



# THE FUTURE OF U.S. NATIONAL HEALTH SECURITY

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“ WE’D LIKE TO THINK THAT NATIONAL HEALTH SECURITY IS ACHIEVED WHEN OUR COUNTRY AND ALL OF OUR COMMUNITIES TOGETHER, ARE PREPARED TO RESPOND AND RECOVER FROM THE HEALTH IMPACTS OF EMERGENCIES. TO DO THIS, YOU NEED STRONG, MODERN NIMBLE HEALTH AND EMERGENCY RESPONSE SYSTEMS. YOU ALSO NEED TO HAVE RESILIENT PEOPLE. THAT MEANS IDEALLY THAT YOU HAVE PEOPLE WHO ARE HEALTHY.

PREVENTION BECOMES VERY IMPORTANT. ”

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Dr. Lurie, Former Assistant Secretary for Preparedness and Response (ASPR) at the US Department of Health and Human Services (HHS) 2009 to 2017.

# INTRODUCTION

## Goals of U.S. National Health Security

**“U.S. National Health Security** actions protect the nation’s physical and psychological health, limit economic losses, and preserve confidence in government and the national will to pursue its interests when threatened by incidents that result in serious health consequences whether natural, accidental, or deliberate.”

– U.S. National Health Security Strategy (2019)

**Those entrusted with the protection of domestic Health Security in the United States face a future with challenges that are likely to be very different from those they face today. Powerful drivers of change such as population growth, climate change, resource scarcity, inequality, polarization, individualism, and decreasing trust, are already reshaping the landscape in which they operate causing issues with delivering on their mission and achieving successful health outcomes.**

The covid-19 pandemic exposed this situation, painfully and tragically, bringing our domestic health security issues to the forefront of political, media and public conversation. The shifting social, political and economic landscape impaired U.S.’s ability to implement it’s well-crafted Health Security Strategy and implementation Plan, regardless of it’s top preparedness ranking in the 2019 Global Health Security Index (GHSI), a comprehensive benchmarking of preparedness and response. In contrast, the U.S. ended up with some of the worst outcomes amongst its wealthy nation peers.<sup>1</sup> Causing many around the world to ask, “how did that happen”? They also began questioning the validity of the GHSI as well and undertook research to identify how this variance occurred<sup>4</sup>.

**The criteria for assessing national preparedness did not include key social, economic and political determinants when ranking preparedness.**<sup>1</sup> The 2019 index only assessed the strategic plans, capabilities and assets of the emergency health systems and procedures. By not having these determinants, it was blindsided by the critical implications that would affect a nations ability to implement their plans—both the management and mobilization of their people, assets and systems. With learnings from the pandemic, the GHSI has since updated their criteria and re-ranked countries declaring that “All countries—across all income levels—remain dangerously unprepared to meet future epidemic and pandemic threats”.<sup>6</sup> Based on outcomes, it is evident that the current approaches and methods aren’t including these determinants as part of their strategic planning. This leaves one to ask, how might a nation better include and address these determinants of health security outcomes as part of developing strategy and planning? What implications and transformations in the current health security enterprise might need to be addressed? Adjusted?

For my semester long project as part of my coursework for the Fall 2021 Futures Research at the University of Houston (U of H), I chose to explore this topic as a means of practically applying the methodology, tools and mindsets of futures and strategic foresight. The work is anchored in the U of H’s Framework, particularly Scanning to Visioning which aligned with class objectives. As part of “Futuring” I used the U of H Scenario Archetypes but was also influence by Thomas Chermack’s book, Scenario Planning in Organizations (2011) and critical uncertainties as a means of developing the underlying base for the scenarios. What you will find here are findings and highlights of the work done, and which I am still pursuing as as an area of research.

### University of Houston Foresight Framework<sup>2</sup>



<sup>1</sup>-Jessica A. Bell and Jennifer B. Nuzzo, Global Health Security Index: Advancing Collective Action and Accountability Amid Global Crisis, 2021. Available: [www.GHSIndex.org](http://www.GHSIndex.org) <sup>2</sup>University of Houston Framework Foresight Model ([Link](#)). <sup>3</sup>University of Houston Framework Foresight Mode ([Link](#)) <sup>4</sup>. Keim, M., & Lovullo, A. (2021). Validity of the National Health Security Preparedness Index as a Predictor of Excess COVID-19 Mortality. *Prehospital and Disaster Medicine*, 36(2), 141-144. <sup>5</sup>. “The evolution of the GHS Index”, Global Health Security Index, NTI, John HopkinsCenter for Health Security & Economist Impact. Dec. 2020 ([link](#)) <sup>6</sup>. “2021 Global Health Security Index Finds All Countries Remain Dangerously Unprepared for Future Epidemic and Pandemic Threats”, Global Health Security Index, NTI, John HopkinsCenter for Health Security & Economist Impact. Dec. 2020 ([link](#)) <sup>7</sup>. Chermack, Thomas. “Scenario Planning in Organizations”, Berrett-Koehler Publishers, 2011.

## Key Questions

What is the future operational environment in which a National Health Strategy would need to function?  
 What health security and broader landscape needs, barriers, opportunities might exist that the strategy would need to address?

## The Drivers



**Rapid urbanization**—Increasing rate of growth in urban areas affecting population density, sanitation needs, and vulnerability and threats.



**Changing demographic**—Unequal rate of population growth and aging, costs of care, and increasing chronic illness magnify risks.



**Polarized Individualism**—Growing rate of individualism and polarization ignite conflict of individual vs collective needs /rights.



