

Accelerating workforce growth

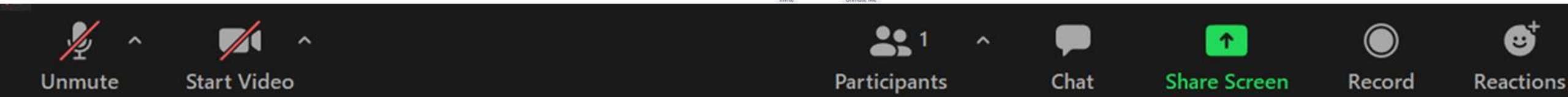
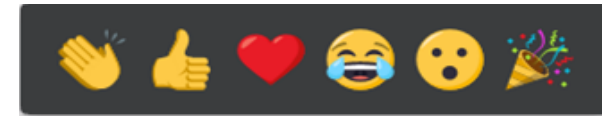
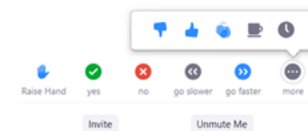
Moderator

Jimica Tchamako, Director of Requirements Lab, Public Health Informatics Institute | May 24, 2022

Better data. Better decisions. Better health.

Finding your way around Zoom

- The audience is muted, type your questions into the chat or use reactions to communicate with panelists.



Increasing Data Science and Informatics Capacity at Health Departments: The Data Science Team Training Program

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Branch Chief

**Population Health Workforce Branch (PHWB)
Division of Scientific Education and Professional Development (DSEPD)**

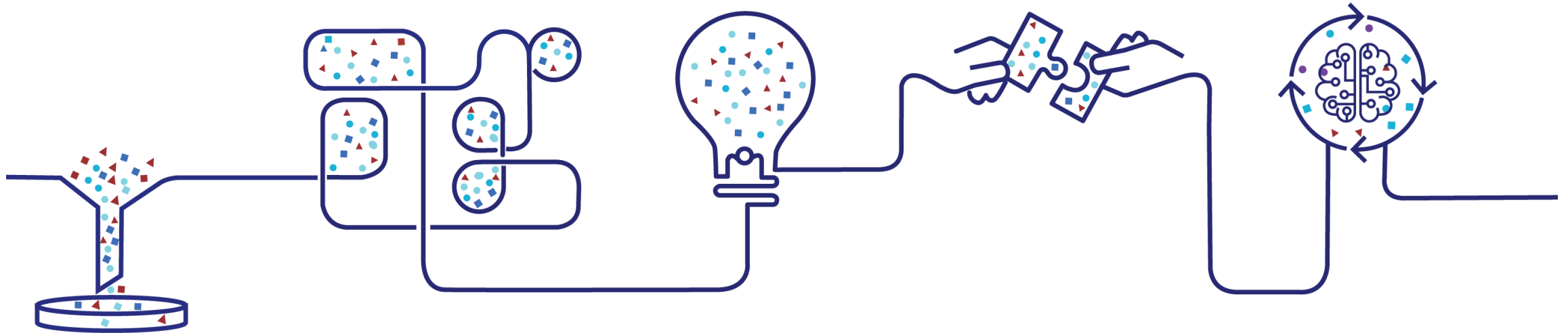


Data Science Team Training (DSTT)

CDC's Data Modernization Initiative

Better, Faster, Actionable Intelligence for Decision-Making at All Levels of Public Health

CDC DMI PRIORITIES



Build the right foundation

Accelerate data into action

Develop a state-of-the-art workforce

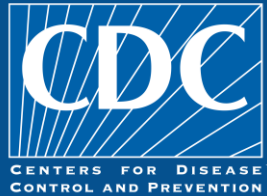
Support + extend partnerships

Manage change + governance



Connected, resilient, adaptable,
sustainable, 'response-ready' **workforce**

DEVELOPING A STATE-OF-THE-ART WORKFORCE



DEVELOPING A STATE-OF-THE-ART WORKFORCE



Data Science Team Training
(DSTT)

Applied Public Health
Informatics Fellowship (APHIF)

CSTE's Data Science Team Training (DSTT)

