health Office	FGD	2	FGD (USU)	1
National Health Insurance	FGD	1	FGD	1
Transportation			In-depth Interview	1
Information and Telecommunication			In-depth Interview	1
Public Health Laboratory			FGD (USU)	1
COVID-19 Taskforce	FGD	1	FGD (USU)	1
Disaster Management Agency	FGD	1	FGD	1
Health Quarantine Centre			FGD	1
Animal Husbandry Office			In-depth Interview	1
Financial and Asset Management Agency			FGD	1
Total	5		10	

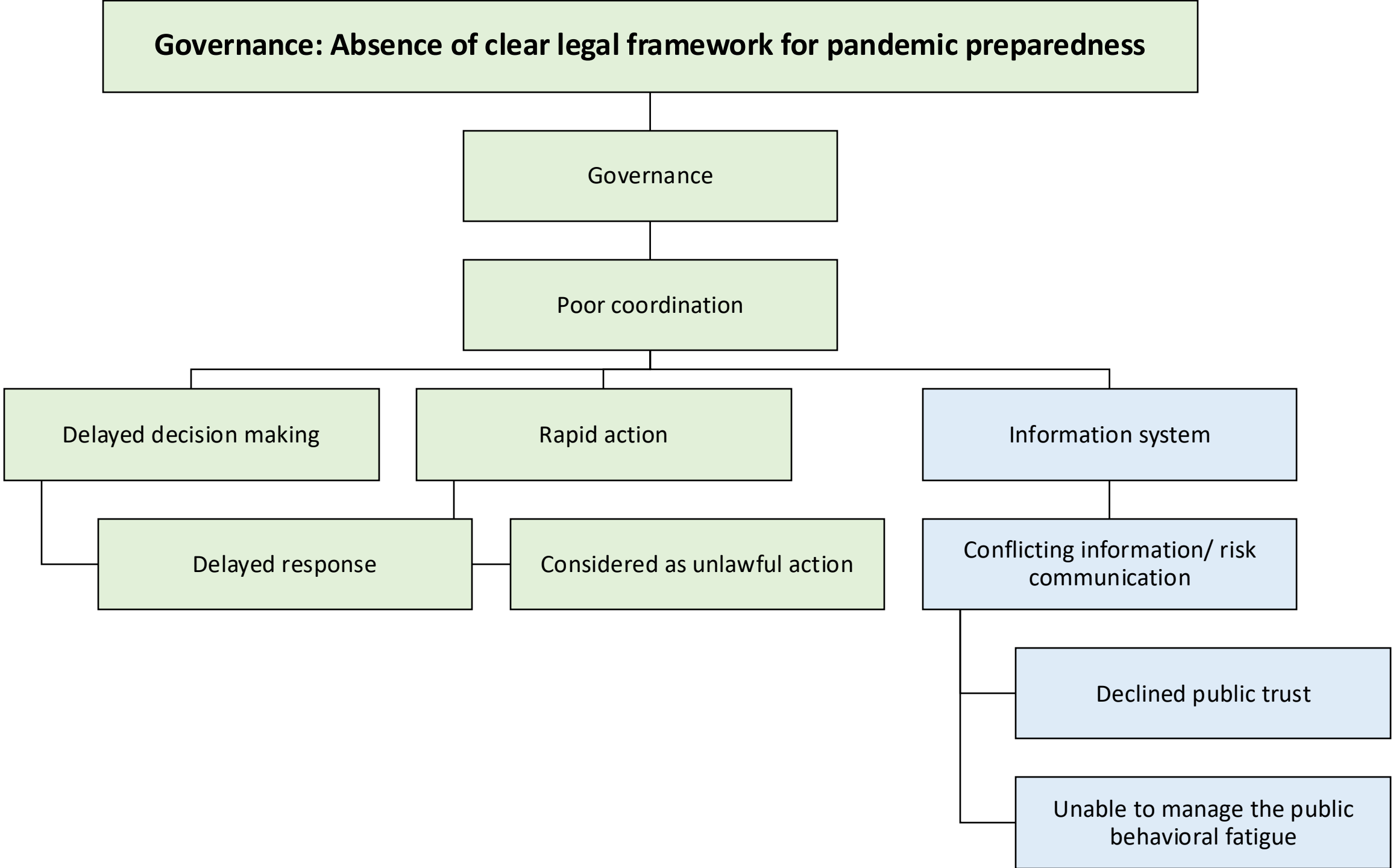
Study Findings

Indicators	Theme	Subthemes
Governance	Improved Governance Capacities	- Improved Preparedness Capacity Following COVID-19 - Risk Management Practices During the Pandemic - Availability of Contingency Planning
	Ongoing Governance Gaps	- Absence of Legal Framework - Infrequent and Informal Vulnerability Assessments - The decline of Public Trust and Behavioral Fatigue - Weak Coordination and Sectoral Ego - Delayed Regulatory Action
Financing	Health Expenditure	- Increased Health Expenditure
	Health Budgeting and allocation	- Flexible Fund Allocation - Lack of Specific Budget for Pandemic
	Multilateral financing	- Diverse perspective on viewing international support

Study Findings

Indicators	Theme	Subthemes
Human Resources	Workforce availability	- Changes in Health Workforce Availability in Indonesia - Persistent Gaps in Workforce Adequacy - Poor distribution of health workforce - Incomplete human resources data
	Workforce competencies	- Uneven Access to Training Across Workforce Groups - Gaps in Pandemic Preparedness Training - Unclear criteria in assigning risk communication specialist
	IHR knowledge and practice	- Recognized Importance of IHR
Information System	Presence of Multipurpose Health Information Systems	- Adoption and Regulatory Requirements for Electronic Health Records - Implementation of Integrated Health Information Tools for Service Delivery - Surveillance Functions and Systemic Challenges - Limited Use of Modelling for Planning and Forecasting - Health Information System Challenges and Gaps