**Confidence in Institutions**—Declining level of trust in government, academia, and media affect ability to lead and social cohesion.



**Resource Inequalities**—Declining level of access to essential health, education, and wealth affect social unrest and calls for change.



**Universal Information**—Increasing access to and use of information increases rate and impact of disinformation, misinformation.



**Transformative Technology**—Speed, scale and integration of innovation with environments and biology bring new opportunity /risk.



**Global Interdependence**—Continuing dependence on global commerce and travel increases risk / speed of contagion and access to resources.



**Agile Digital Governance**—Increasing rate of digitization, business and development models bring new capabilities, interactions and threats.



**Climate Change**—Increasing rate, impact, and scale of climate events place pressure on health security systems, affecting resource security.

## The Scenarios

### BASELINE



### The More Things Change, the More We Stay the Same

**Key Shift:** Cycles of action and complacency leave much unchanged. Increasing conflict over individual rights vs community, increasing chronic health and difficulties identifying disinformation continue to be challenges, limiting the capabilities of the national health security enterprise.

### NEW EQUILIBRIUM



### A Tale of Two Nations

**Key Shift:** Declining cohesion results in more pronounced split between classes, with wealthier 'elite' increasing their personal protection and immunity while the underserved and middle class continues to see a rise in vulnerability. This builds cohesion and support for emergency response efforts.

### COLLAPSE



### One Nation, Over All

**Key Shift:** Continued decline in cohesion and ability of government leaders and the public to align in a consensus-based democracy. There is a complete and constant 'securitization' of health as a means to address the increased frequency and scale of emergency health events.

### TRANSFORMATION



### National Immune System

**Key Shift:** A shift to individual and shared public preventative health are supported by changes in world views and enabled by integrated technology and data. This further democratizes access to trusted resources, advance risk detection and rapid, customized, efficient, emergency response.

## Transformation Scenario Opportunities

- 1 Participatory Strategy & Policy Design.** Empower state, local, and private communities with the authority to co-create health strategies and emergency policies based on local data-driven and expertise.
- 2 Adaptive Capacity Operating Model.** Shift towards a more agile, capabilities-driven vs threat based approach to national health security strategic planning and infrastructure capacity response.

### Client(s)\*

Assistant Secretary for Preparedness and Response (ASPR), U.S. Department of Health & Human Services

\*This is hypothetical for the context of the course and this exercise. They are the owners of the National Security Strategy, it's implementation Plan, the Biodefense Plan and Pandemic Preparedness Plan.

### Key Questions

- What is the future operational environment in which a National Health Strategy would have to function?
- What health security needs might exist that the strategy would need to address?
- What are the most critical national health security threats and public health and medical preparedness, response, and recovery challenges that warrant increased attention? What recovery opportunities or promising practices should be capitalized on?

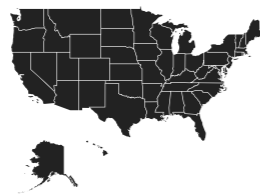
### National Health Security Timeline Horizon

H1 > 2023-26

H2 > 2027-30

**H3 > 2030-35**

### Geographical Scope



The United States

## Domain Description

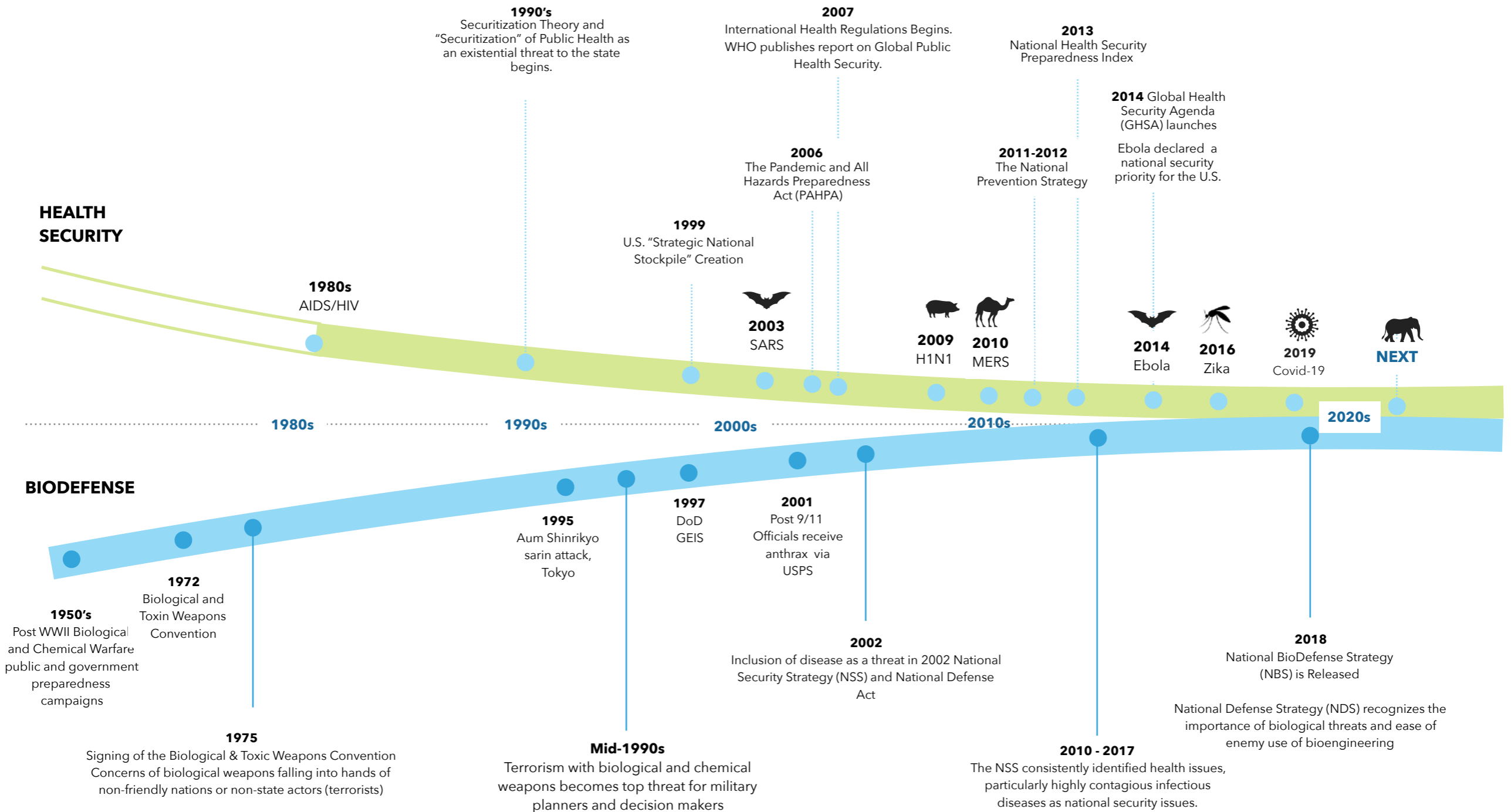
In today's connected world, health security is a global issue. Yet it is the responsibility of each nation to do it's part by being prepared domestically and ready to respond to public health emergencies and events when they reach their border. For this reason, this work focuses on the United States National Health Security enterprise, its guiding strategy and implementation plan and the the broader trends, inputs, plans and predictions influencing it's domains.

