The National Health Security Preparedness Index:

Analytic Methodology Workgroup Virtual Meeting

PREPARED
NATIONAL HEALTH SECURITY PREPAREDNESS INDEX

February 10, 2016
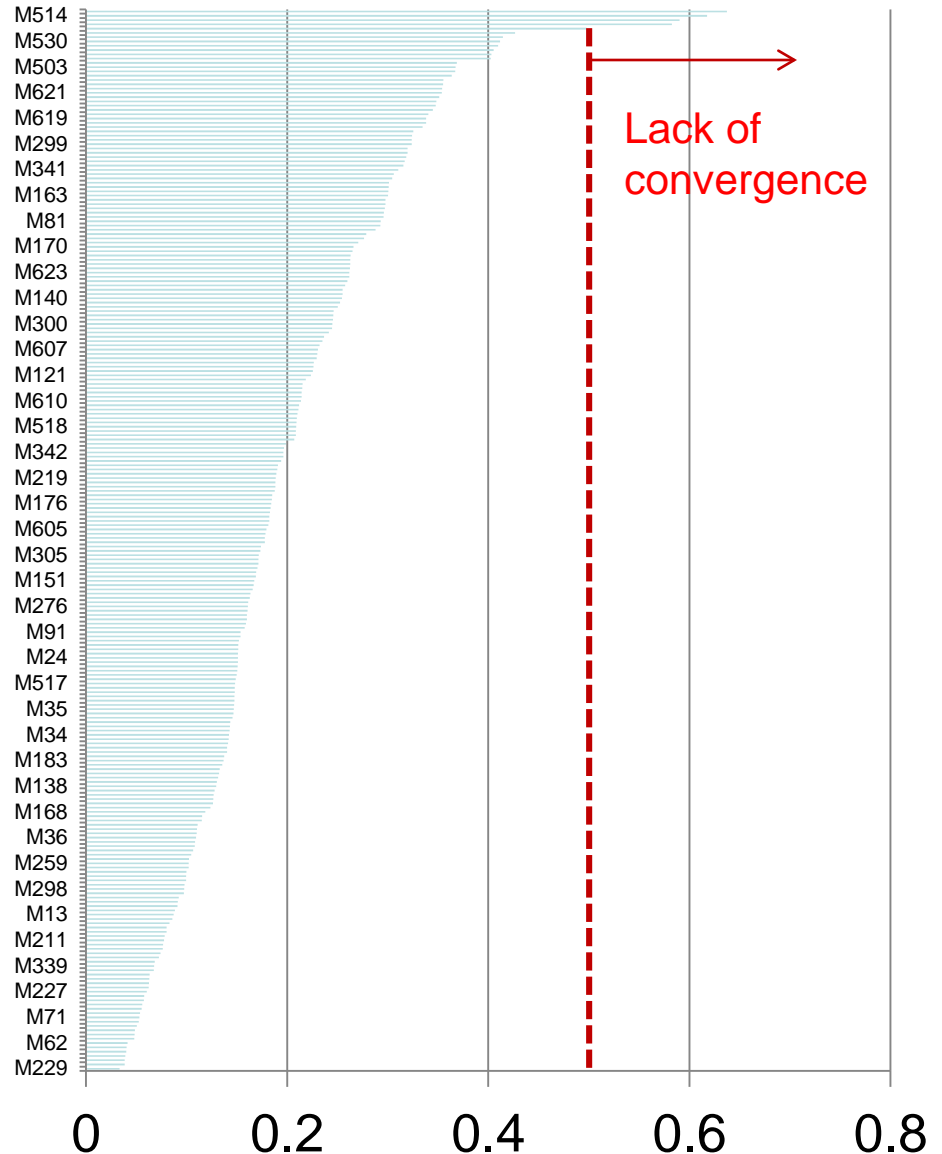