Governance: Absence of clear legal framework for pandemic preparedness
Governance
Poor coordination
Delayed decision making
Delayed response
Rapid action
Considered as unlawful action
Information system
Conflicting information/ risk communication
Declined public trust
Unable to manage the public behavioral fatigue
Financing
Unclear budgeting structure for pandemic related context
Not optimal budget allocation
Delayed in fund disbursement
Governance
Not optimal risk management
Lack of PPE availability and production
Human Resources
No/ lack allocation for workforce training
Poor coordination
Information system
Absence of vulnerability assessment
Human resources
Unable to determine
how to solve the gap in human resource availability and distribution
What trainings are needed
Unable to determine
What are the gaps in health system
How to improve health system availability and utilization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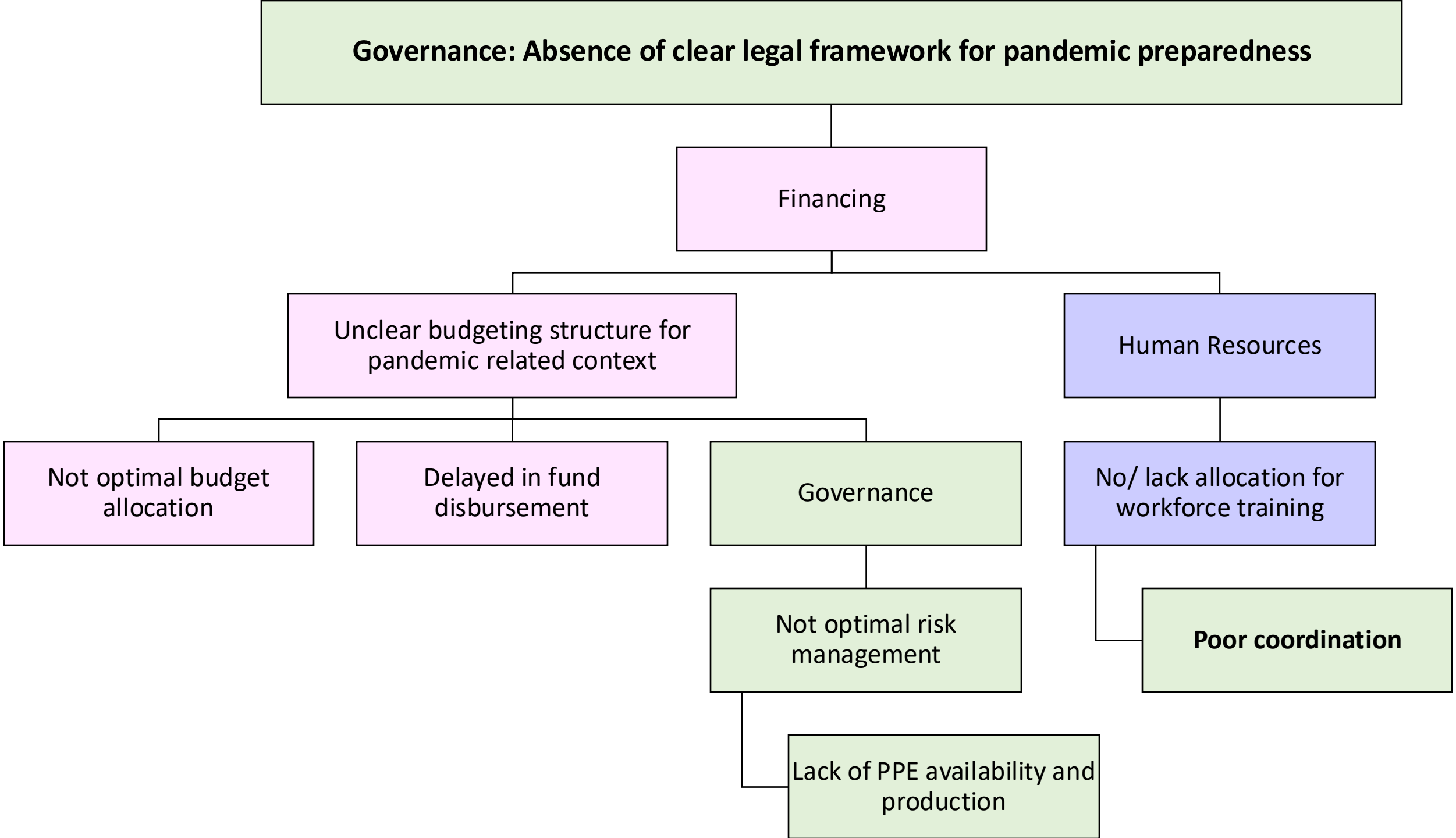
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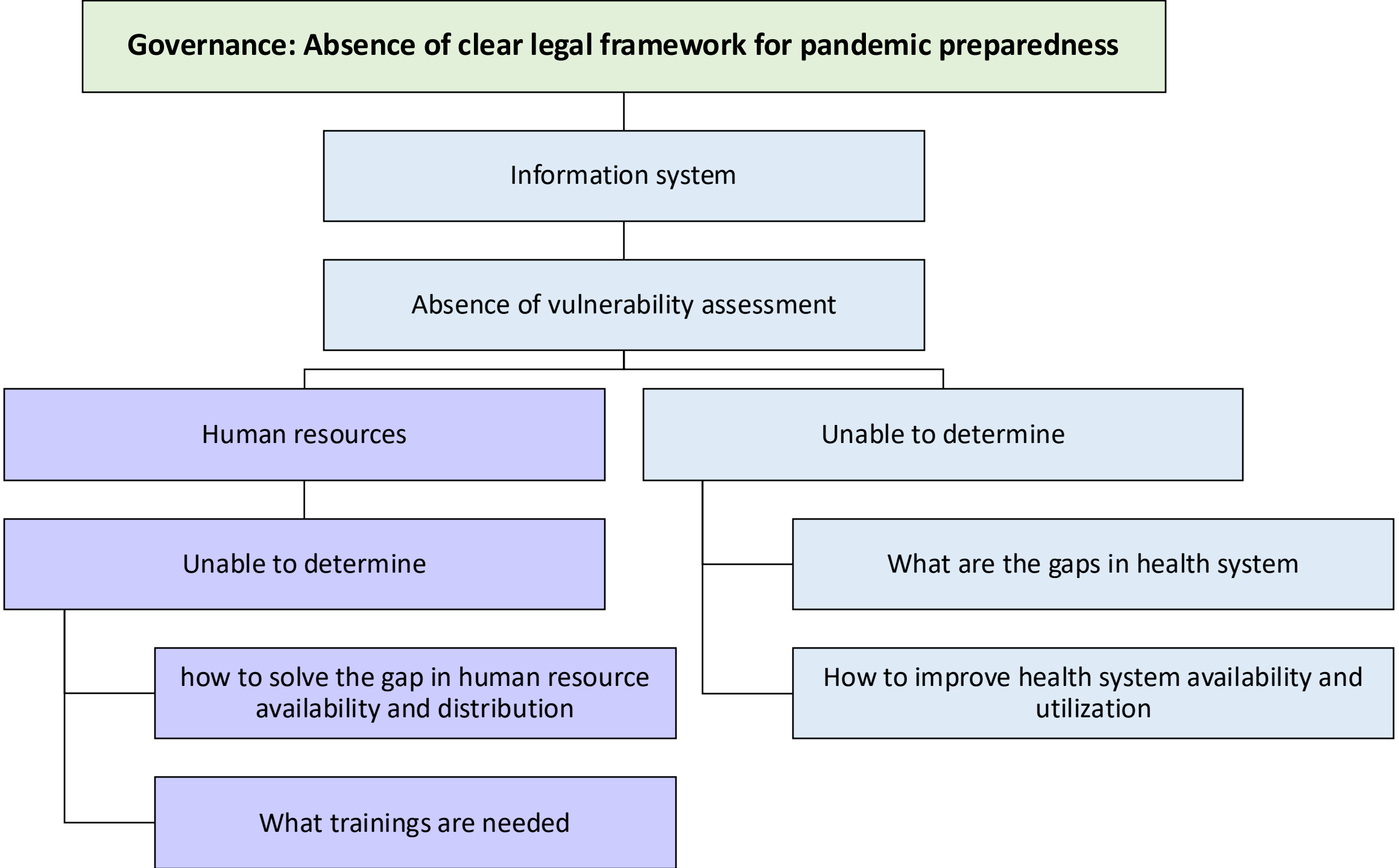
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Conclusion