## Domain Map



## Key Stakeholders & Roles

	Examples	Importance to Domain
<b>Federal Government</b>	Dept. Of Health & Human Services, Medicare, CDC, FDA, Veteran Affairs, Homeland Security, FBI/Intelligence	HHS creates and leads Health Security management in collaboration with other federal agency stakeholder. They also manage the biodefense strategy that is created by the National Security Council. Provide communication to the broader public on national emergencies. Partner with private sector to innovate on medical counter measures (e.g. vaccines, test, etc.). Provide coordination for the states.
<b>State, Local and Tribal Leadership</b>	State and Local Government, HHS Offices, Governor and Support Team	Localize the security strategies and logistics for their constituents. Help to interpret, implement and enforce policy and mandates. Share state health data and information back to Federal government.
<b>Emergency Response Teams</b>	FEMA / Disaster Medical Team,	Plan and implement "boots on the ground" logistics during public health events. Run exercise simulations as part of training. Orchestrate emergency hospital set ups, getting emergency medication for displaced or sheltering people. Leading local responder teams
<b>Public Health Care &amp; Medical Care Systems</b>	Public Health & Medical Providers	Monitor patients population for reportable diseases and provide health care to individuals during emergencies.
<b>Pharma, Labs, Private Sector Manufacturing</b>	Pharma Scientists, Lab Technicians & Medical Counter Measure Innovators & Manufacturers	Contract and/or partnering with federal agencies to support ongoing medical countermeasure innovation and manufacturing. Share reportable disease information with CDC.
<b>U.S. Constituents</b>	U.S. Constituents & Citizens	Receive advance warning of potential and spreading diseases and information on how to protect themselves and others. Asked to support efforts to prevent, monitor and mitigate disease spread and illness.
<b>Animals, Agriculture &amp; the Environment</b>	Animals, Agriculture & the Environment	Potential threats and requirements for Humana health. Zoonotic diseases spread from animal to human while some are also a food source. Animal and agricultural disease can cause food scarcity. Medical waste from one time use only person protective gear has doubled during covid.



**Key Increases**

- Increasing speed of disease spread, frequency of zoonotic disease emergence (particularly corona respiratory illnesses) and scale of emergency and impact to people, economy and environment.
- Increasing number of policies, rules and regulations to try to address increasing threats and development of capabilities to 'fight' them in response.
- Increasing use of "Securitization" within government to focus attention, assets, resources and budget on an existential emergency threats to the nation.

## Issues + Questions on the Future of Emergency Health Response System



**WORKFORCE:** There are a lot of good people engaged in emergency response preparedness, but burnout and staffing are and will be challenges in the future.



**FUNDING:** Budgets and funding for emergencies is often a challenge since it requires convincing others to spend money to prepare for 'just in case'. Post Covid this may shift for some types of emergencies. Private sector donations happen but during PHE aren't something to count on. Some companies show up with 'miracle' donations,



**RESOURCE MANAGEMENT:** District, city, and state, borders sometimes creating barriers to efficient and agile response by hindering the sharing of critical resources across lines.



**WAYS OF WORKING:** Fiefdoms and layers of command create complicated processes and siloes, hindering collaboration.



**MINDSET:** There is a strong mindset of 'this is how we've always done it' which draws on previous experience to address events but may not always be effective with new threats.



**CAPABILITIES:** Having access to contextual data and data from across systems in the future could better enable collaboration and better planning and response.

**Interview w/ Emergency Management and Counterterrorism Professional, experience as Logistics Section Chief, (FEMA), National Disaster Medical Support, Response Coordination (HHS).** Medical surge capacity for the state of Louisiana and the city-wide plan for pandemic influenza (later used for Covid) as well. Individual agency pandemic plans for NY state and New York City Dept of Health in their bureau of environmental emergency preparedness and response whose purview is occupational health and safety of responders during emergencies and disasters.

