PREPARED
NATIONAL HEALTH SECURITY PREPAREDNESS INDEX

Frequently Asked Questions
National Health Security Preparedness Index, 2021 Release

A. THE INDEX AND HEALTH SECURITY

A1. What is the National Health Security Preparedness Index?

The National Health Security Preparedness Index (the Index) is a tool for measuring the capabilities that exist at national, state, and local levels for protecting people from the health consequences of large-scale hazardous events. The eighth release of the Index combines 130 measures from 64 sources, offering a broad view of health security in the United States as a whole, each state, and the District of Columbia.

A2. What is national health security?

Health security is the nation's collective ability to keep its residents safe and healthy in the face of disease outbreaks, natural disasters, and other large-scale hazardous events. Threats to U.S. health security are on the rise due to newly emerging infectious diseases, growing antibiotic resistance, globalization in travel and trade, political instability and terrorism, and extreme weather events.

A3. Why do we need to measure health security?

Although much has been accomplished in strengthening U.S. health security, each natural disaster, disease outbreak, or other crisis illustrates that gaps remain even as new threats emerge. Measuring national health security generates knowledge to (1) inform resource and policy decision making, (2) guide quality improvement for health security activities, (3) mobilize collaboration and shared responsibility, and (4) advance the science of measuring health security.

A4. Who developed the Index?

Multiple organizations and entities developed the National Health Security Preparedness Index. The initial Index releases in 2013 and 2014 were supported by the U.S. Centers for Disease Control and Prevention and developed through a collaborative effort of more than 30 organizations led by the Association of State and Territorial Health Officials, the Oak Ridge Associated Universities, the University of Pittsburgh Medical Center, and Johns Hopkins University.

Since 2015 the Robert Wood Johnson Foundation (RWJF), together with the Index program office at the University of Kentucky and the University of Colorado, has led the annual, collaborative process to refine the Index and better inform health security.

The Index has evolved and improved over time as a measurement tool, using stakeholder input and real-world experience. Feedback from many sectors has contributed to development of the current Index. Learn more in "Tips from the Field."

A5. Does the Index provide a complete picture of health security?

The 2021 Index release measures health security from a broad, multi-sectoral perspective using 130 measures from 64 sources. The Index is constructed from existing national data sources and therefore some important capabilities are not included in the Index because data are not available. Although the Index has some data and

measurement limitations the Index exists as the only national, longitudinal resource for measuring health security capabilities in every U.S. state.

A6. How does the Index differ from other evaluations of public health and state readiness?

Responsibility for the nation's health security is shared among the many sectors that prepare for, respond to, and recover from health security threats. Drawing data from many sources the Index provides a broad, multi-sectoral, and multi-dimensional view of preparedness. It is the first national Index that assesses U.S. health security by collectively measuring the preparedness capabilities in the 50 states and the District of Columbia. The 2021 Index release includes results for eight consecutive annual periods dating back to 2013, allowing for valid comparisons over time.

A7. How does the Index help to build a Culture of Health?

Building a Culture of Health in the United States includes preparing to protect everyone from health threats when disasters and other crises occur. RWJF's Action Framework stresses that preparedness and resiliency require strong collaboration across sectors and effective integration across health services and systems. By measuring the contributions of these multiple sectors and systems to health security, the Index suggests opportunities for collaboration and partnership to improve health, well-being, and security at national and state levels.

A8. How can stakeholders provide feedback on the Index?

Anyone can have a voice in shaping the future of the Index by:

- Submitting recommendations about new measures, and providing feedback about results;
- Participating in Index-related presentations and discussions at meetings, conferences, and virtual webinars.
- Testing new ways of using the Index and sharing your experiences and lessons learned.

Send your recommendations and feedback to the Index team at any time by emailing SystemsforAction@ucdenver.edu.

B. 2021 INDEX RELEASE

B1. What is the most recent Index score for the United States?

The 2021 Index release contains data through year-end 2020. The national average Index value stood at 6.8 on a 10-point scale as of 2020, unchanged over the prior year, but an 11.5 percent improvement since 2013. A complete summary of 2021 Index Release Key Findings is available for download.

B2. What does this mean about the nation's state of health security?

The 2021 Index release indicates that U.S. health protections are growing stronger over time but at a slow and uneven pace. Gains in health protections are not keeping pace with rising health security threats. Geographic areas in the South-Central, Upper Mountain West, Midwest, and Pacific trail the rest of the nation in health security, leaving many low-income populations and rural residents at elevated risk. Vulnerabilities related to health care delivery systems are particularly pronounced across the United States, indicating a need for focused attention.

B3. How does the 2021 Index release compare to previous releases?

The 2021 Index release retains the framework of the previous releases. It includes six domains and allows for comparing and tracking improvements over time through the inclusion of comparable annual results from 2013 through 2020.

