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## Learning from Variation and Change: The 2016 Release of the National Health Security Preparedness Index

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# Learning from Variation and Change: The 2016 Release of the National Health Security Preparedness Index



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# Why a Preparedness Index?

**Increase awareness & understanding of preparedness as a shared responsibility of multiple sectors in government and society**

- **Identify strengths and vulnerabilities**
- **Track progress**
- **Encourage coordination & collaboration**
- **Facilitate planning & policy development**
- **Support benchmarking & quality improvement**
- **Drive research & development**



# A Brief History

2012

- **Collaborative Development:** Partnership led by CDC, ASTHO and >25 collaborating organizations

12/2013

- **1<sup>st</sup> Release:** Initial model structure and results
  - 5 domains and 14 subdomains
  - 128 measures

12/2014

- **2<sup>nd</sup> Release:** Revised model and results
  - 6 domains and 18 active subdomains
  - 119 retained + 75 new = 194 measures
  - 75% of retained measures have updated data

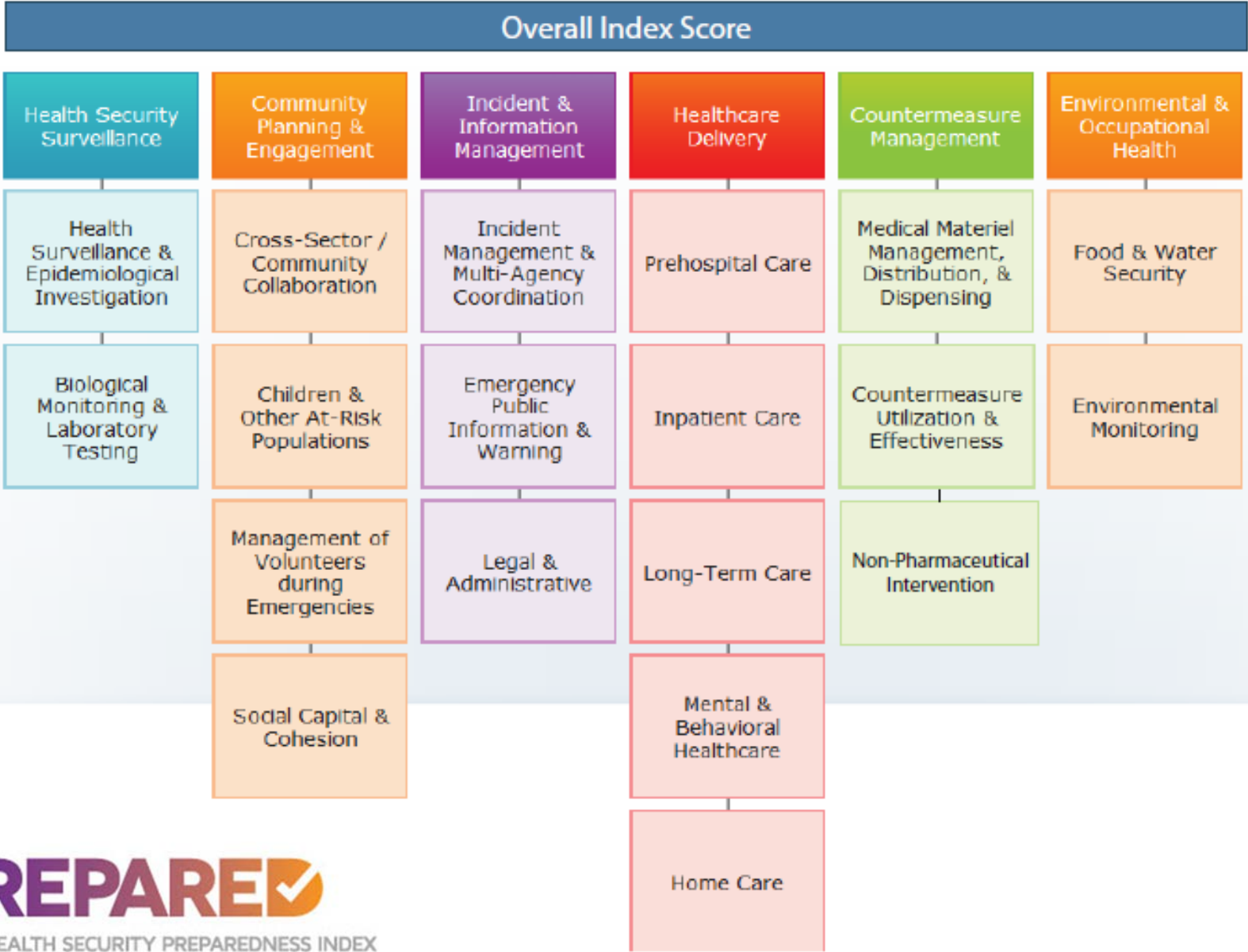
1/2015

- **Transition to Robert Wood Johnson Foundation**