Program Overview

DSTT LEARNING COMPONENTS



Curated, self-paced, **Coursera** courses



Monthly **office hours** with SMEs and colleagues



Team **coaching** with SMEs



Training **stipend**



Virtual peer **learning community**

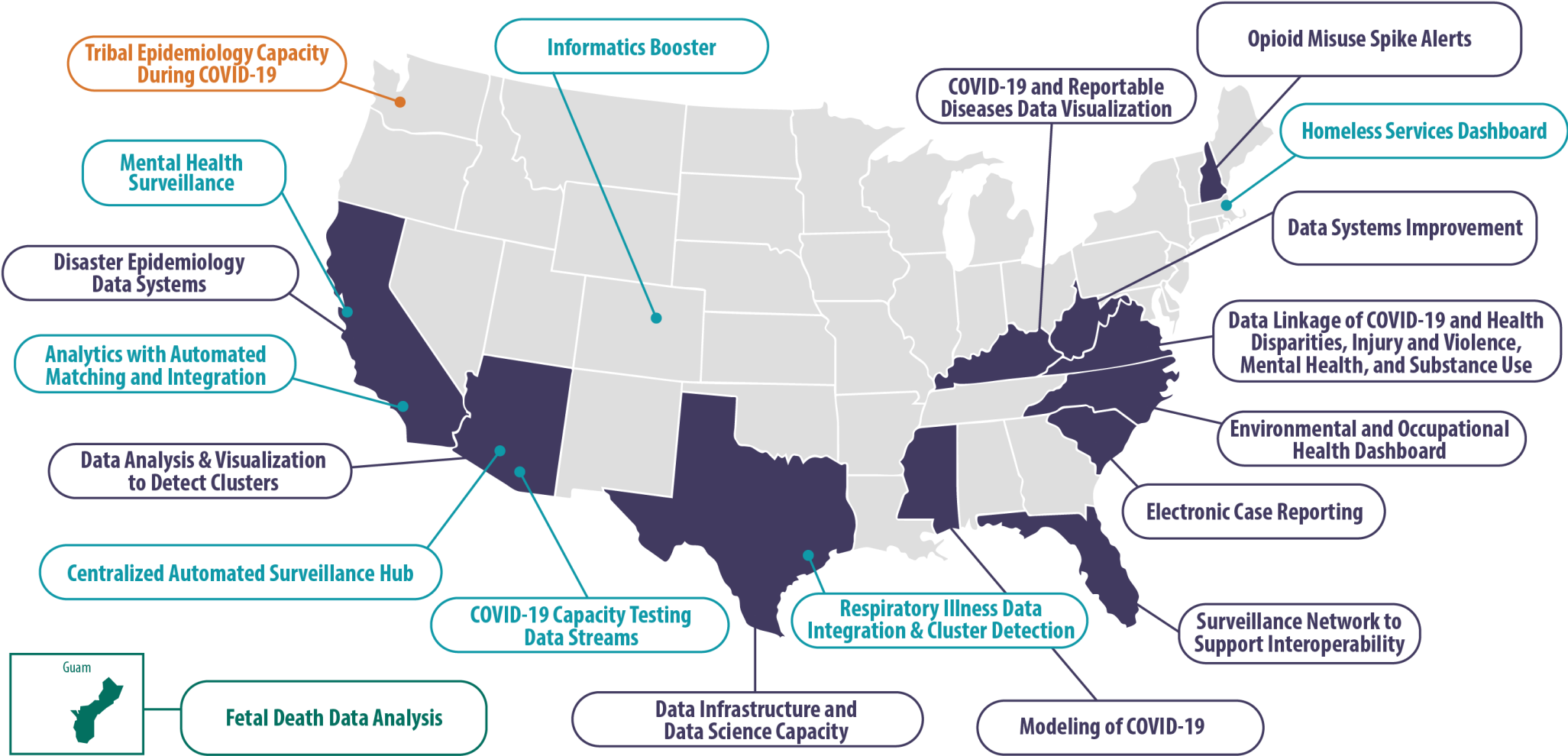


Team data science **projects**



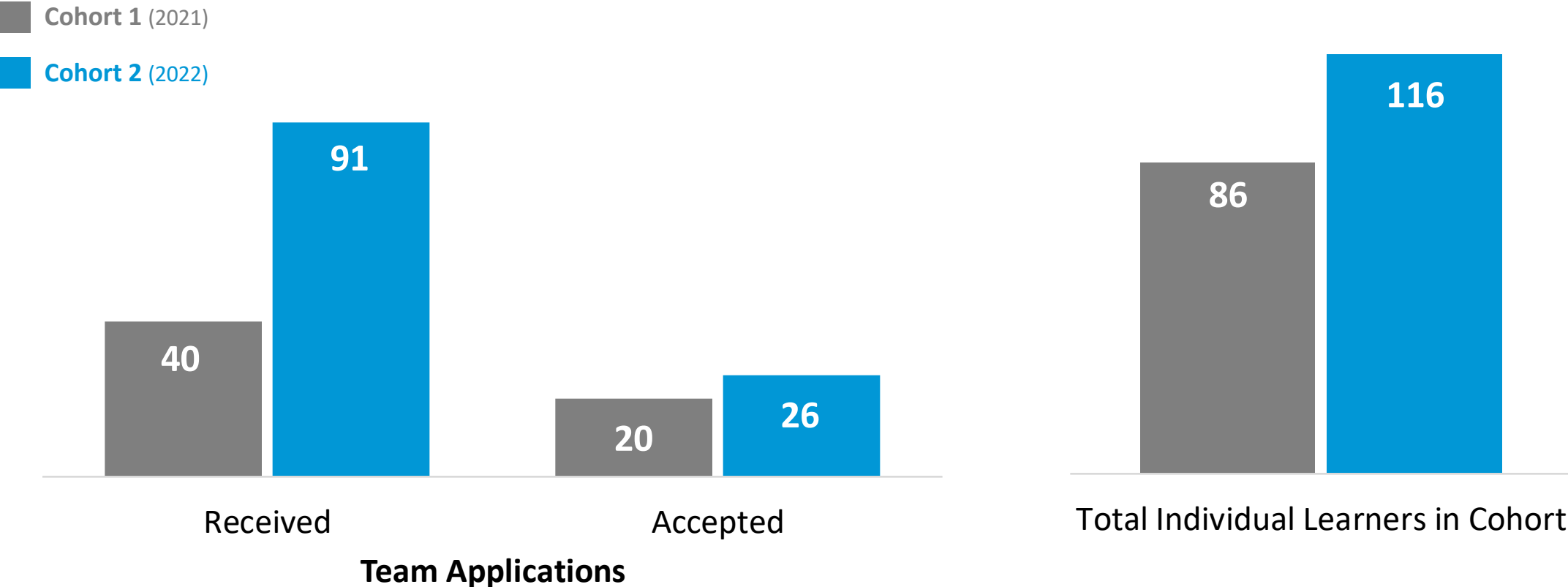
Final symposium **presentations**

DSTT COHORT 1 (2021)



GROWING DEMAND FOR DSTT

There were more than twice as many DSTT applications for **Cohort 2** than for Cohort 1. DSTT Cohort 2 includes 26 teams and 116 total participants.



DSTT Evaluation

Evaluation Questions and Findings

DSTT COHORT 1 EVALUATION QUESTIONS

(1) How did teams **engage** with the DSTT **program elements**, and which were most and least **helpful**?

(2) How successful was DSTT in building individual data science **competencies**, team **capability**, and **capacity** at public health agencies?

(3) What **contextual factors** facilitated and hindered development of data science competencies, capability, and capacity?

METHODS & DATA SOURCES

Mixed methods evaluation collecting data from...



Focus groups



Web survey



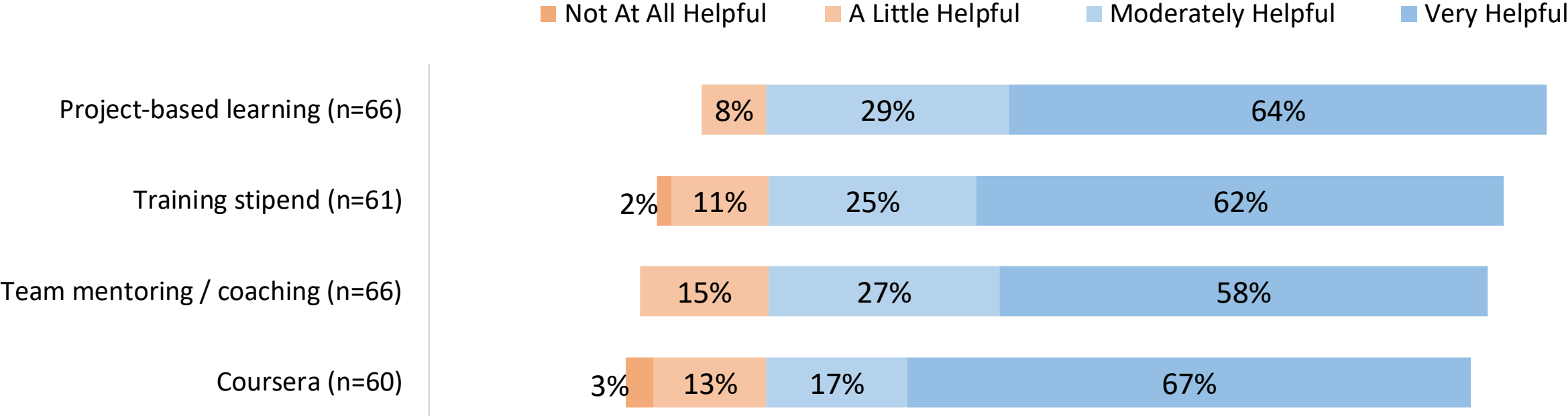
**Coursera
Dashboard**

How did teams engage with the **program elements**, and which were most and least helpful?

