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 identifying both strengths and gaps in the protections needed to keep people safe and healthy in the face of large-scale public health threats. This fourth release of the Index combines 139 measures from 59 sources, offering a broad view of both the U.S. as a whole and each state. 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 (ASTHO), the Oak Ridge Associated Universities (ARAU), the University of Pittsburgh Medical Center, and Johns Hopkins University. In January 2015, responsibility for the Index transferred to the Robert Wood Johnson Foundation.

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 emergencies. Threats to American 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 and preparedness?

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

A4. Does the Index provide a complete picture of health security and preparedness?

The Index measures health security from a broad, multi-sectoral perspective using 139 measures from 59 different sources; however, it is not a complete picture. Important capabilities are not fully reflected in the Index due to both data and measurement limitations. The Index remains a work in progress as preparedness science, measurement, and practice continue to develop and advance. To recommend additional data sources or participate in workgroup discussions to further improve the Index, visit www.nhspi.org.

A5. 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, multidimensional view of preparedness to date. It is the first national Index that assesses U.S. health security by collectively measuring the preparedness of the states. While

not directly comparable to prior releases, the 2017 Index release includes results for four consecutive annual periods dating back to 2013, thereby allowing for valid comparisons over time.

A6. Who developed the Index?

Development of the National Health Security Preparedness Index has been shared among multiple organizations and entities. The Centers for Disease Control and Prevention (CDC) initiated the Index and provided funding for its first two years. During this period, the Association of State and Territorial Health Officials led development of the first two Index releases, working with CDC, a multidisciplinary Steering Committee, workgroups, and task forces made up of 100 individuals representing more than 35 organizations who contributed to Index design, development, and implementation.

For the past two years, the Robert Wood Johnson Foundation, together with the Index program management office at the University of Kentucky, has led the collaborative process to annually refine the Index and better inform health security.

Index development has been and continues to be a transparent process that includes continuous improvement, stakeholder involvement, and real-world experience. Feedback from many sectors has informed development of the current Index. Learn more at www.nhspi.org.

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

Building a Culture of Health in the U.S. includes = preparing to protect everyone from health threats when disasters and other crises occur. The Robert Wood Johnson Foundation'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?

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

- Visiting the Index website (www.nhspi.org) to learn how to participate in public workgroup meetings, submit candidate measures, and provide feedback on recommended changes
- Joining the Index mailing list to receive updates about the Index and hear about other opportunities to provide feedback
- Participating in Index-related presentations and discussions at meetings, conferences, and virtual webinars

B. 2016 INDEX RESULTS

B1. What is the 2017 Index score for the United States?

The national score is 6.8 out of 10. This represents a 6.3% improvement since the Index began in 2013 and a 1.5% improvement from the previous year. A complete summary of Key Findings is available for download.

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

The 2017 Index release indicates that American 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. Large geographic areas in the Deep South and Mountain West trail the rest of the nation in health security, leaving many low-income populations and rural residents at elevated risk. Vulnerabilities related to healthcare systems and environmental health are particularly pronounced across the U.S., indicating a need for focused attention.

B3. What is different about the 2017 Index?

The 2017 Index retains the framework of the previous releases: it still includes 6 domains and allows for comparing and tracking improvements over time through the inclusion of comparable annual results back to the baseline year of 2013. For the first time, the 2017 release adds data for the District of Columbia alongside the 50 states. This Index release assesses 139 total measures across 19 sub-domains. Nine item measures are NEW to the Index 2017, with data added for all four years as available. One item measure that appeared in the 2016 Index has transitioned to Foundational Measure status in 2017. Seven item measures saw changed specifications in 2017, as recommended by the Association of Public Health Laboratories, which fields the survey that constitutes the data source for the re-specified measures. Four 2016 measures were removed from the 2017 Index, either due to data no longer being available or to a change in responsible entity for a specific function.

Recent Index updates provide greater clarity about strengths and weaknesses, as well as the ability to track improvements and declines in health security and preparedness over time.