  - Validation studies and revision to methodology & measures

4/2016

- **3<sup>rd</sup> Release:** Revised model and results
  - 6 domains & 19 subdomains
  - 65% measures retained, 12% respecified, 8 new additions = 134
  - 90% of retained measures have updated data from 2<sup>nd</sup> release

# Current Index Structure



# 2016 Methodological Enhancements

- **Consolidation:** reduce correlated, redundant & noisy measures
- **Composition:** expand social, environmental economic indicators of preparedness & resiliency
- **Grouping & weighting:** use empirical methods for internal consistency, discriminant power
- **Scaling:** reflect distributional properties
- **Comparisons:** address accuracy and uncertainty
- **Trending:** apply new methods/measures retrospectively

# 2016 Changes in Measure Set

- 42 measures eliminated due to data periodicity >3 years
- 29 measures eliminated due to poor construct validity
- 22 measures respecified to improve construct validity
- 8 newly added measures

<b>Domain</b>	<b>Construct Validity</b>	
	<b>2014 Alpha</b>	<b>2016 Alpha</b>
Health security surveillance	0.377	0.712
Community planning & engagement	0.382	0.631
Incident & information management	0.455	0.734
Healthcare delivery	0.354	0.596
Countermeasure management	0.231	0.654
Environmental/occupational health	0.546	0.749