DSTT Evaluation Question #1

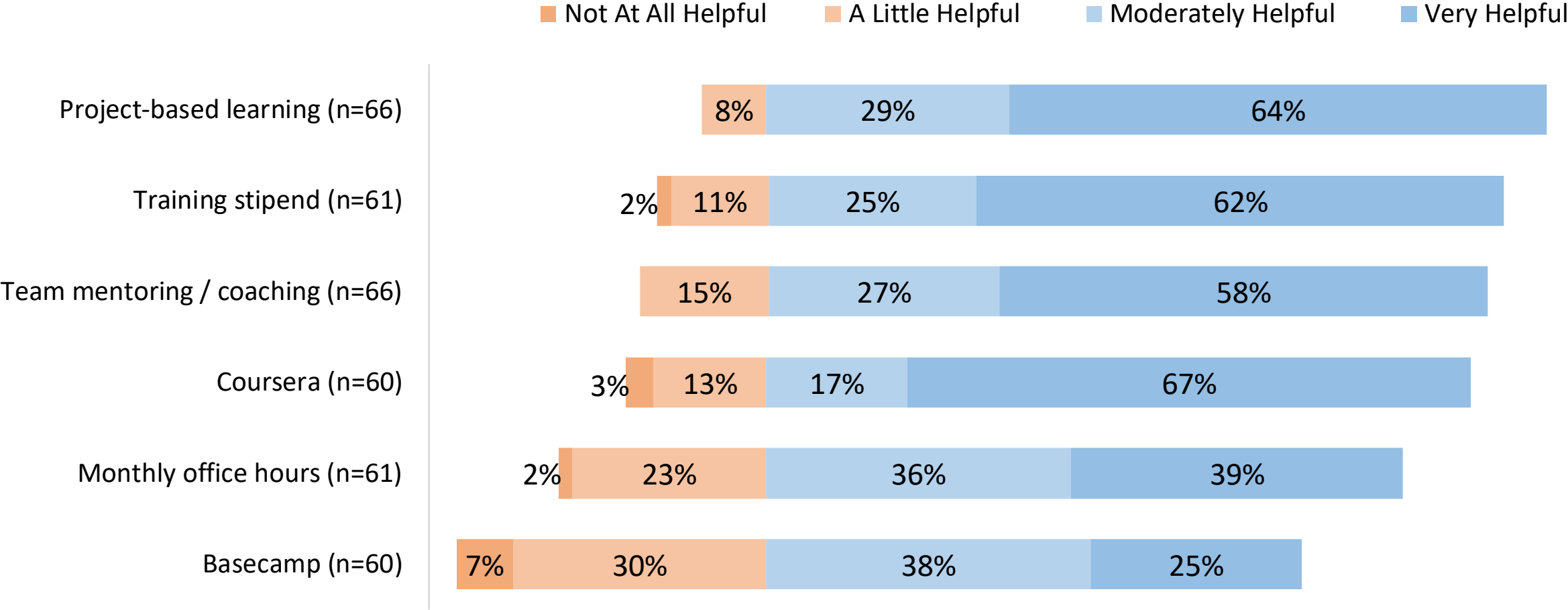
Site-focused and individually directed program elements were the most helpful

DSTT participant opinions about helpfulness of DSTT program elements (n=varies)



Site-focused and individually directed program elements were the most helpful

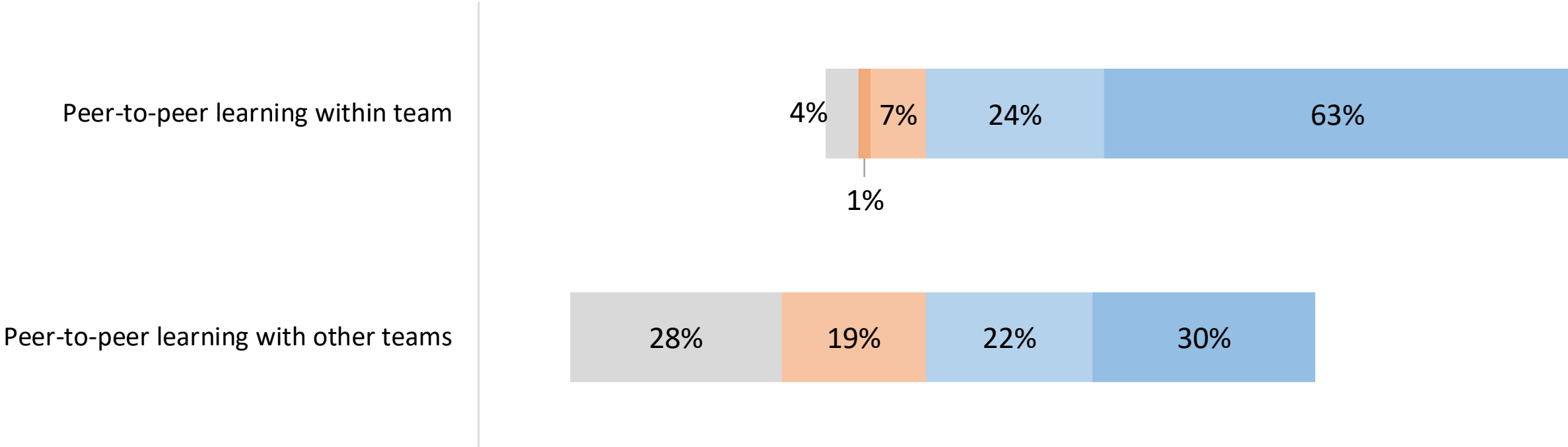
DSTT participant opinions about helpfulness of DSTT program elements (n=varies)