C. UNDERSTANDING STATE RESULTS

C1. What does an Index result of 10 mean?

A result of 10 would mean the state has fully achieved all capabilities included in the Index. While it is appropriate for states to strive for improvement along the Index spectrum because all measures chosen are considered important components of health security, each state's health security strengths and weaknesses are unique and influenced by local socioeconomic, demographic, and environmental circumstances. For this reason, individual states and communities need to develop tailored approaches to health security priority-setting and improvement.

C2. Why are Index results not ranked by state?

Rankings can be misleading by obscuring 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 ranks. 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.

C3. Why have the scores for 2013, 2014, and 2016 Index releases changed?

The methodology used to calculate the 2017 Index was retroactively applied to previous years to obtain results that allow for comparison over time. Full details about Index methodology are available in the 2017 Index Methodology. Except for the inclusion of the District of Columbia and the addition and removal a small number of measures as discussed above, no major methodological changes were made between the 2016 and 2017 releases.

C4. How do the Index results relate to large urban areas?

The Index currently is designed to measure health security and preparedness for each U.S. state and the District of Columbia and to compute national preparedness measures as aggregations of state measures. State-level data sources are the most consistently available sources across the nation.

While data used in the Index applies to the state level, the domains, sub-domains and measures included in the Index are important at all levels of health security and preparedness practice. At each level, the Index can be a useful tool to explore variation across domains within the state, discuss where jurisdictions likely contribute to state results, discuss interrelationships among sectors, enhance understanding of the types of efforts needed to advance health security, and generate ideas on how to ensure the highest level of preparedness is achieved through intra- and multi-sectoral partnership and collaboration.

C5. Are rural states at a measurement disadvantage?

No. Measures, where applicable, account for population size and do not favor populous areas. Index results are meant to reflect realities in the state, including both strengths and gaps, factors the

community can easily influence and improve, and factors that are more difficult to address and change. Collectively, the measures should accurately reflect both the state's health security and its preparedness. As such, Index results for rural states reflect the reality of having fewer resources than needed for optimum preparedness in some areas, as well as associated strong points in others.

C6. 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.

C7. Why are Puerto Rico, tribes, and U.S. territories excluded from the Index?

Previous and current versions of the Index are state-centric and do not include Puerto Rico, tribes, or U.S. territories.

D. METHODOLOGY AND DATA

Full details of the Index Methodology are available here.

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 2017 Index. The 139 measures selected are drawn from 59 sources. The Index uses the most recent data publicly available (and downloadable) at the time of data request. As a result, it is often the case that data lags behind the public release of reports by a year or more. Annual updates will be made with each new release.

D2. Why are some data 2 to 3 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 when primary sources collect and when they publish their data. Sometimes this time lag can span two or at most three years. Frequency of data updating and data access are both considered in measure selection.

D4. Is the Index a simple roll-up of PHEP and HPP performance measures?

No. The Index is much broader than the Public Health Emergency Preparedness (PHEP) Program and Hospital Preparedness Program (HPP) performance measures. The 2017 Index has 139 measures from 59 sources.

D5. Why calculate Index values?

Indices are widely used to extract and summarize meaningful information from multiple, often imperfect, data sources and measures. If well-constructed, an Index can 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. The advantages of an Index are especially large when individual measures have limitations and errors that make them, alone, inadequate or problematic for revealing meaningful patterns and trends. In the case of the Preparedness Index, the Index values provide a numeric representation of the broad preparedness constructs and capabilities reflected in the Index domains and subdomains. Individual measures are imperfect representations of these constructs, but the subdomain, domain, and overall Index values provide more reliable and meaningful characterizations of the underlying (or "latent") constructs of preparedness.

D6. 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 2017 Index Methodology.

D8. 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 with guidance from the National Quality Forum's measure selection criteria, which states that measures must be important to measure and report, include scientifically acceptable measure properties, and be both usable and feasible. Details on the National Quality Forum's measure selection criteria are available at www.qualityforum.org.