# Current Index Structure and Methodology

- 134 individual measures



- 19 subdomains



- 6 domains

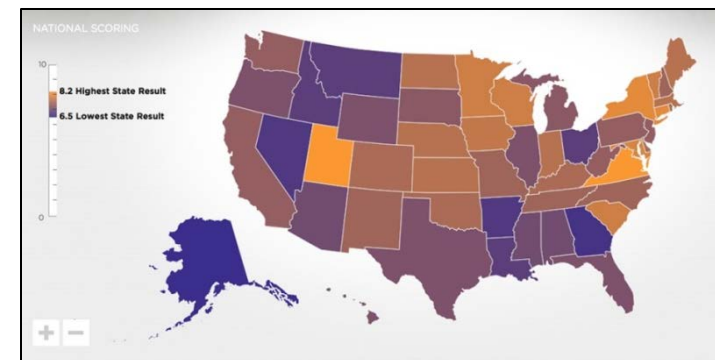


- State overall values



- National overall values

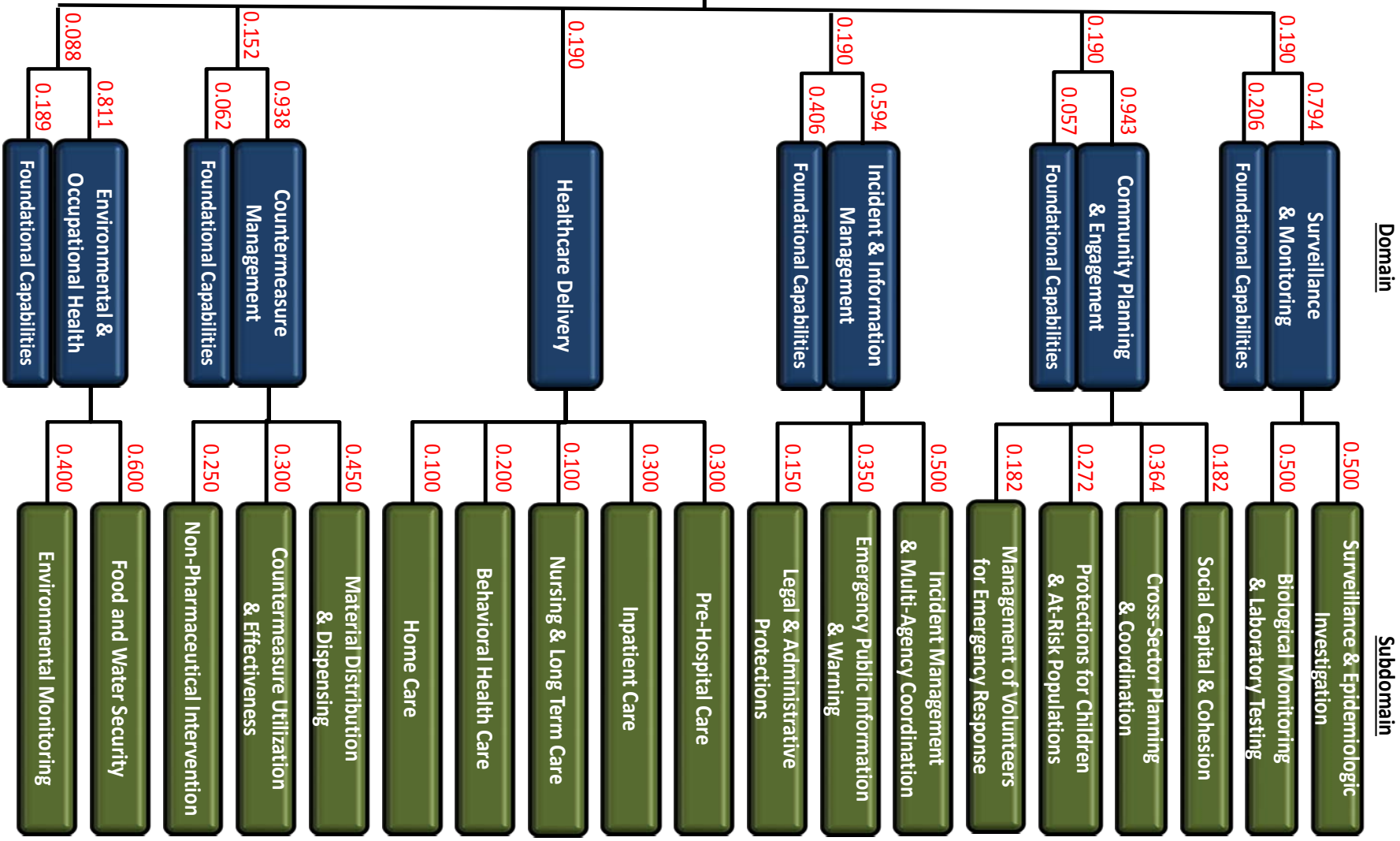
- Normalized to 0-10 scale using min-max scaling to preserve distributions
- Imputations based on multivariate longitudinal models
- Empirical weights based on Delphi expert panels
- Bootstrapped confidence intervals reflect sampling and measurement error
- Annual estimates for 2013, 2014 and 2015