If a Futurist Could Answer any Question About National Health Security 15 Years in the Future, What Would You Ask?

“ How prepared will we be to respond to these emerging health threats from a STRATEGIC and TACTICAL tactical perspective? How has our ability to detect emerging threats improved? ”

“ This may be changing, but Government, particularly in emergency response sectors, are not a hotbed of innovation. You hear a lot of “not my job”. A lot of “we've always done it this way”. “People aren't wanting to ruffle feathers. People wanted to keep their head low and not be change agents. ”

What Perspective, What Paradigms, Behaviors, Structures, or Other Factors Does the National Health Security Need To Forget?

Looking Back From 15years in the Future, How Did the National Health Security Enterprise Hinder the Goals?

“ Under the Obama administration we were well prepared, but then the new administration disbanded the Pandemic Advisory Committee. How prepared will we be if things change with each administration? Not just from a strategic preparedness perspective, but what about the tactical assets on the ground in terms of supplies, equipment, and people that are needed to respond to these things? ”



# Scanning Hits

(Select Highlights)

IMPACT  
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H2

## Global health security and universal health coverage: understanding convergences and divergences for a synergistic response

Researchers from the School of Public health, University of Queensland, and the Institute of Tropical Medicine in Belgium, conducted a macro-analysis of the Global Health Security index (GHSI) and the Universal Health Coverage index (UHCI). They posit that there is a tension between the two global agendas that is hindering their abilities to achieve either goal. Their conclusion is that the best strategy for both agendas is a more synergistic strategy that both strengthens health system preparedness while also pursuing a “one health” approach.

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0244555#pone-0244555-g004>

## Expanding the domestic public health supply chain is a matter of national security

To proactively plan and ensure readiness for the next large scale public health event, the Biden-Harris administration will be using its purchasing power and a novel financing model to expand and incentivize domestic healthcare manufacturing. Backed by a \$1 billion investment by the White House and Congress and another \$4 billion from U.S. Dept. of HHS in partnership with the DoD, this demand side strategy aims to increase drug and health care supply chain resilience by increasing production and controlling the end-to-end supply chain for the products (e.g., raw materials, chemical, to fabrication of goods). <https://www.statnews.com/2021/08/26/expanding-domestic-public-health-supply-chain-matter-of-national-security/>

IMPACT  
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H2

H2

IMPACT  
4

## AI and Synthetic Biology are Critical to Future Competitiveness

Biotechnology has been identified by the National Security Commission on Artificial Intelligence AI as one of seven technologies critical to the future of national competitiveness while recognizing the potential “dual use” technology threat it poses to national security.

These urge Congress to 1) raise the profile of biosecurity and biotechnology issues in the Government and including biosecurity and synthetic biology within the national security and defense toolkit, 2) investment in R&D platforms to secure 3) to view its AI and biological technologies as mutually reinforcing and 4) development of a biotechnology manufacturing ecosystem.

It is also implied that it will improve military readiness and solutions for biological threat.

Work, Robert O. “AI and Synthetic Biology are Critical to Future Competitiveness”. War on the Rocks, Commentary. May 27, 2021. [\(Link\)](#)

## Health Security Intelligence: Engaging across Disciplines and Sectors

Public or civilian population disease outbreaks have not traditionally been considered national security issues, outside of their impact on troops and readiness. Yet, the growing threat and frequency of health and biological threats—natural (zoonotic), synthetic, weaponized, or climate-driven—causing unpredictable and disruptive impact to health, society, and the economy is starting to bring this into question. As a result of growing conversation and discourse on the topic, Journal of Intelligence & national Security released a Special Issued dedicated to Health Security. T

Filippa Lentzos, Michael S. Goodman & James M. Wilson (2020) Health Security Intelligence: engaging across disciplines and sectors, *Intelligence and National Security*, 35:4, 465-476, DOI: 10.1080/02684527.2020.1750166

## Advances in Synthetic Biology and Biosafety Governance

Synthetic biology is still very much in an early stage, with a lot of potential to advance biomedical, environmental science, energy, and food industries. Yet, for most research, there are also “dual uses” that pose equal threat to both. What the Covid-19 virus response revealed was the speed and techniques for pathogen synthesis which equally could be accessed by others using the same techniques and the risk of access to sequencing via digital systems. For this reason, the authors call for further biosafety governance and the remediation of varying standards and regulations across countries to prevent and control bio-risks. This would require cooperation and adherence to regulations and standard across research centers and labs, government regulatory agencies, international policy, and relations.

Li, Jing, Zhao, Huimaio, Zheng, Lanxin, An, Wenlin. “Advances in Synthetic Biology and Biosafety Governance”, *Frontiers in Bioengineering and Biotechnology*, Professional Journal [\(Link\)](#)

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IMPACT  
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IMPACT  
3

H1

# Issues, Plans & Projections Highlights

## Current & Emerging Issues

The recent Covid-19 pandemic brought to light existing and emerging conditions and problems affecting the successful outcome of the National Health Security enterprise.

### Healthcare Access + Inequality Issues

- Continued underfunding and defunding of public health system, increasing costs of healthcare, and a history of systemic inequalities is increasing distrust, preventable chronic health issues

### Social Conflict and Polarization

- Rising individualism and rights advocacy in opposition with public health measures. This paralleled with increased disinformation, fueling volatility and violence.

### Workforce Capacity Issues

- Overworked, under supported, and threatened by the public is causing burnout and attrition across healthcare, public health an emergency response fields.