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Agenda

- **Summary of Delphi Results**
- **Weighting**
- **Imputation**
- **Confidence Intervals**
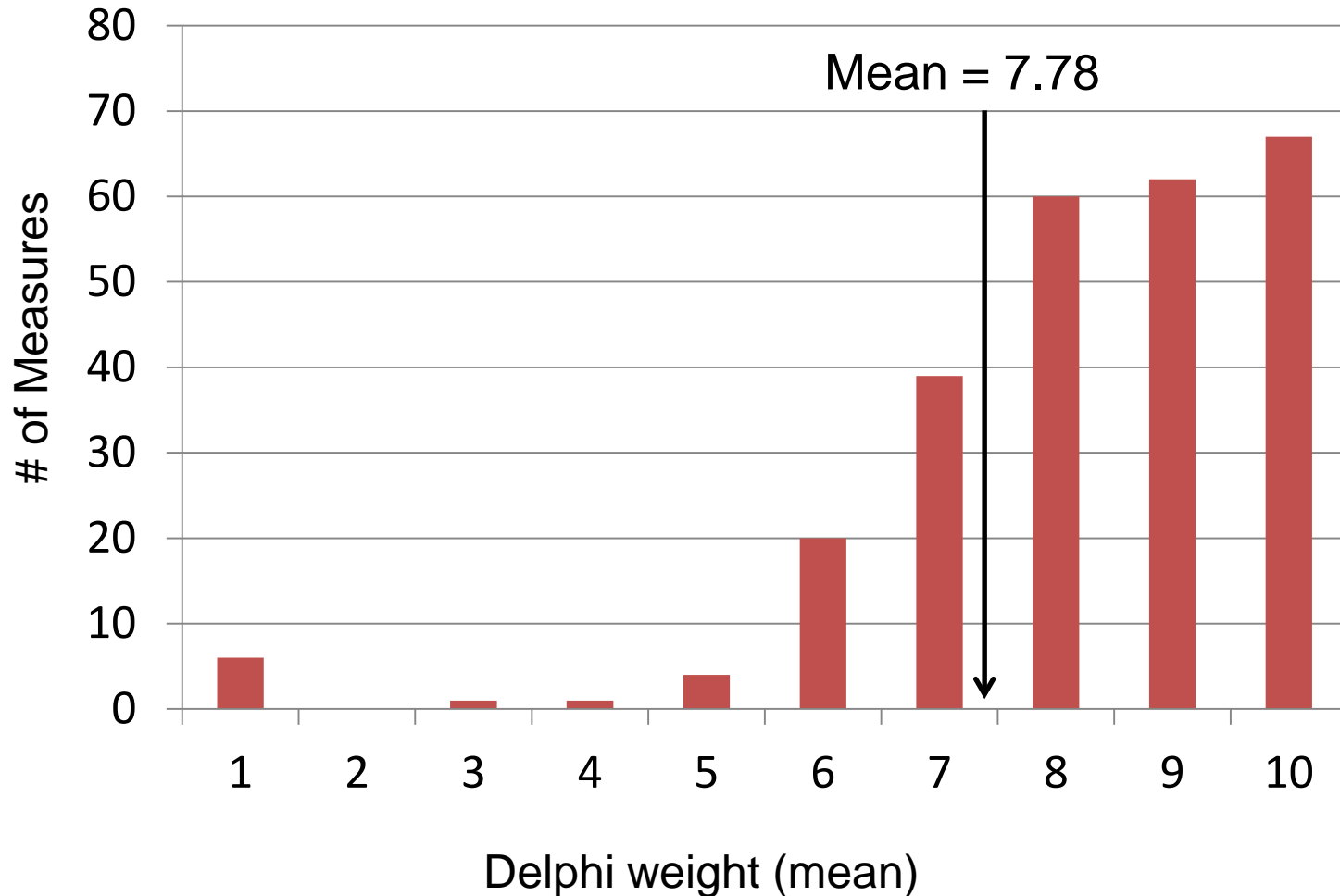- **In-Person Meeting**