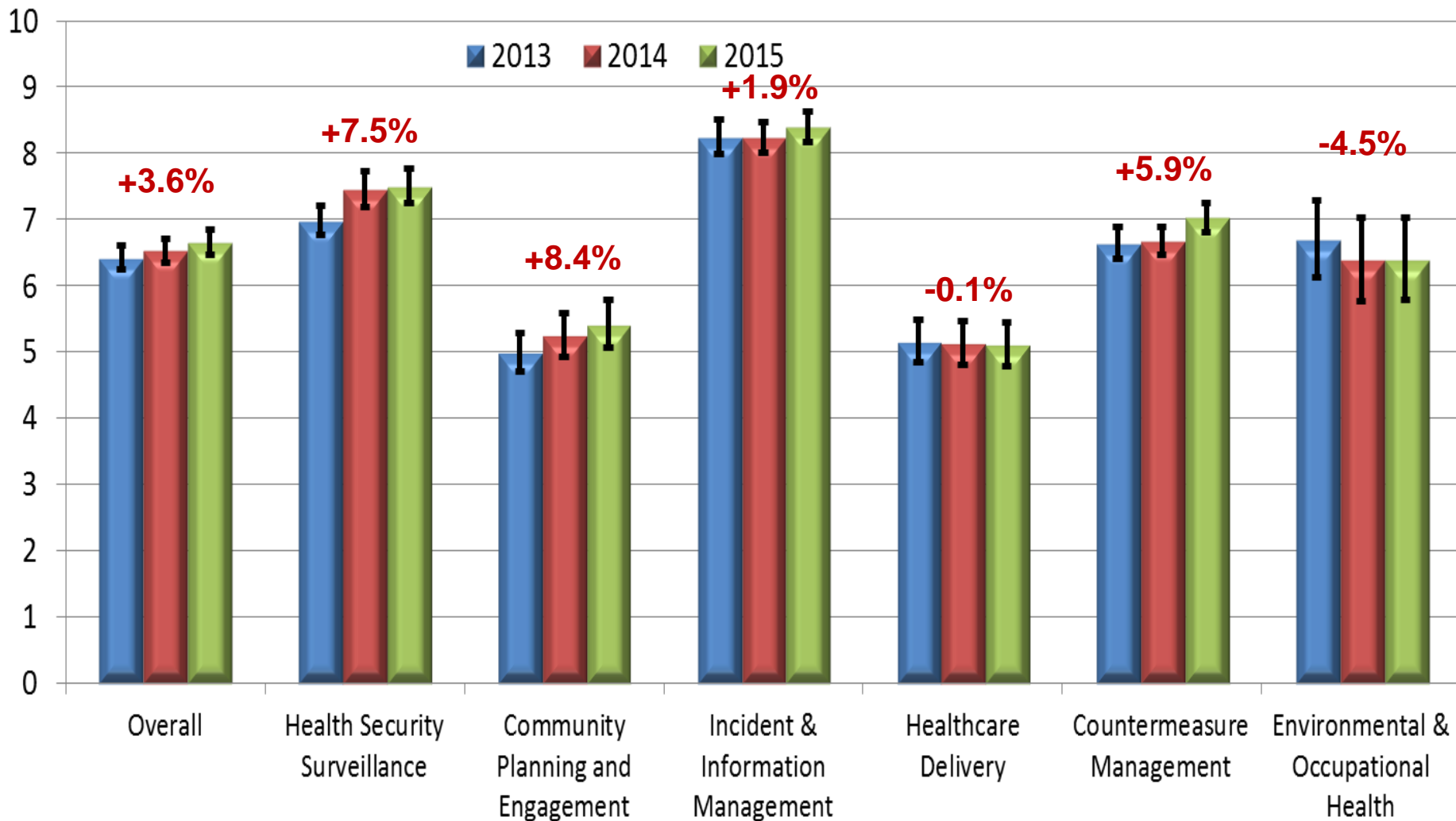
# Index Delphi Weights & Foundational Capabilities