### Funding

- historically underfunded, the public health system continues to struggle with providing quality, innovative, services and support at scale.

### Healthcare and supply chain surge capacity

- Current health system not built for pandemic scale. Not all hospitals have same capacity and/or equipment to be agile when addressing threats.

### Accountability & Resources

- Agencies and teams aligned to budgets and resources have structural, capacity and behavioral incentives making it difficult to mobilize resources between them.

### Siloed Data & Information

- While a more integrated data structure is being created, the system is only as good as the data that is share.

### Medical, Health & Health Security Innovations

- While medical and health innovation for commercial use has been growing, it has not be designed with the needs of health emergencies in mind.

### Policies and Regulations

- Policies and regulatory processes that are effective during normal times or with small epidemics were barriers to rapid response e.g. Labs and testing and at home test.

## Plans

**2021** Global Health Security Agenda

**2019 - 2022** National Health Security Strategy

**2019 - 2022** National Health Security Implementation Plan

**2018** Plan National Biodefense Strategy

**2021** The Apollo Program for Biodefense

**2019** Global Health Security Index

## Projections

**Global Trends; a more contested world, The Strategic Futures Group**", National Intelligence Council. March 2021. [\(Link\)](#)

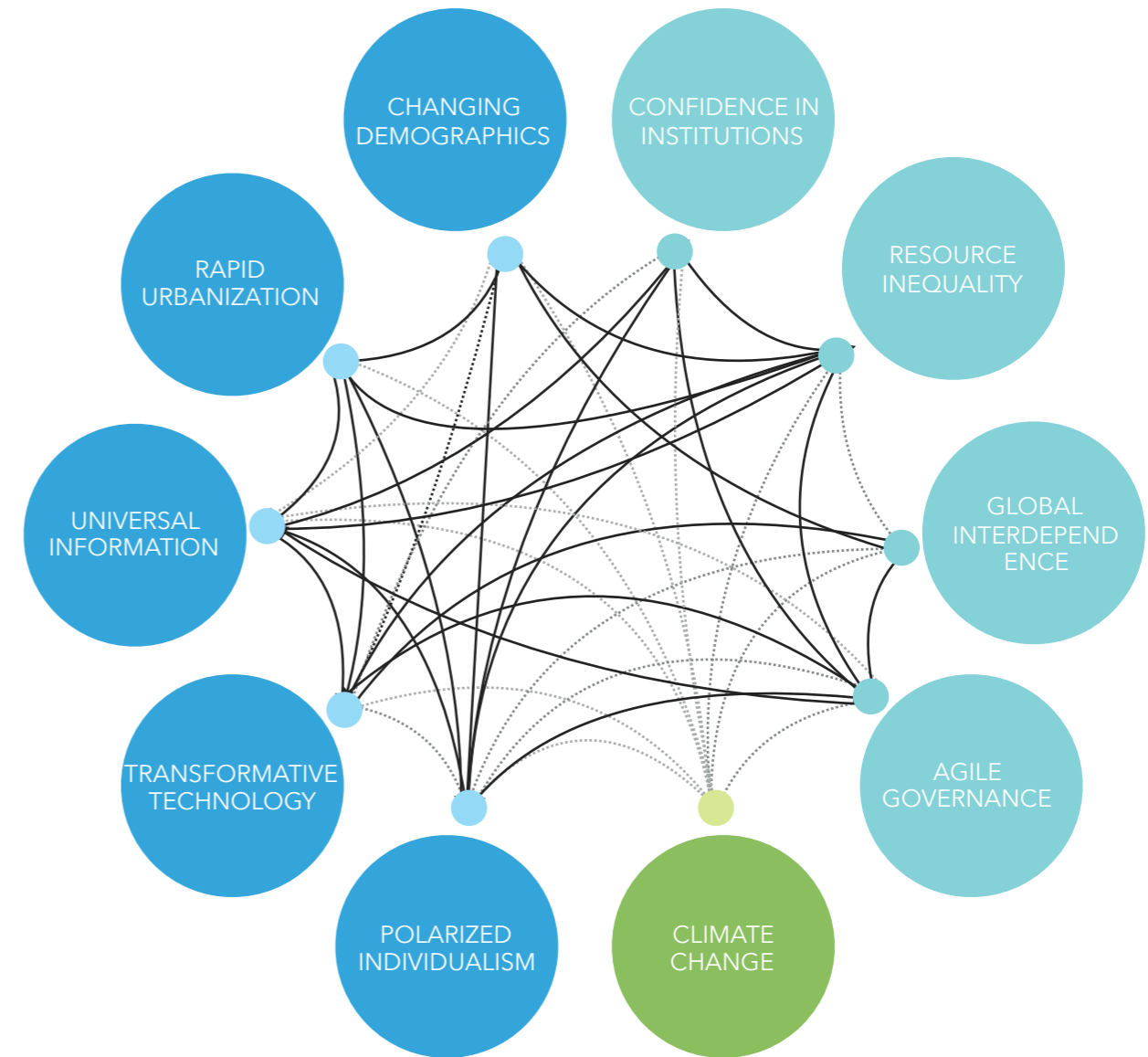
**Bipartisan Commission on Biodefense.** "The Apollo Program for Biodefense: Winning the Race Against Biological Threats." Bipartisan Commission on Biodefense. Washington, DC: January 2021 [\(Link\)](#)

**Bouskill, Kathryn, Smith Elta, "Global Health and Security; Threats and opportunities"**, Rand Corporation, December 2019 [\(Link\)](#)

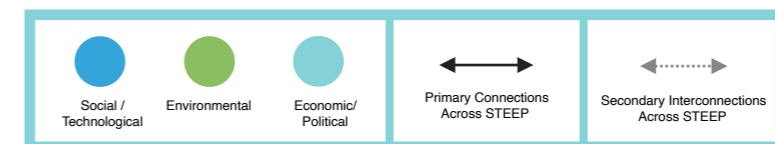
## Change Drivers Dynamics Increasing Planning and Operational Complexity

There are several macro-level factors, both global and domestic, affecting the success of the National Health Security mission and how it is able to achieve its goals.