- Despite notable improvements, Indonesia's health system remains weak in pandemic preparedness.
- A key root cause: Absence of a clear legal framework for pandemic prevention, preparedness, and response.
- The gap persists, especially at the provincial level, where capacities and risks vary widely.

Recommendation

Establish a Provincial Communicable Disease Control Agency (PCDCA) to lead pandemic prevention and response

Key Features	Legal mandate to regulate, coordinate, and act on pandemic threats
	Operational at provincial level to reflect local challenges and resources
	Integrated with national systems for early warning, surveillance, and response
Steps to Implementation	Amend national legal frameworks to enable PCDCA formation
	Develop standard guidelines for agency structure, authority, and roles
	Pilot in selected provinces with high-risk profiles
	Scale and integrate across all provinces with national coordination

Acknowledgement

- I would like to express my deepest gratitude to the **Singhealth DukeNUS Global Health Institute (SDGHI)** for their full support of **this project**, including the invaluable opportunity to undertake a two-week **fellowship** in Singapore
- I would also like to thank **Universitas Sumatera Utara (USU),** especially **Dr. Inke Nadia Lubis**, for her continuous support and encouragement throughout this initiative
- Appreciation is extended as well to the team from **USU** and **Monash University Indonesia**, whose generous contribution in terms of expertise, resources, and active collaboration played a crucial role in shaping this project
- My sincere thanks also go to the **SDGHI administrative team**, whose excellent coordination and logistical support ensured the smooth execution of my fellowship activities

Thank You