Project-Level Analysis of Goals & Metrics Survey Items

The NSF INCLUDES Coordination Hub's Collaborative Infrastructure Survey is designed to document respondents' assessment of their project's progress addressing specific components of each design element. The graphics on the site portray survey findings using *respondents* as the unit of analysis. While this perspective is useful, it fails to consider whether respondents within a given project agreed about the level of progress around the design elements. In addition, there is considerable benefit in considering *projects* as the unit of analysis (e.g., to assess which design elements projects appear to be addressing in a given year of NSF INCLUDES funding). To address this, we used item-response theory and confirmatory factor analysis to generate *project-level* composite scores for each survey item.[1] This approach allowed us to assess the extent to which Alliances have operationalized the design element of collaborative infrastructure at a given point in time. **Learn more about the methodology used to generate project-level findings**

Project-level survey responses regarding Goals & Metrics were largely positive, with an overall score of 74.7 (and a range of 65.9 to 82.1 on a scale of 1 to 100). Additionally:

- At the item level, Alliance-level responses for Goals & Metrics were highest for the following statement: *"All of our core partners are involved in the process of making sense of findings that emerge from the project's analysis of shared measurement data"* (81.2).

- Alliance-level responses for Goals & Metrics were lowest for the following statement: *"Our project uses data to make regular improvements"* (68.3).

- There were some noteworthy differences for Goals & Metrics across Alliances by year of NSF INCLUDES funding. Alliances with 3 years of NSF INCLUDES funding were slightly more likely to have higher composite scores for the following two statements: *"Our project has participatory processes to refine its measures, indicators, metrics, and/or data collection methods"* (77.3, compared to 71.2 for Alliances with 2 years of NSF INCLUDES funding) and *"Our project has the capacity to track progress across all partners"* (72.1, compared to 66.8 for Alliances with 2 years of NSF INCLUDES funding).[2,3]

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[1] These approaches are designed to assess the relationship between the latent construct and observed items to test the reliability and validity of the measurement and quantify the attributes of interest.

[2] Because the survey was administered for the first time in spring 2021, we presently have no data on respondents' perceptions of progress at the end of the first year of NSF INLCUDES funding. (Going forward, we expect to obtain Year 1 data from NSF INCLUDES Planning Grants and Cohort 3 Alliances.) As a result, we are currently unable to provide information about the relative progress that respondents would have reported for their initial year.

[3] In theory, one would expect that Alliances with more years of NSF INCLUDES funding would report more progress around the operationalization of a given design element. However, we are somewhat cautious when making such comparisons, because it is possible that the characteristics of Alliances funded in a given cohort differ (e.g., in terms of the maturity and complexity of their partnership structure, the range of barriers they are designed to address, the characteristics of their participant population, and the complexity of their approach). In addition, respondents' perspectives concerning their accomplishments (or the progress they still need to make) around a given design element may shift as they recognize the complexity of a given issue—with respondents realizing more work is needed as they begin to delve more deeply into a particular task.

Project-Level score for Goals & Metrics

Survey item	Overall (n=6 projects)	Year 2 of project funding (n=3 projects)	Year 3 of project funding (n=3 projects)
All of our core partners are involved in the process of making sense of findings that emerge from the project's analysis of shared measurement data	81.2 (75.0, 85.7)	81.0 (78.3, 82.5)	81.3 (75.0, 85.7)
Our project has participatory processes to refine its measures, indicators, metrics, and/or data collection methods	74.2 (61.5, 81.8)	71.2 (61.5, 78.3)	77.3 (75.0, 81.8)
Our project has the capacity to track progress across all partners (e.g., protocols, common metrics)	69.4 (52.5, 84.1)	66.8 (52.5, 77.8)	72.1 (64.3, 84.1)
Our project uses data to make regular improvements	68.3 (52.1, 85.0)	67.6 (52.1, 85.0)	68.9 (65.0, 73.8)
Overall	74.7 (65.9, 82.1)	73.4 (65.9, 82.1)	76.0 (73.2, 79.3)

Note: The score for a given survey item represents the overall standardized scale score obtained from the item-response theory and confirmatory factor analysis. Each score has a range of 1 to 100, with 100 representing the highest possible score—i.e., all respondents within a project answered the highest response category (either "achieved" or "strongly agree") for a given survey item. In addition, we provide the minimum and maximum project-level standardized scale score response *(in italics)* for a given survey item.