- 
**Rapid urbanization**—Increasing rate of growth in urban areas affecting population density, sanitation needs, and vulnerability and threats.
- 
**Changing demographic**—Unequal rate of population growth and aging, costs of care, and increasing chronic illness magnify risks.
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**Polarized Individualism**—Growing rate of individualism and polarization ignite conflict of individual vs collective needs /rights.
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**Confidence in Institutions**—Declining level of trust in government, academia, and media affect ability to lead and social cohesion.
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**Transformative Technology**—Speed, scale and integration of innovation with environments and biology bring new opportunity /risk.
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**Global Interdependence**—Continuing dependence on global commerce and travel increases risk / speed of contagion and access to resources.
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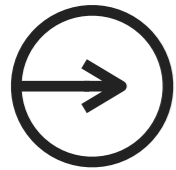


Driver Interconnections + Impact



## SCENARIOS HIGHLIGHTS

### Baseline



## The More Things Change, the More We Stays the Same

**Key Shift:** Cycles of action and complacency leave much unchanged. Increasing conflict over individual rights vs community, increasing chronic health and difficulties identifying disinformation continue to be challenges, limiting the capabilities of the national health security enterprise.

**Key Dimensions:**

- Aging population and increasing chronic disease
- Continued social unrest due to health and economic inequalities
- Increased lack of social cohesion and ability to build alignment on change
- Continued destabilization of public health systems
- 'Business as usual' for Government, Health Security and Emergency operations

### New Equilibrium



## A Tale of Two Nations

**Key Shift:** Declining cohesion results in more pronounced split between classes, with wealthier 'elite' increasing their personal protection and immunity while the underserved and middle class continues to see a rise in vulnerability. This builds cohesion and support for emergency response efforts.

**Key Dimensions:**

- Increased wealth 'gap' w private healthcare and advanced innovations for their consumption
- Moderate improvement in public health funding becomes more widely used
- Private and public health security detection and mitigations systems run in parallel
- Social cohesion and reduced politicization among the non-wealthy elite better support detection, preventative and response to health emergencies.
- Increase digitization, data and information moderate detection while respective privacy

### Collapse



## One Nation, Over All

**Key Shift:** Continued decline in cohesion and ability of government leaders and the public to align in a consensus-based democracy. There is a complete and constant 'securitization' of health as a means to address the increased frequency and scale of emergency health events.

**Key Dimensions:**

- Extreme increase of individualism and polarization create barriers to health
- Government is unable to take action without invoking 'securitization' to access necessary funds and powers to enforce compliance
- Privacy and individual rights activists are blocked from mass media information sharing platforms and monitored, many take to dark, anonymous channels
- Distrust in government grows as it moves towards a more authoritarian state
- National Health security is now owned by DoD and Homeland Security

### Transformation



## A National Health Immune System

**Key Shift:** A shift to individual and shared public preventative health are supported by changes in world views and enable by integrated technology and data. This further democratizes access to trusted resources, advance risk detection and rapid, customized, efficient, emergency response.

**Key Dimensions:**

- Social responsibility has transformed approaches to social conditions of health e.g. climate
- Transformative technology and integrated data systems to shift health from the treatment of disease to the prevention reducing chronic disease and vulnerability of population
- Access to resource has improved reducing the push towards urbanization
- More flexible health security management and operations focus on prevention and early detection reducing incidents but have adaptive capabilities for emergency needs

## The More Things Change, the More We Stay the Same

Cycles of action and complacency in the United States has left much unchanged from where the U.S. was back in 2023 when the shift to life with Covid-19 became endemic. For awhile, there was a lot of public and political discussion of what needed to change across the national health security enterprise, the strategies, the implementation plans and who should be accountable for each. Quickly, economic, political and the desire to 'return to normalcy' to dominant.

Climate change events affecting the nation such as extreme weather events, droughts, water level rise, and fires quickly became the next securitized issue. Displaced constituents, many advanced in age, began resettling into urban areas in order to lower costs and have more access to shared health, wellness and community services. Higher density of populations created additional strain on these services, in particular waste management. Population disease outbreaks and spread continued to proliferate.

Globalization and travel continue to carry emerging diseases, although advances in detection and tracking of mass transit and through borders have helped to deter the already known list of reportable diseases. Occasional one or two get through a year.

With the costs of medical health care at an all time high, access to care financing remained a constant burden, one which continued to keep some locked in cycles of generational poverty. Medicare funding is nearly drained, resulting in a need to reduce the availability of funds for infrastructure and national defense.

Increasing frustration with the government and the foundational, dated systems on which our economic, social and political system exist. Social activism and unrest are at a point of high conflict.

A decaying public health system, stripped of authority, lacking funding and struggled to regain ground after Covid. While the government tried to incentivize the field to rebuild capacity, many opted for news roles in the private sector.

The forced digitization and data integration of real-time health security monitoring systems was set up, which strengthened HHS ability to detect emerging public health issues earlier. These systems are frequently targeted by non-state actors who leverage open source and online educational resources to build hacking and technology capabilities to attempt to takeover or hold the system for ransom.