Overview of the Delphi process

- **Separate panel convened for each of 6 domains**
- **Item Measure Assessment**
  - **Measures in each domain rated on importance**
  - **Use Visual Analog Scale (VAS) ratings**
  - **Results reported back to panelists with opportunity to revise ratings**
  - **Three waves used for each panel**
- **Subdomain/Domain Assessment**
  - **Similar approach**
    - **distribution of 100% instead of VAS**
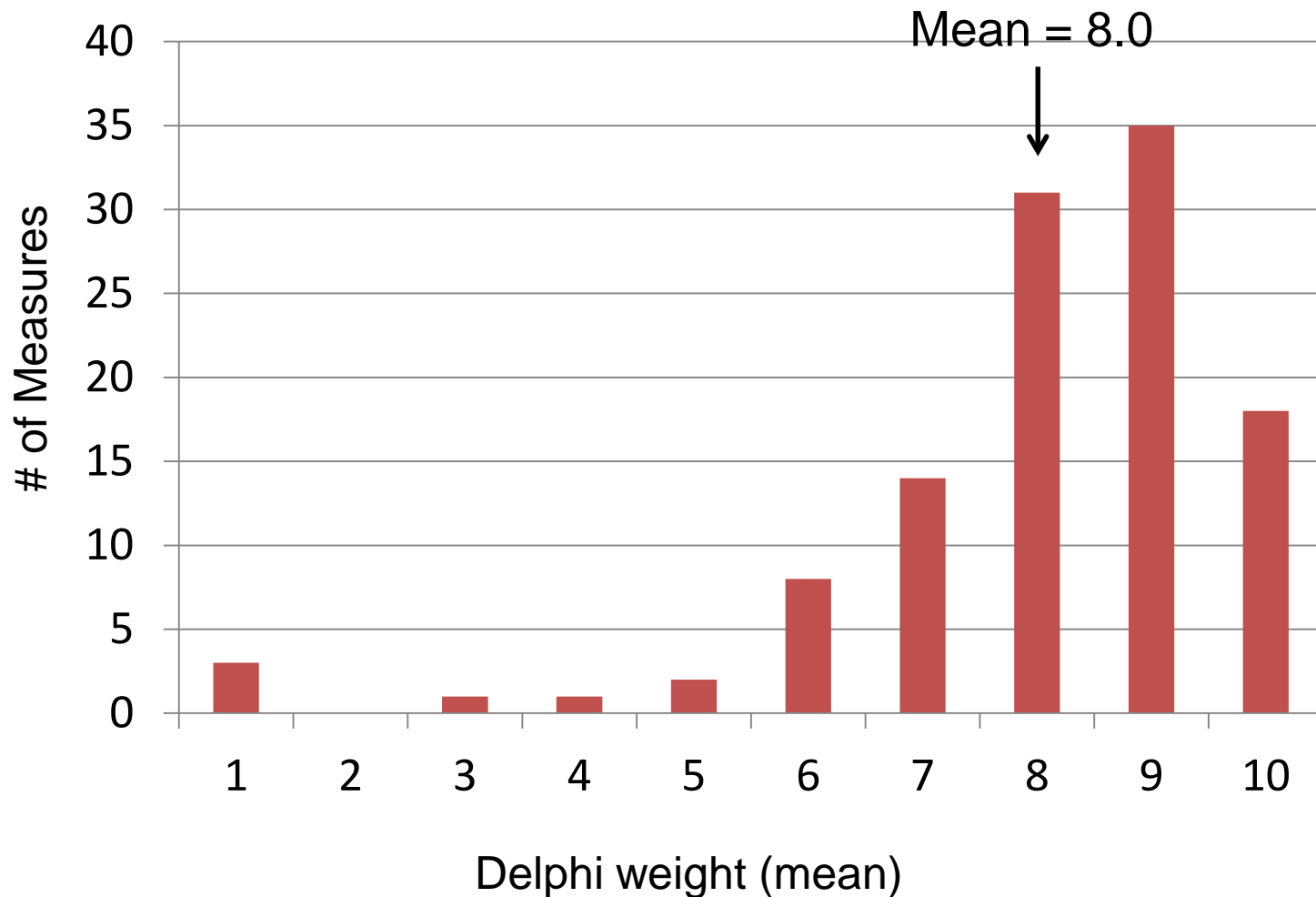
Assessing convergence in Delphi scores

- Discrimination Coefficient of Variation

- Only 5 measures exceed critical value of 0.5

- Most measures are well within the range of convergence (average = 0.18)

Lack of convergence

M514 M530 M503 M621 M619 M299 M341 M163 M81 M170 M623 M140 M300 M607 M121 M610 M518 M342 M219 M176 M605 M305 M151 M276 M91 M24 M517 M35 M34 M183 M138 M168 M36 M259 M298 M13 M211 M339 M227 M71 M62 M229