Peer-to-peer learning within DSTT teams was substantially more helpful and experienced by more participants than peer-to-peer learning across DSTT teams

DSTT participant opinions about helpfulness of peer-to-peer learning (n=67)

■ Did not experience ■ Not At All Helpful ■ A Little Helpful ■ Moderately Helpful ■ Very Helpful



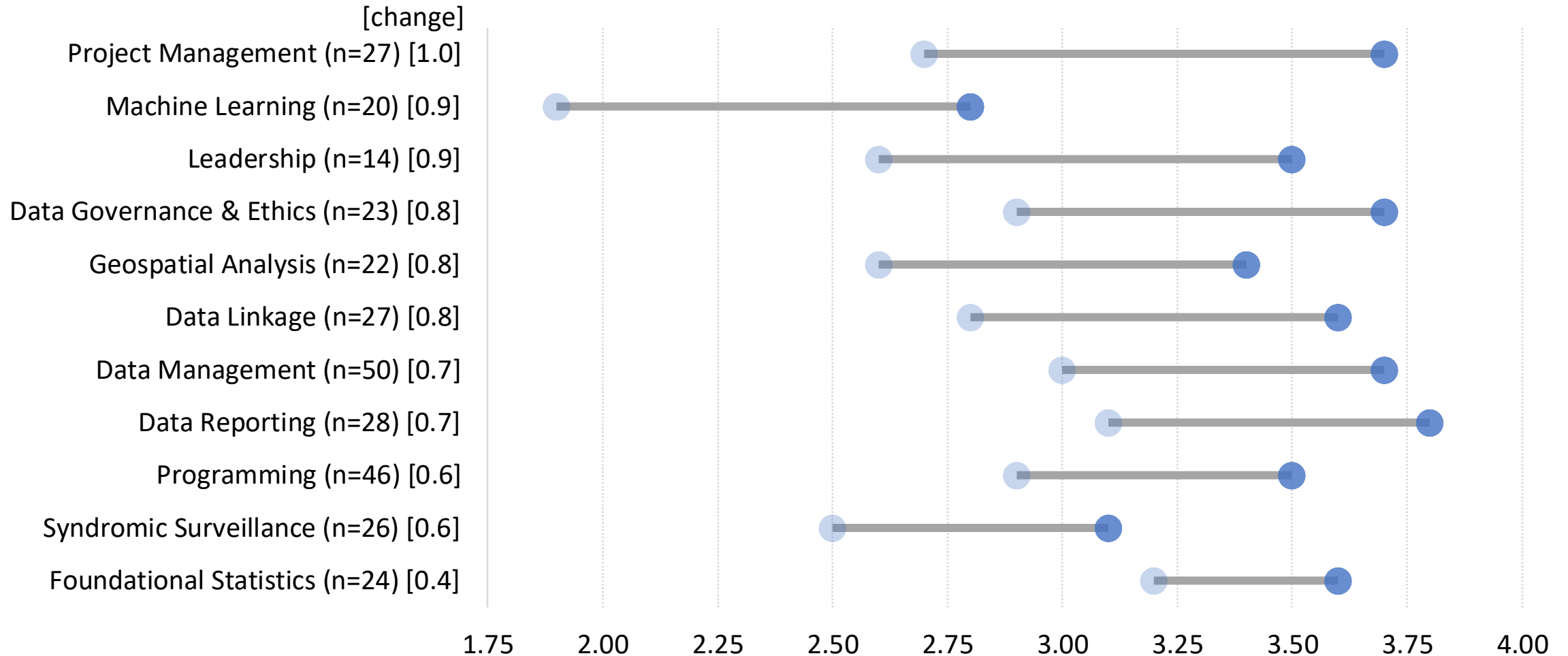
How successful was the DSTT program in building participant data science **competencies, team data science **capability**, and data science **capacity** at public health agencies?**

DSTT Evaluation Question #2

INDIVIDUAL-LEVEL COMPETENCIES

All data science domains showed positive pre-to-post change in competency

Mean pre-to-post change among participants with domain focus (n varies); ordered from most to least change