*The National Health Security strategy and plan remains locked in a business as usual, four year planning cycle, with highly detail plans that feel slightly more data and risk driven at the state level.* While funding increased for a few years post the pandemic, it soon dropped backed to pre pandemic levels. The upside was that initial investment in infrastructure and innovation helped to modernize the health data and reporting system while also finding new ways to detect infections and disease that didn't invade privacy or touch individual rights such as the monitoring of waste management systems in conjunction with other key indicators.

**Rapid change along the same path accentuates the current trajectory.**

## TRANSFORMATION NARRATIVE

### National Immune System

Issues driving social and political polarization have been reduced and governance has taken on a flexible, networked, and collaborative, networked, governance and operating model. Government-federal, state, city, tribal as well as NGOs and the population align around a shared definition of national health security as an integrated Public Health, Intelligence, Defense issue. Initial concerns about 'watering down the mission' and 'budget' conflicts were laid to rest through new ways of working. Accountability, oversight, and funding are now aligned by capabilities rather than by threat types. Medical and health intelligence capabilities contribute to a shared threat forecasting system, sharing research and learnings and early warnings.

Leveraging insights and innovations from the private sector whose own forced transformation was a result of emergent 'virus' like companies changing the landscape of their industries, health security monitoring and **strategic planning is a now ongoing activity informed by a national health data and insights system.** Cybersecurity is a prioritized issue as cyber-attacks are ongoing and data sources such as hospitals and care centers struggle with their own system security. The national health and biosecurity security agendas, strategies and plans are no longer drafted quadrennially by each incoming president allowing incremental vs sudden funding and defunding of capabilities. Ongoing and agile planning cycle allowing the national health security network to "swarm" to rapidly move resources to where they are needed. This includes a multi-disciplinary and sector reserve of professionals, with flexible licenses to practice care across state lines, authority, and temporary security clearances to rapidly assist with early detection and mitigation efforts. Amazon-like regional, emergency supply distribution centers with 3D printing and fabrication capabilities are engaged to support overflow medical device manufacturing needs. This swarming enables allows for rapid response to the changing threat landscape of biological, chemical, radioactive, and nuclear threats.

This transformation occurred after several attempts to increase prevention and mitigation of public health events. Polarization, inequities, declining health and a fragile health and supply chain infrastructures, continued to thwart top down, centralized governance, and event mitigation. More vulnerable populations continued to carry the burden and impact of a growing range of public health events triggered by climate change affecting air, food, and water quality, criminal use of new technology or accidents, emerging diseases. Increased political tensions, mass public criticism and social unrest finally forced change. Digitization and automation of the private and public health care infrastructure, reduced health care administrative costs and increased access to preventative and sudden care needs. Increased access the internet in rural and disadvantaged areas brought more equal access to education and opportunities to remote work, slowing the rate of urbanization while also bringing new life and economic revival to the rural America. While digital misinformation continues, its ability to influence and polarize (and radicalize) individuals waned as growing proximity to others renews empathy and a sense of shared purpose required to support any health security effort.

A future where collective intelligence, networked governance, and operational swarming are partnered with citizen engagement .

Change to Operating Model

Participatory, Data-Informed Policy



## Participatory Policy

The ability to implement health security measures and policies that are nuanced by community and based on real-time data supports fosters trust, transparency and participation between the people and the government, reducing negative perceptions of 'top down' control. They are able to see real-time 'effects' of measures taken (or not) and benefits or detriments of each through a virtual feedback loop such as shorter lockdowns and shutdowns for less affected communities. This bottom-up approach empowers constituents in situations where they otherwise would feel disempowered or frustrated (e.g., national quarantine lockdowns, masks, or national mandates) building accountability and engagement.

While health threats increase in frequency, complexity, and ranges of severity, keeping up with both threat awareness and measures to take or being taken and the cognitive and emotional burden on the constituent may undermine the health, trust and participation, and economic benefits derived from this approach to health security management and implementation.

## RECOMMENDATION

**Empower state, local, and private communities with the authority to co-create health strategies and emergency policies based on local data-driven and expertise.**