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 at 2017 Index Methodology.

D9. Why were some measures from the previous Index years dropped from the 2017 Index and new measures added?

Four measures included in the 2016 Index release were dropped from the 2017 Index for such reasons as a lack of updated data and change in responsibility for a capability from state to federal levels.

Nine new measures were added to the 2017 Index following the 2016 Call for New Measures.

D10. How is the Index being validated?

The Index began with face validation through stakeholder input from and extensive dialogue among health security and preparedness experts. The 2017 release of the Index has been validated for construct validity to ensure that component measures are reasonable representations of the preparedness constructs articulated in the six domains of the Index structure.

D11. How accurate is the Index?

Each measure included in the Index contains some amount of measurement error, and some measures also contain sampling error due to the data collection procedures utilized. The 2017 release of the Index calculates and displays **confidence intervals** for each national summary measure to reflect the level of measurement certainty surrounding these national estimates. The size of each confidence interval depends upon the number of individual measures used in constructing each summary measure, and upon the degree of variability in each individual measure.

D12. Who is accountable for Index results?

A Guiding Principle of the Index is that "responsibility for [the] nation's health security is shared among… 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 preparedness as a responsibility shared by many different stakeholders in government and society. Improving Index results requires the efforts of more than any one individual, organization, or sector.

D13. 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 help guide efforts to achieve a higher level of health security and preparedness.

The Index is intended to be used to do the following:

- **Inform resource and policy decisions.** For example, the Index can be used to:
    - Identify the types of efforts and resources that must be developed and sustained to support effective responses and resilient communities
    - Demonstrate how the quality of everyday systems influences disaster response capabilities
- **Guide quality improvement.** For example, the Index can be used to:

- Enhance understanding of what influences health security and how the work of various sectors and components intersect
- Galvanize action towards both strategic and operational quality improvement efforts

- **Enhance collaboration and strengthen shared responsibility.** The Index can be used to:
  - Foster new and existing partnerships and collaborations, emphasizing that responsibility for health security is shared across many sectors
- **Advance the science of measuring preparedness.** The Index can be used to:
  - Serve as a call to action for improved data collection, more evidence-based targets, and research to identify the most effective approaches to strengthening health security and preparedness

E2. Can the Index be used for trend analysis (year-to-year comparisons)?

Yes. The changes made beginning with the 2016 Index methodology allow for trend analysis. These methodological changes are applied to all previous years during Index production, allowing for trend analysis beginning at the baseline year (2013). There are currently four years of data available.

E3. How can individual state and federal policymakers, practitioners, and their private and community partners in supporting health security use Index results?

The Index is of practical use for both policymakers and practitioners. Highlighting strengths as well as systems gaps, the Index can serve as a resource to: 1) communicate the importance and multi-sectoral nature of preparedness; 2) convene stakeholders; 3) identify strengths, weaknesses, opportunities, and threats; 4) develop shared priorities and plans; 5) strengthen coordination collaboration, and partnerships; 6) advocate and secure resources; 7) provide technical assistance and support; and 8) monitor progress.

E4. What does the Index mean for local health jurisdictions?

The Index is an important summary of state-level data that looks at overall progress toward national health security and preparedness. While variability within a state exists from community to community, the domains, sub-domains, and measures included in the Index are important at all levels of public health practice. At each, the Index can be a useful tool to explore variation across domains within the state, discuss where jurisdictions likely contribute to state results, discuss interrelationships among sectors, enhance understanding of the types of efforts needed to advance health security, and generate ideas on how to ensure the highest level of preparedness is achieved through partnership and collaboration.

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

The Index serves as a call for filling gaps in measurement and improving measures of preparedness. Researchers and academics can develop:

- More science- and practice-based targets for existing measures
- Better measures and data collection systems
- Improved measurement methodology
- An improved understanding of what measures most accurately predict strong performance during an event
- Ways of helping practitioners identify and strengthen greatest gap areas.