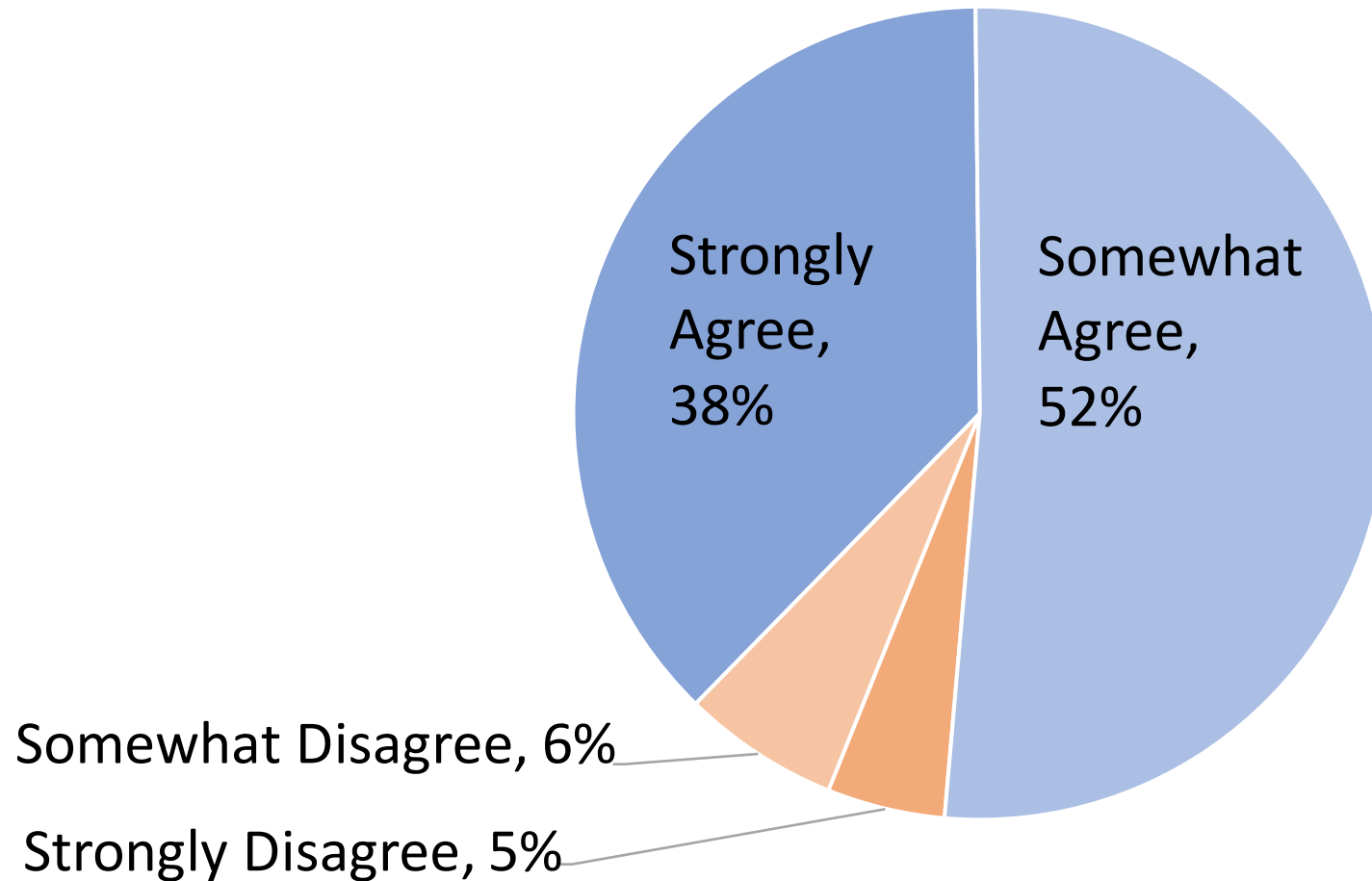


Survey scale = 1-5; in figure, X axis = 1.75 - 4.0 to display length of pre-to-post lines more clearly

TEAM-LEVEL CAPABILITY

Most DSTT participants applied what they learned to their team data science projects

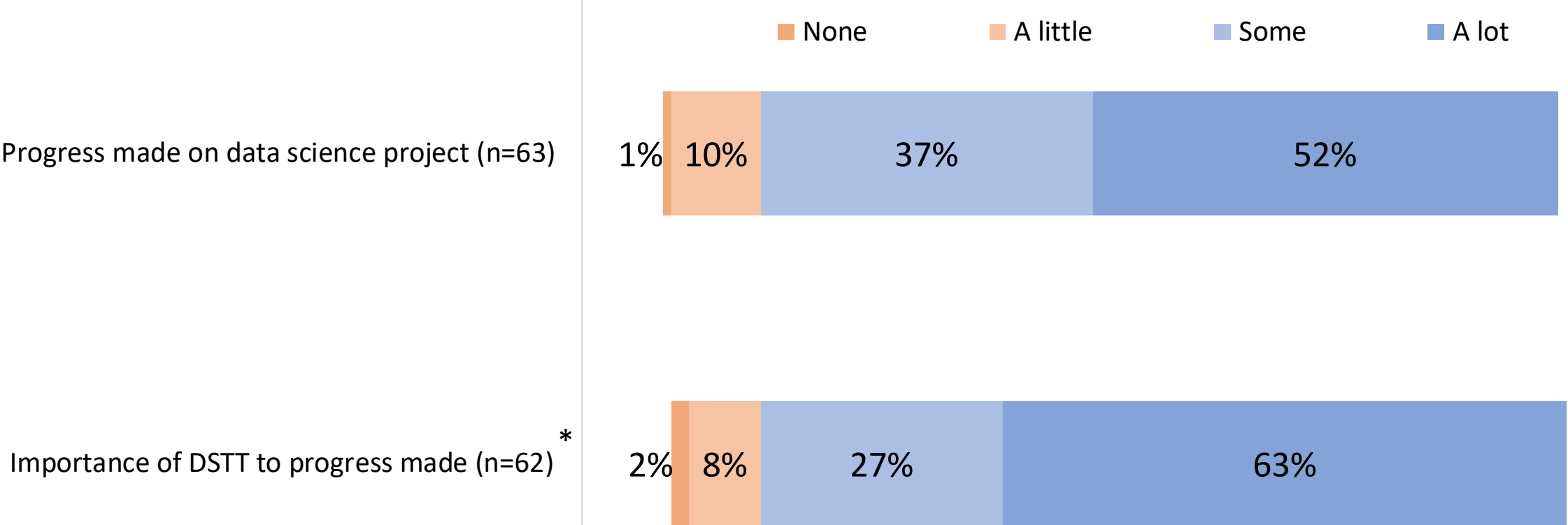
DSTT participant opinions about extent to which they used what they learned in team projects (n=64)



AGENCY-LEVEL CAPACITY

Teams made progress on data science projects they attribute to participation in DSTT

DSTT participant opinions about the extent of progress on data science projects and the importance of participation in the DSTT to the progress that was made (n varies)



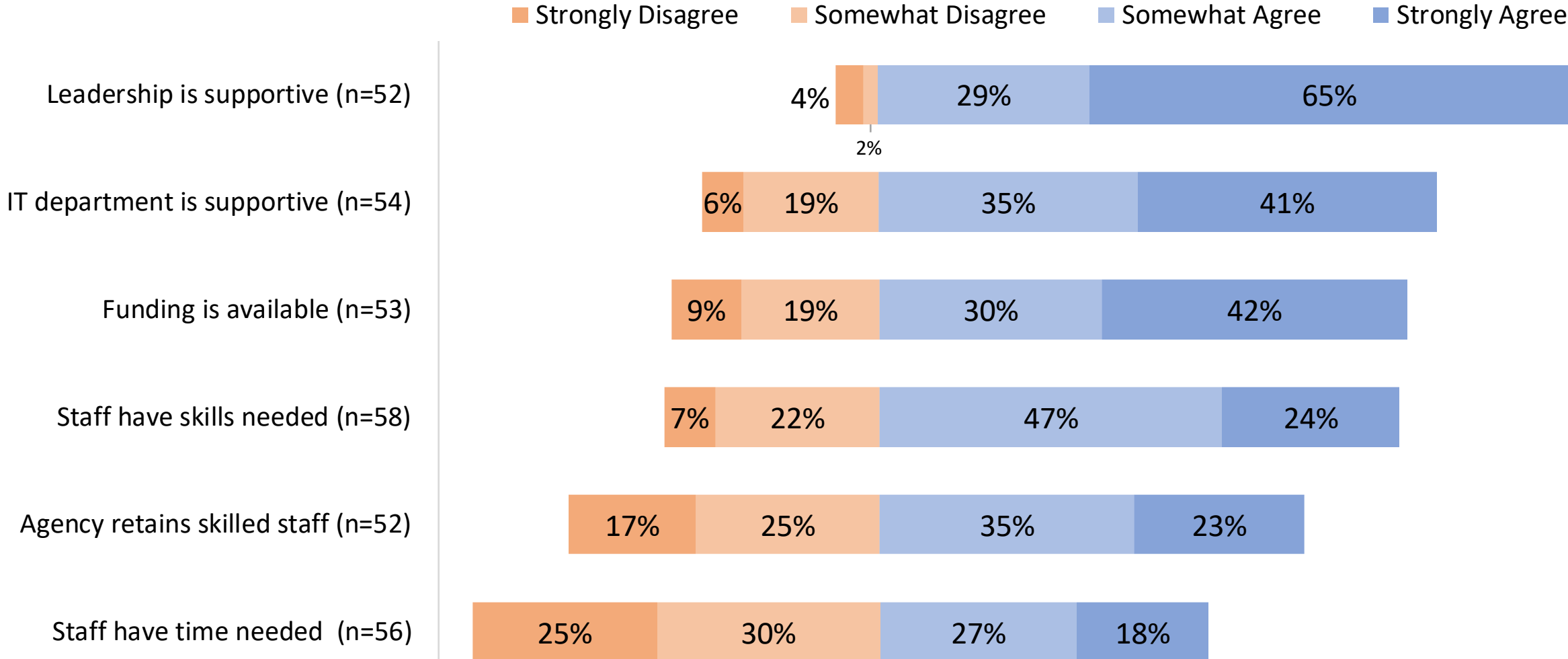
* Excludes one respondent who reported that no progress was made