Each annual Index update provides greater clarity about strengths and gaps, as well as the ability to track improvements and declines in health security over time. This Index release assesses 130 total measures across 19 subdomains. There are no new item measures added to the 2021 release and data are available for all eight years. More details are available in the 2021 Index release Key Changes.

C. UNDERSTANDING STATE SCORES

C1. What does an Index score of 10 mean?

An overall Index score of 10 would mean that a state has achieved the maximum level of capability in all measures, subdomains, and domains included in the Index. To date no state (or D.C.) has reached this level of health security in all measures. But many states have achieved scores of 10 on selected individual measures. Each state has its own unique combination of relative strengths and vulnerabilities. For this reason individual states and communities are encouraged to develop tailored approaches to improving their health security levels. (See Practitioner's Guide)

C2. Why are Index results not ranked by state?

Rankings can be misleading because they obscure the magnitude and significance of numeric Index results. When Index results are clustered or have compressed distributions two states can have very similar Index values but have very different rankings. When comparing results over time small changes in Index values can cause large changes in rank that may have little practical or statistical significance. For clarity and transparency the Index reports actual numeric results rather than rankings. (See question D4 for more information on calculations of Index values.)

C3. Why have the scores for previous years changed?

It is not uncommon for us to make small updates to the Index each year and any changes are applied retrospectively to all years of the Index so that comparisons over time are valid. Except for an additional year of data no changes were implemented in the 2021 Index. One new measure was added to the Index in 2020 and data corrections were made in 2020 to several other measures. Full details about Index methodology are available in the 2021 Index release Methodology.

C4. Are rural states at a measurement disadvantage?

Where applicable, measures are scaled to account for the relevant population size of the jurisdiction. Index results are meant to reflect realities within the jurisdiction, including both strengths and gaps, factors the jurisdiction can easily influence and improve, and factors that are more difficult to address and change. Measurement properties such as validity and reliability should not vary considerably based on urbanity or rurality. However some measures are derived from surveys that use complex probability sampling and may yield smaller sample sizes, and therefore larger sampling variances, for less populous states.

C5. Are measures for which all states achieve the target value included in the Index?

A total of 19 measures are included in the Index as Foundational Capabilities, representing capabilities that are uniformly available in every state and firmly ingrained in practice. (See 2021 Index release Measures List)

C6. Are U.S. territories, such as Puerto Rico, and tribes included in the Index?

Previous and current versions of the Index focus on states and do not yet include U.S. territories due to data limitations. However work is underway to explore the development of data and measures that are relevant for U.S. territories.

D. METHODOLOGY AND DATA

Full details of the 2021 Index release Methodology are available for download.

D1. Where did the data in the Index come from?

The Index is built on measures from existing data sources; no primary data collection is used in constructing the Index. Hundreds of data sources were examined to produce the 2021 release. The 130 measures selected are drawn from 64 sources. The Index uses the most recent data publicly available at the time of data request.

D2. Why are some data two- to three-years-old (or older) in the latest Index?

The Index uses existing data to avoid placing additional data collection burdens on practitioners. There typically is a time lag between data collection by primary sources and publication. Sometimes this time lag can span two or three years. Both the frequency of data updates and data access are considered in measure selection and retention for each release.

D3. Is the Index a simple roll-up of Public Health Emergency Preparedness (PHEP) and Hospital Preparedness Program (HPP) performance measures?

No. The Index is much broader than the PHEP Program and HPP performance measures. The 2021 Index release includes 130 measures from 64 sources.

D4. Why calculate Index values?

Indices are widely used to extract and summarize meaningful information from multiple, often imperfect, data sources and measures. Well-constructed indices provide a holistic or global characterization of a phenomenon and allow users to see broad patterns and trends that are impossible to see using individual measures. Indices are particularly advantageous when individual measures have limitations that make them inadequate or problematic for revealing meaningful patterns and trends on their own. In the case of the National Health Security Preparedness Index, Index values provide a numeric representation of the broad health security constructs and capabilities reflected in Index domains and subdomains. Individual measures are imperfect representations of these constructs; however the subdomain, domain, and overall Index values provide reliable and meaningful characterizations of the underlying (or latent) constructs of health security.

D5. Are the measures weighted?

Each measure is assigned a weight based on expert panel ratings of how important the measure is to the capabilities represented in each Index domain and subdomain. These weights are used to combine individual measures into summary measures at the subdomain, domain, and overall level. This methodology ensures that more important measures receive more weight in the Index and prevents measures from arbitrarily receiving

more weight based purely on the number of measures included in each domain and subdomain. For more details, visit the 2021 Index release Methodology.

D6. How were the measures and Index structure selected?

Measures were selected by stakeholders involved in prior Index releases and through annual public calls for new measures beginning in 2015. All measures were selected by applying a set of selection criteria that include; (1) perceived importance to one or more of six health security domains used in the Index; (2) statistically valid and reliable data source; (3) nationwide availability across all or most states; and (4) data collected consistently periodically over time (at least every three years). The Index structure remains the same as in the 2013 Index, which was developed by a broad collection of preparedness stakeholders. History and rationale for the Index design are available online.