0   0.2   0.4   0.6   0.8

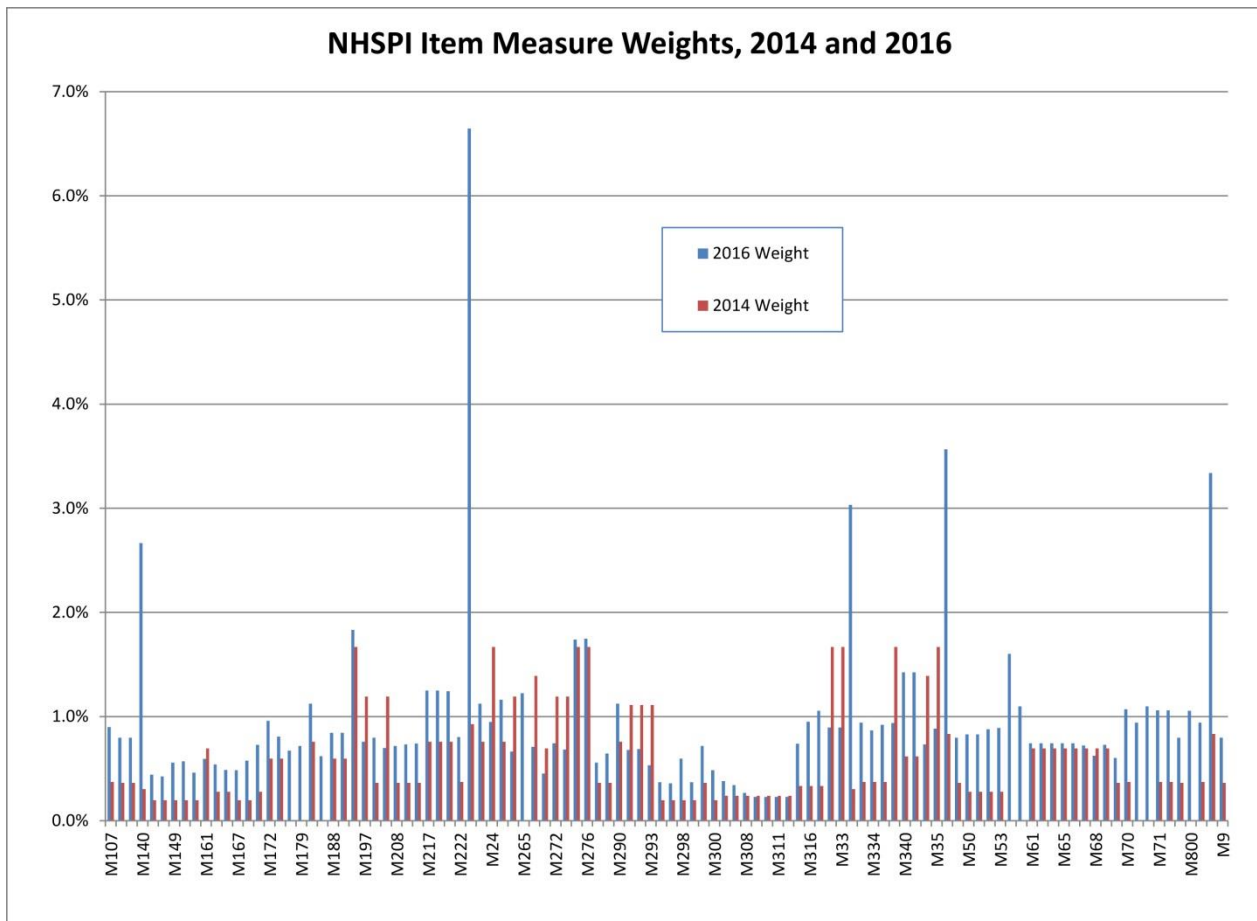# Distribution of Delphi Weights (All measures)