What contextual factors at DSTT sites facilitated and hindered development of data science competency, capability, and capacity?

DSTT Evaluation Question #3

Contextual factors facilitate and hinder data modernization at DSTT sites

DSTT participant opinions about factors affecting data modernization at their agencies (n varies)*



* Excludes respondents that answered "don't know"

Conclusions & Recommendations

DSTT EVALUATION CONCLUSIONS



DSTT developed individual-level data science *competencies*; participants reported learning in all data science domains on which they focused.



Developed team-level data science *capability*; participants reported strengthening professional connections within teams and agencies, and applying knowledge and skills learned individually to work collaboratively on team data science projects.



Made important contributions to agency-level data science *capacity* at participating public health agencies; participants reported progress on data science projects that they attributed to participation in DSTT.

DSTT EVALUATION CONCLUSIONS



Extent of participant engagement with and views on helpfulness of DSTT program elements varied, indicating many strengths and some **opportunities to refine program structure and delivery.**



There are important **contextual factors** at agencies that may facilitate and hinder data modernization.

RECOMMENDATIONS FOR DSTT

1. Refine program elements
2. Address participant time constraints
3. Increase networking opportunities across teams
4. Provide additional technical support for teams
5. Mitigate contextual factors that hinder data modernization
6. Continue to offer and expand DSTT



Fine Tuning

RECOMMENDATIONS FOR DSTT

1. Refine program elements

- Provide guidance on Coursera
- Foster interactivity in monthly office hours
- Provide direction for using training stipends



Fine Tuning

RECOMMENDATIONS FOR DSTT

2. Address participant time constraints

- Provide learning resources earlier in the program
- Offer guidance on how to use learning resources
- Expand program duration



Fine Tuning

RECOMMENDATIONS FOR DSTT

3. Increase networking opportunities across teams

- Foster interactivity in existing program elements
- Actively connect individuals and teams
- Organize additional networking activities



Fine Tuning

RECOMMENDATIONS FOR DSTT

4. Provide additional technical support for teams
 - Arrange guest lectures from other SMEs
 - Consider expanded learning resources through external vendors

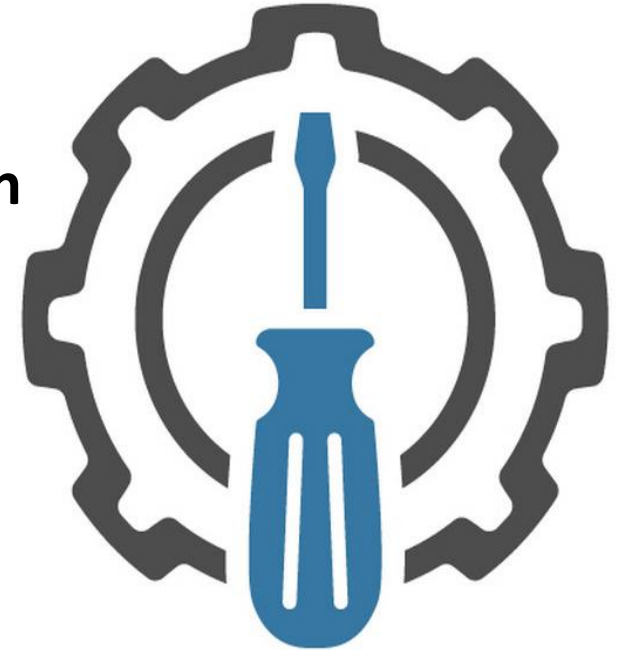


Fine Tuning

RECOMMENDATIONS FOR DSTT

5. Mitigate contextual factors that hinder data modernization

- Train teams on how to advocate for data modernization
- Provide resources directly to health department leadership



Fine Tuning

RECOMMENDATIONS FOR DSTT

6. Continue to offer and expand DSTT

- Grow program capacity
- Expand learning resources
- Enhance peer-peer learning



Fine Tuning

RECOMMENDATIONS FOR DSTT

1. Refine program elements
2. Address participant time constraints
3. Increase networking opportunities across teams
4. Provide additional technical support for teams
5. Mitigate contextual factors that hinder data modernization
6. Continue to offer and expand DSTT



Fine Tuning

ACKNOWLEDGEMENTS

- Bernadette Aylward
- Kacy Chrestman
- Amanda Masters
- Jessica Arrazola
- David Napp
- Jane Conklin
- Tennille Clayton
- Heather Strosnider

For more information, contact CDC
1-800-CDC-INFO (232-4636)
TTY: 1-888-232-6348 www.cdc.gov

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

ADDITIONAL RESOURCES

CDC's Data Modernization Initiative

- <https://www.cdc.gov/surveillance/data-modernization/>

Applied Informatics Fellowship Program (APHIF)

- informaticstraining@cste.org
- <http://cste.org/page/aphif-webpage>

Data Science Team Training (DSTT)

- dstt@cste.org
- <http://cste.org/page/dstt-webpage>

Data Science Upskilling (DSU)