## Health Security & Preparedness



NOTE: numbers indicate Delphi expert panel weights

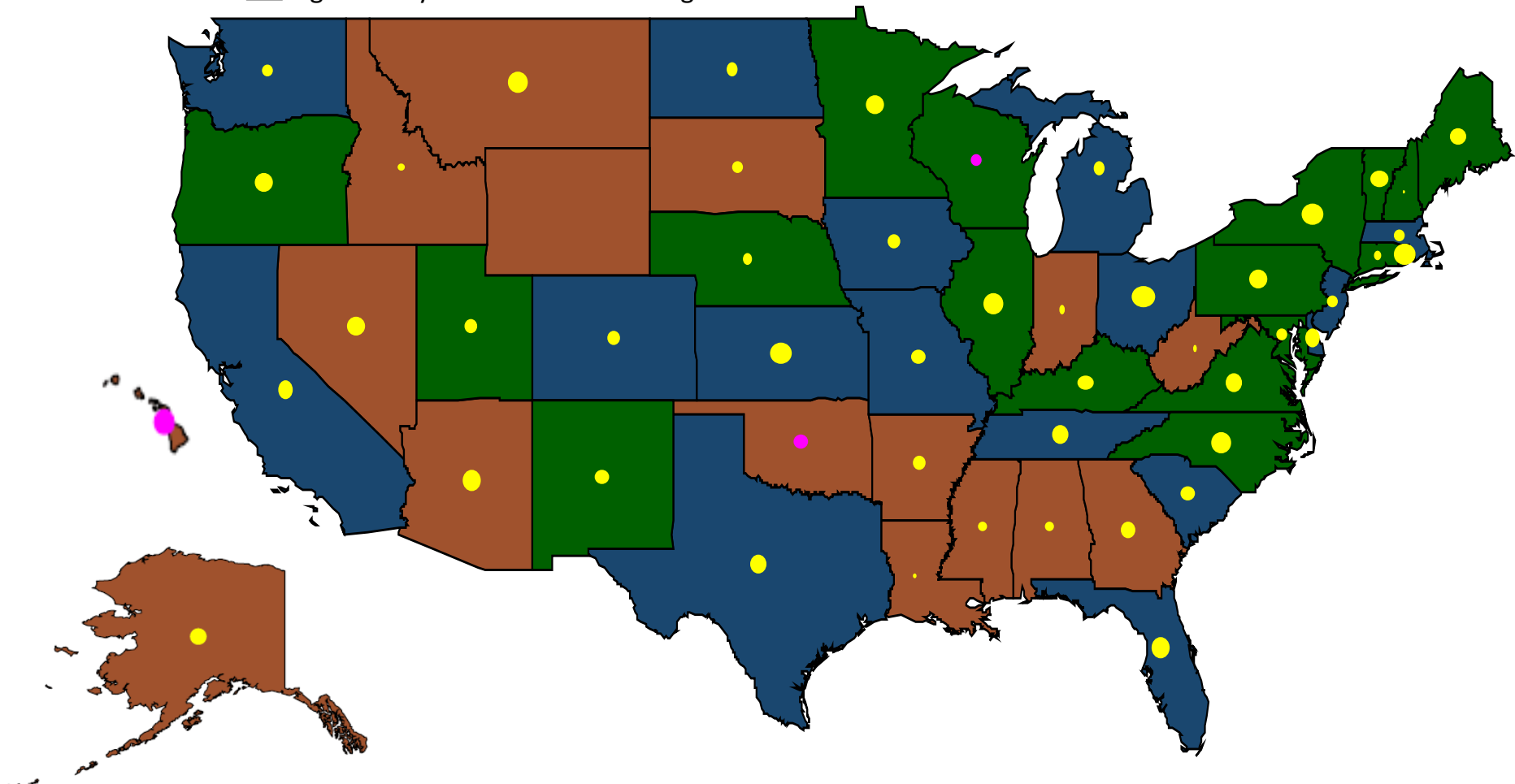
# 1. National preparedness trended upward in most functional areas during 2013-15, except in environmental health and healthcare delivery