Distribution of Delphi Weights (only measures in Index)
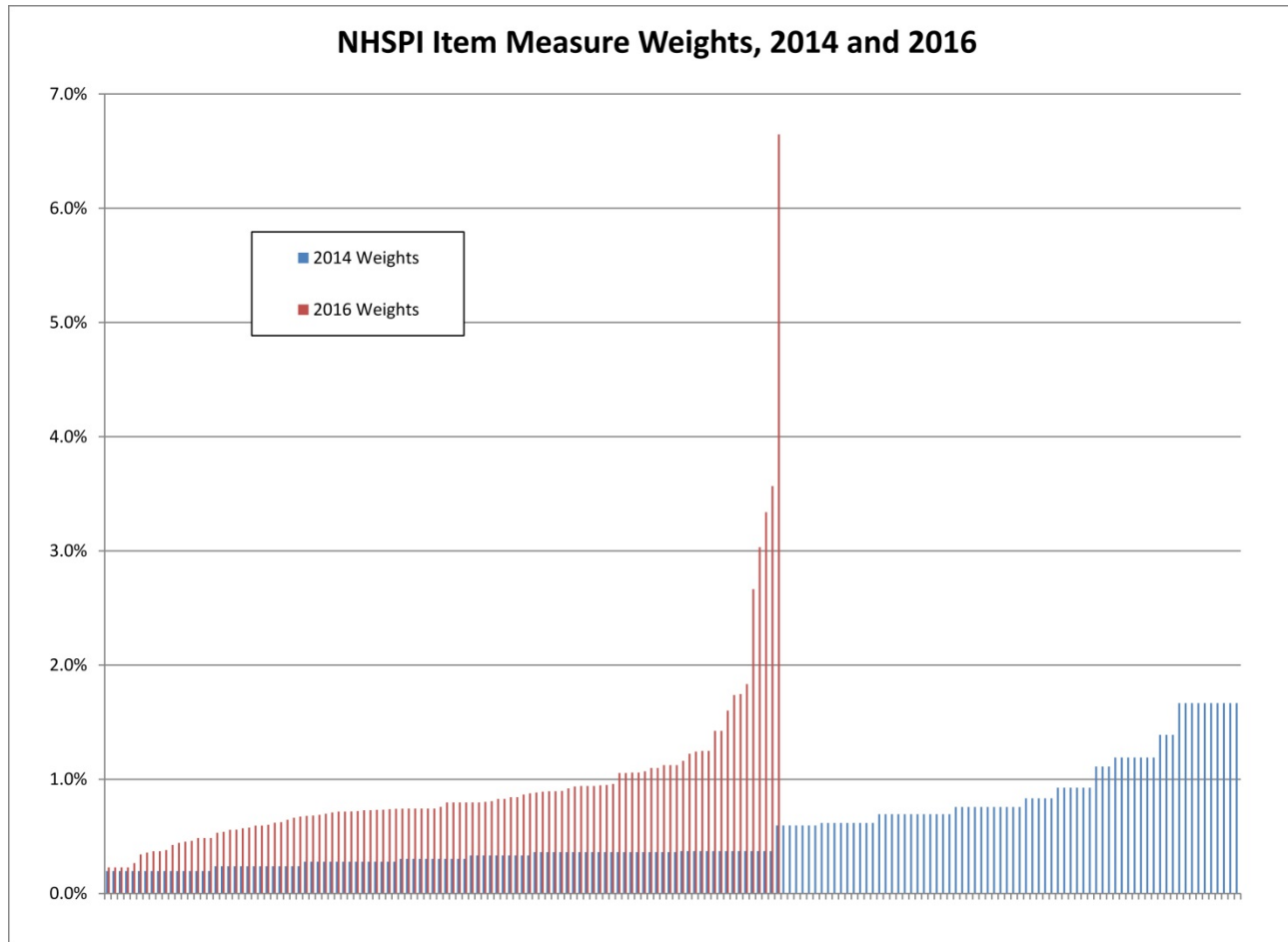
Implementing the Delphi Results: Weighting