- DSU@cdc.gov
- <http://cdc.gov/phif/overview/index.html>
- <https://resources.data.gov/resources/cdoc-case-study/>

Public Health Informatics Fellowship (PHIFP)

- PHIFP@cdc.gov
- <http://cdc.gov/phifp/index.html>

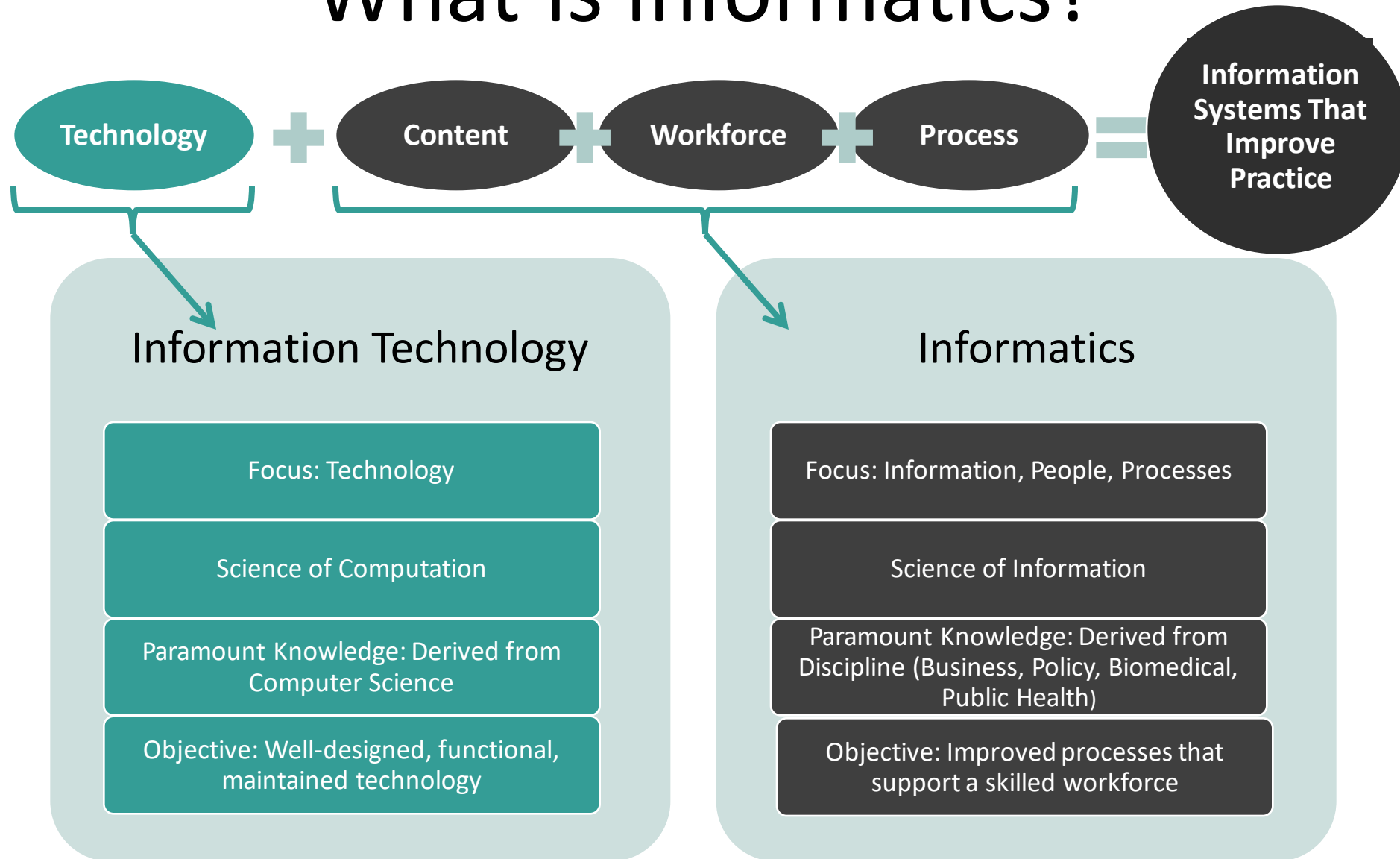




WA DATA TASK FORCE – DEFINING ROLES

2022 – PHII Data Modernization Workshop

What is Informatics?



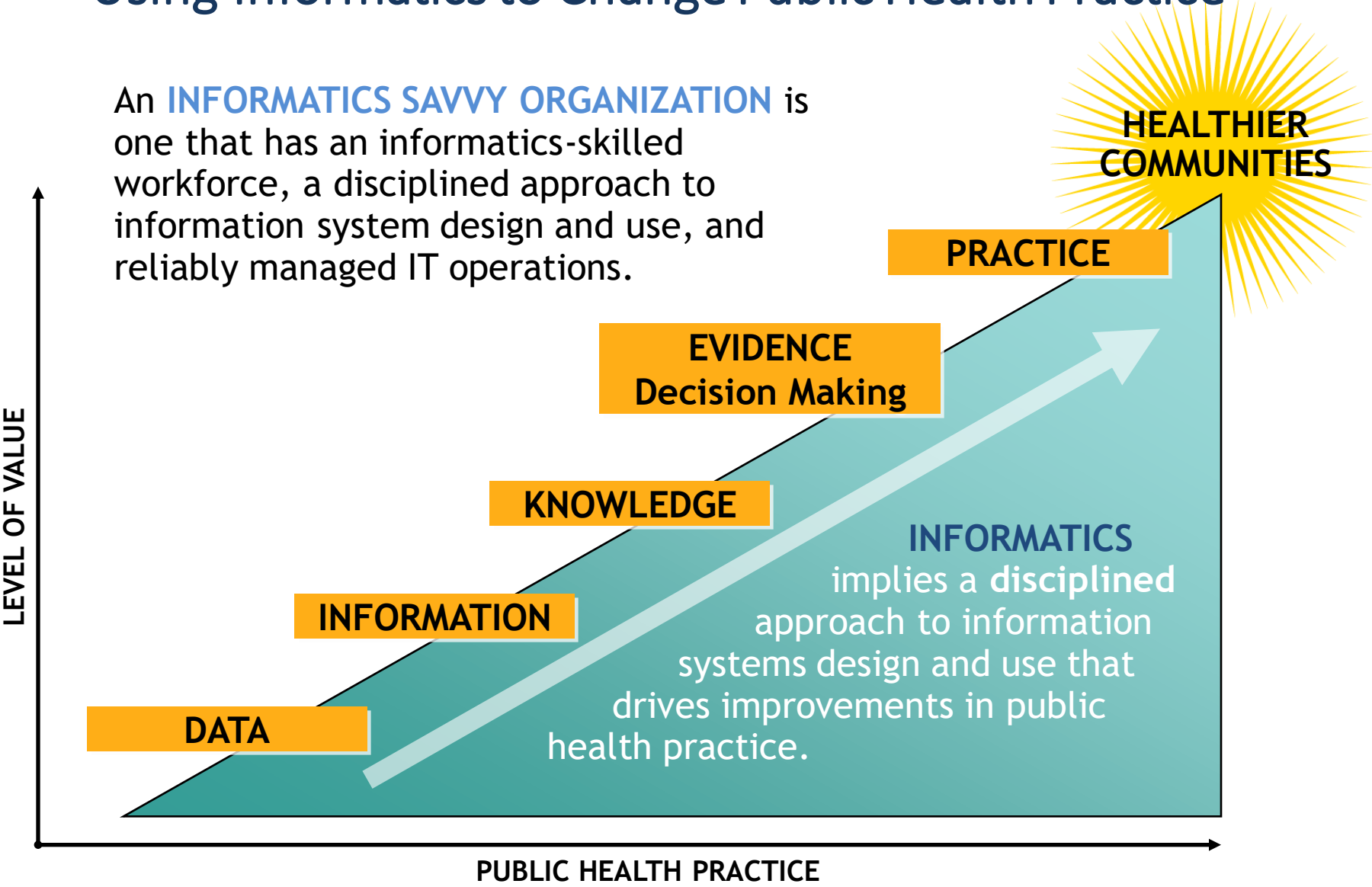
Attribution: Dr. Martin LaVenture, PhD, MPH, Minnesota Department of Health