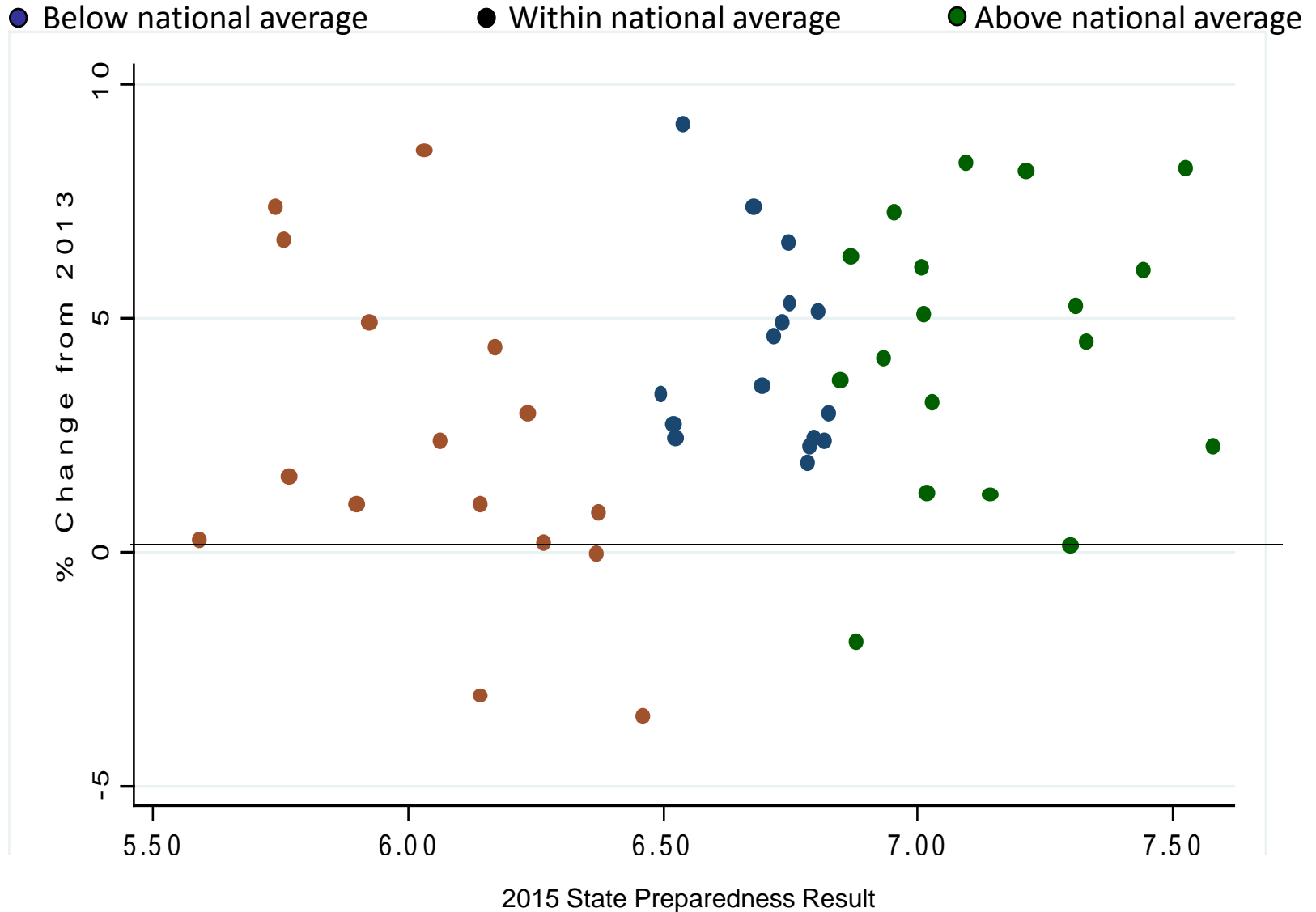
## 2. Preparedness improved in most states during 2013-15, but significant geographic differences remain.

- Significantly below national average in 2015
- Within national average confidence interval
- Significantly above national average in 2015