D7. Why were some measures from the previous Index years dropped from earlier Index releases and new measures added?

Each year Index measures are assessed for reliability and validity, and new measures are considered to enhance the Index. Twenty measures included in the 2018 Index release were dropped from the 2019 release due to a lack of updated data. Nine new measures were added to the 2019 Index following the 2018 Call for New Measures, public comment period, and workgroup and National Advisory Committee discussions. One new measure was added to the 2020 Index, but there are no new measures for the 2021 Index.

D8. How is the Index validated?

The Index began with face validation through stakeholder input and extensive dialogue among health security experts. The 2021 release of the Index has been validated for construct validity to ensure that component measures are reasonable representations of the health security constructs articulated in the six domains of the Index structure.

D9. How accurate are the Index values?

Each measure included in the Index contains some amount of measurement error and some measures also contain sampling error due to data collection procedures. The limitations for each Index measure are noted in the 2021 Index release Measures.

To account for measurement and sampling error the 2021 release includes **99 percent confidence intervals** for each national summary measure to reflect the level of measurement certainty surrounding these national estimates. This confidence interval shows the range of scores in which we are 99 percent certain that the true score lies. The size of this confidence interval for each domain depends upon the number of individual measures used in constructing each summary measure and the degree of variability in each individual measure.

D10. How will the Index model be improved over time?

Stakeholders from the many diverse sectors influencing health security (such as private sector and community-based organizations) are regularly engaged to continue strengthening Index content and structure. Ongoing sensitivity analyses and model validation work will also continue to strengthen the Index.

E. USING THE NATIONAL HEALTH SECURITY PREPAREDNESS INDEX

E1. How should the Index be used?

The Index aims to provide an accurate portrayal of the nation's health security using relevant, actionable information to guide efforts to achieve a higher level of health security. The Index should be used to inform resource and policy decisions, guide quality improvement, enhance collaboration and strengthen shared responsibility, and advance the science of measuring health security. Learn more about how to use the Index.

E2. Who is accountable for Index results?

The Index conceptualizes health security as a responsibility of all sectors and jurisdictions that work together to prepare for, respond to, and recover from health security threats. No single agency or organization has the ability to support all of the protections necessary to keep people safe and healthy in the face of health emergencies; therefore the Index reflects health security as a responsibility shared by many different stakeholders in government and society. Improving Index results requires organizations and sectors to work together.

E3. Can the Index be used for trend analysis of national and state results (year-to-year comparisons)?

Yes, the Index allows for trend analysis. Any changes implemented as part of an Index release would be applied to all previous years, allowing for trend analysis over the entire time period, which is now eight years (2013-2020).

E4. What does the Index mean for local jurisdictions?

The original Index was designed and implemented to produce state-level measures but the domains, subdomains, and measures included in the Index also are relevant for local jurisdictions as well as states. More recently we have developed county-level Index estimates using a subset of 84 measures that members of an expert working group identified as particularly relevant for local health security capabilities. These county-level Index values are available for the years 2019 and 2020, and can be downloaded from the Toolkit and Resources section of the website.

E5. How can policymakers use the Index to inform resource and policy decisions?

The Index is a tool to help policymakers to identify health security gaps and strengths. In addition the Index can help policymakers identify how policies and resource allocations influence health security. For more on using the Index for policy development and resource allocation see the Innovator's Guide.

E6. How can practitioners use the Index for quality improvement?

The Index supports quality improvement efforts and promotes shared responsibility for health security at the state and national levels. Practitioners can use the Index to identify gaps and strengths at the state level. This knowledge can inform strategic planning, program development, and grant applications. For more on using the Index for quality improvement see the Practitioner's Guide.

E7. How can researchers and academics use the Index to advance the science of measuring health security?

The Index serves as a call for filling gaps in measurement and improving measures of health security. Researchers and academics can use the Index to identify additional measures and to examine how Index scores predict response and performance during an event. Index scores can also be used to identify best practices and solutions for health security problems. For more on using the Index for research see the Innovator's Guide.

E8. How can other stakeholders use the Index?

Data in the 2021 Index release is meant to spark dialogue and collaborations with organizations beyond the traditional health security sectors of public health and emergency management. Other stakeholders, such as community organizations and businesses, can use the Index to identify opportunities for improvement and build coalitions to make meaningful change. Use the Innovator's Guide to explore the Index and identify how stakeholder organizations can support and improve health security.

E9. How can the Index be framed and communicated?

The Index is designed to create opportunities for conversations about health security and educate the public, policymakers, and others about the importance of health security. The Index can be used to draw attention to health security and to create support for policy changes and resource allocations that improve and maintain health security levels. For ideas about how to communicate strategically about Index results, see the Communicator's Guide.