### Strategic Response

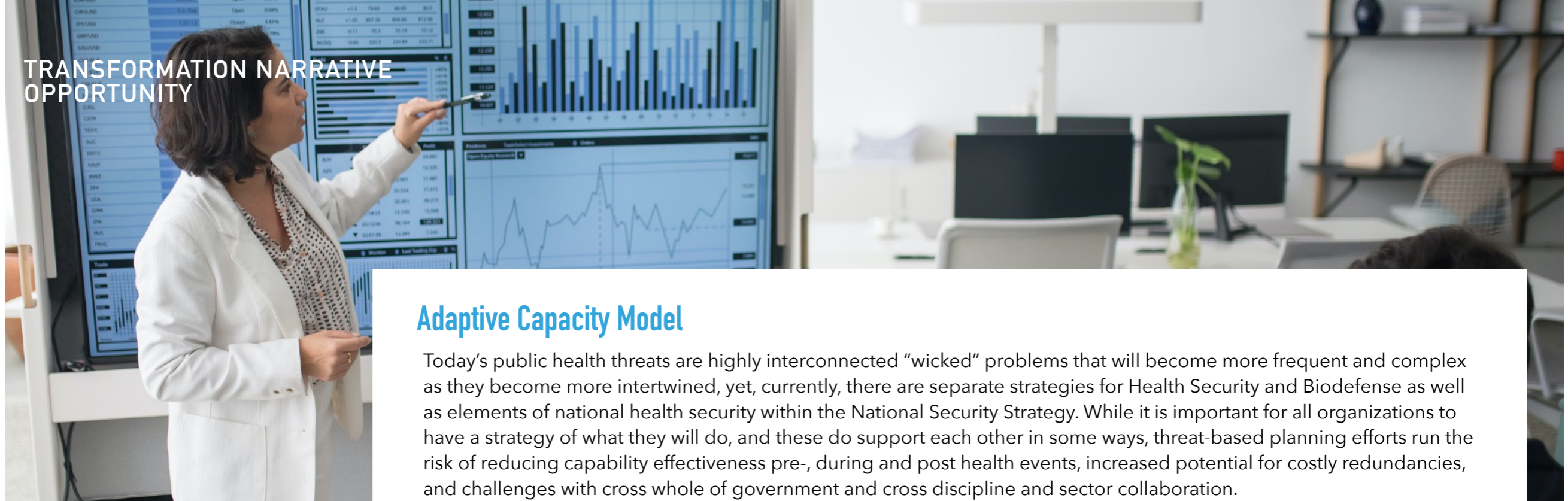
- Identify an internal or external partners and stakeholders
- Create a platform (technology or otherwise) for bi-lateral communication and engagement that integrates with trusted and preferred channels used by constituents, and which proactively inform them of issues and requirements
- Engage constituents and policy makers from a diversity of communities in ideation and co-creation sessions to build empathy and understanding and with equality top of mind
- Co-create both vision, outcomes, and measures

### Plan | Next Steps

- Gather learning from the 'Federalist approach' attempted during Covid-19 to understand the governance issues experienced during that time
- Assess current data and technology infrastructure for real-time monitoring and decisions to determine technology needs and budgets
- Build understanding of stakeholder needs
- Identify dependencies, regulatory and legal issues



## TRANSFORMATION NARRATIVE OPPORTUNITY



### Adaptive Capacity Model

Today's public health threats are highly interconnected "wicked" problems that will become more frequent and complex as they become more intertwined, yet, currently, there are separate strategies for Health Security and Biodefense as well as elements of national health security within the National Security Strategy. While it is important for all organizations to have a strategy of what they will do, and these do support each other in some ways, threat-based planning efforts run the risk of reducing capability effectiveness pre-, during and post health events, increased potential for costly redundancies, and challenges with cross whole of government and cross discipline and sector collaboration.

Addressing this would be a huge transformation of the National Health Security enterprise requiring the restructuring of governance, operations and engagement models around the capabilities required to achieve national health security strategic goals and outcomes. For this reason, the organizational and people change management would be a challenger, however, this form of all-hazards planning would enable preparedness for the growing number of uncertainties and unknown threats the national will face in the future. By restructuring around capabilities and building both depth of expertise and capacity, they support fast, agile responses customized for that event. This focus could also support more consistent, cross agency, funding of capabilities at scale, providing access across the nation and helping to maintain threat advantage.

### RECOMMENDATION

**Shift towards a more agile, capabilities-driven vs threat based approach to national health security strategic planning and infrastructure capacity response.**

### Strategic Response

- Recruit cross-agency, discipline, and sector partners to collaborate on a capabilities-based Vision for Health Security Enterprise and Operations
- Address current state capability siloes, issues and gaps
- Define clear policies and ways of working and accountability
- Build an ongoing system for modeling an increasingly diverse spectrum of evolving threat scenarios to inform ongoing capabilities creation and development
- Ongoing training and performance tracking for continuous and ongoing improvement
- Consistent and flexible budgeting to maintain readiness

### Plan | Next Steps

- Understand current capabilities and supporting technologies that are currently aligned to threat-based initiatives and agencies
- Identification of stakeholders, decision makers and dependencies

## Conclusion

As the Global Health Security Index stated, *“All countries—across all income levels—remain dangerously unprepared to meet future epidemic and pandemic threats”*. Not one of the countries ranked is immune to the complexity of this ‘Postnormal’ in which we all exist. Yet, now there is actual proof and data on the strengths and weaknesses of our domestic emergency preparedness and response systems when faced with volatility, uncertainty, complexity and ambiguity and this needs to change.

This Coronavirus pandemic was NOT a black swan. According to Nassim Nicholas Taleb, the creator of the term ‘black swan’ stated in a 2020 New Yorker article:

*“The Black Swan” was meant to explain why, in a networked world, we need to change business practices and social norms—not, as he recently told me, to provide “a cliché for any bad thing that surprises us.” Besides, the pandemic was wholly predictable—he, like Bill Gates, Laurie Garrett, and others, had predicted it—a white swan if ever there was one. “We issued our warning that, effectively, you should kill it in the egg,” Taleb told Bloomberg. Governments “did not want to spend pennies in January; now they are going to spend trillions.”*

While this was not a ‘black swan’ per se, the issue for National Health Security outcomes were the ‘black jellyfish’, the series of small high impact events that change the landscape in which it needed to operate. And before the cycle of action and complacency hit again, now is the time to leverage what has occurred as a business case for transformation. To do this effectively, the view of the future should be broader to include the social, political and structural determinants of health security outcomes and look further ahead than then next administrative cycle.

While this project began as a student project with focus on applying methods learned within the context of a ‘client project’, I aim to continue this research to build out the breadth and depth of this body of work. Thank you for reviewing this submission.

Should you have any question of feedback about this report, it would be a pleasure to connect with you. I may be contacted at [klcarpenter3@uh.edu](mailto:klcarpenter3@uh.edu).