- 2016 Index
  - Delphi assessment of importance to preparedness
  - Weights derived from expert assessments
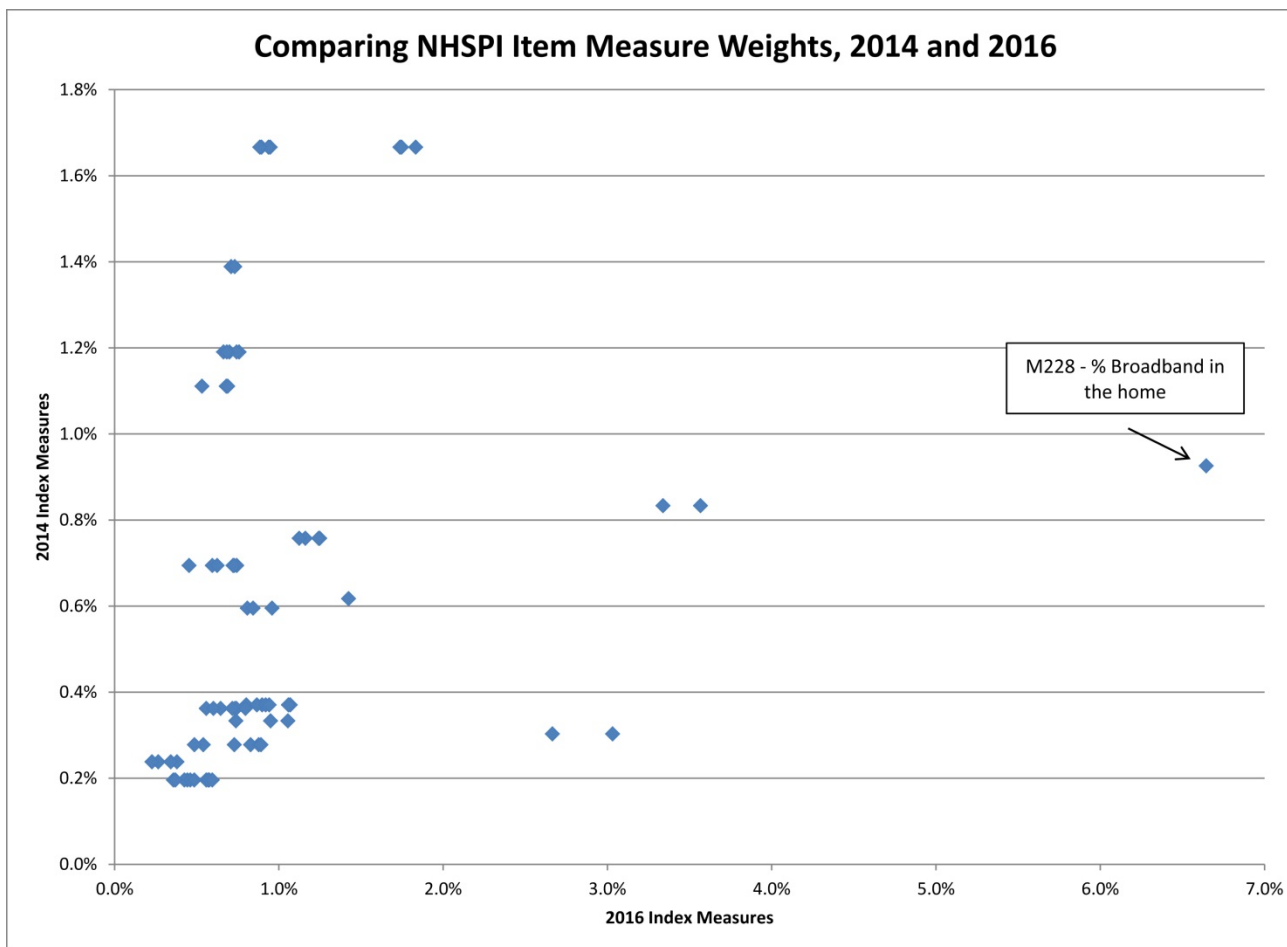
Implementing the Delphi Results: Weighting

NHSPI Item Measure Weights, 2014 and 2016

Implementing the Delphi Results: Weighting

NHSPI Item Measure Weights, 2014 and 2016

Implementing the Delphi Results: Weighting

Comparing NHSPI Item Measure Weights, 2014 and 2016

Dealing with Missing Values: Imputation

- Using multiple regression analysis to estimate missing values
- Just over a third of the item measures having missing data
  - Most are estimated using regression
  - Using 2014 Index data for others (e.g., APHL)
    - Still working on getting updated data

Imputation: What's in the Equation?

- Other item measures in the domain
- Geographic identifiers
  - Climate region, land area, % urban
- Socioeconomic/demographic measures
  - Age distribution, educational attainment, population, personal income

Confidence Intervals

- Frequentist approach for now, but will explore Bayesian method for the future
- Point estimates (states and U.S.)
  - Item measures, subdomains, domains, overall
- Confidence Intervals (90%) for the U.S.
  - Subdomains, domains, overall
- Three different time periods

Confidence Intervals
Identify Notable Changes

- Is a state's Index value (overall, subdomain, or domain) **above** the U.S., **below** the U.S., or the **same** as the U.S.?

- Is a state's Index value (overall, subdomain, or domain) showing notable changes over time (relative to the U.S.)?

  - Will display 3 time periods

In-Person Meeting

- Joint meeting of Analytic Methodology and Model Design Workgroups
- RAND, Santa Monica, CA
- Wednesday, **July 27, 2016**

For More Information

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