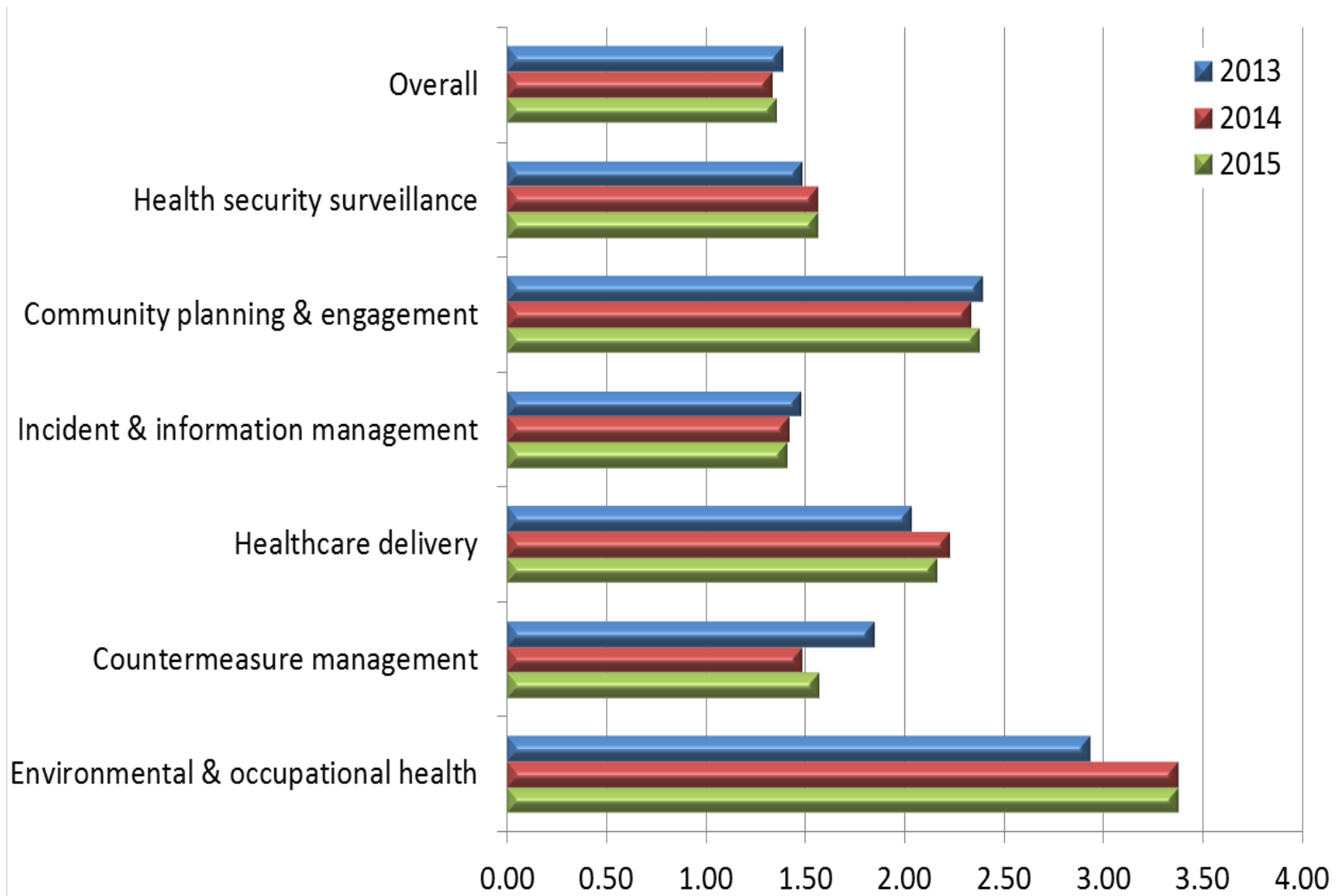
- % increase 2013-2015
- % decrease 2013-2015



### 3. Improvements in preparedness occurred across the U.S. in both above-average and below-average states. However, some below-average states continued to lose ground.



#### 4. Gaps in preparedness between the highest and lowest states are large and persistent, and they have increased in environmental health and in healthcare delivery.



# Caveats and cautions

- Imperfect measures & latent constructs
- Missing capabilities
- Timing and accuracy of underlying data sources

# Next Steps

- Now: state preview period
- 2016 Public Release on April 26  
[www.nhspi.org](http://www.nhspi.org)
- National convening to showcase uses: Fall 2016
- Continued work to incorporate advances in measurement: ASPR, CDC, NIH, AHRQ, HP2020
- Additional analysis to understand causes and consequences of change



# National Advisory Committee Members | 2015-16

1. Tom Inglesby, (Chair) UPMC Center for Health Security
2. Robert Burhans, Emergency Management Consultant
3. Anita Chandra, RAND
4. Ana-Marie Jones, Collaborating Agencies Responding to Disasters
5. Eric Klinenberg, New York University
6. Jeff Levi/Dara Lieberman, Trust for America's Health
7. Nicole Lurie, Assistant Secretary for Preparedness and Response
8. Stephanie Lynch, Caddo Parish (LA) Commissioner
9. Suzet McKinney, Chicago Department of Public Health
10. Stephen Redd, CDC Office of Public Health Preparedness & Response
11. Richard Reed, American Red Cross (through 2/2016)
12. Martin Jose Sepulveda, IBM Corporation
13. Claudia Thompson, NIH National Institute of Environmental Health Sci.
14. John Wiesman, Washington State Secretary of Health





# For More Information



## National Program Office

Supported by The Robert Wood Johnson Foundation

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