Toward an Understanding of Public Health Informatics

- Public health informatics is key to enabling effective monitoring and surveillance. Informatics makes the collection, packaging, and flow of massive amounts of data and information more reliable, efficient, and timely.
- While epidemiologists are generally responsible for analyzing surveillance data (eg, interpreting statistics and identifying trends), informaticians are responsible for designing, developing, managing, and evaluating the information systems that are crucial to surveillance practice.
- Thus, public health informatics is important for making surveillance activities and programs more effective.

Using Informatics to Change Public Health Practice

An **INFORMATICS SAVVY ORGANIZATION** is one that has an informatics-skilled workforce, a disciplined approach to information system design and use, and reliably managed IT operations.

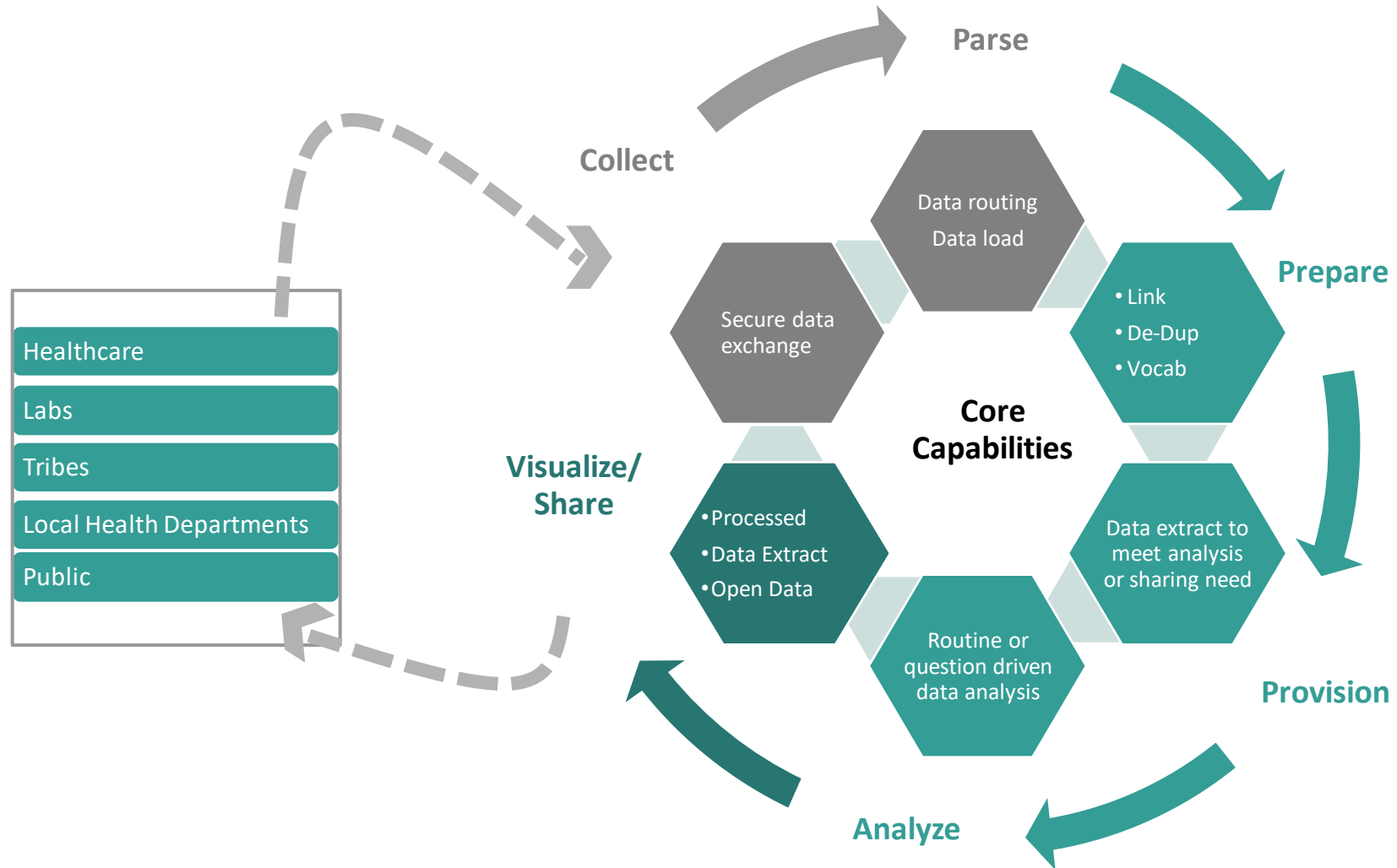


Adapted from: Marty LaVenture, Bill Brand, Minnesota Department of Health. Karen Zeleznak, Bloomington Division of Public Health by Bryant Karras

Defining Roles – 2 Deliverables

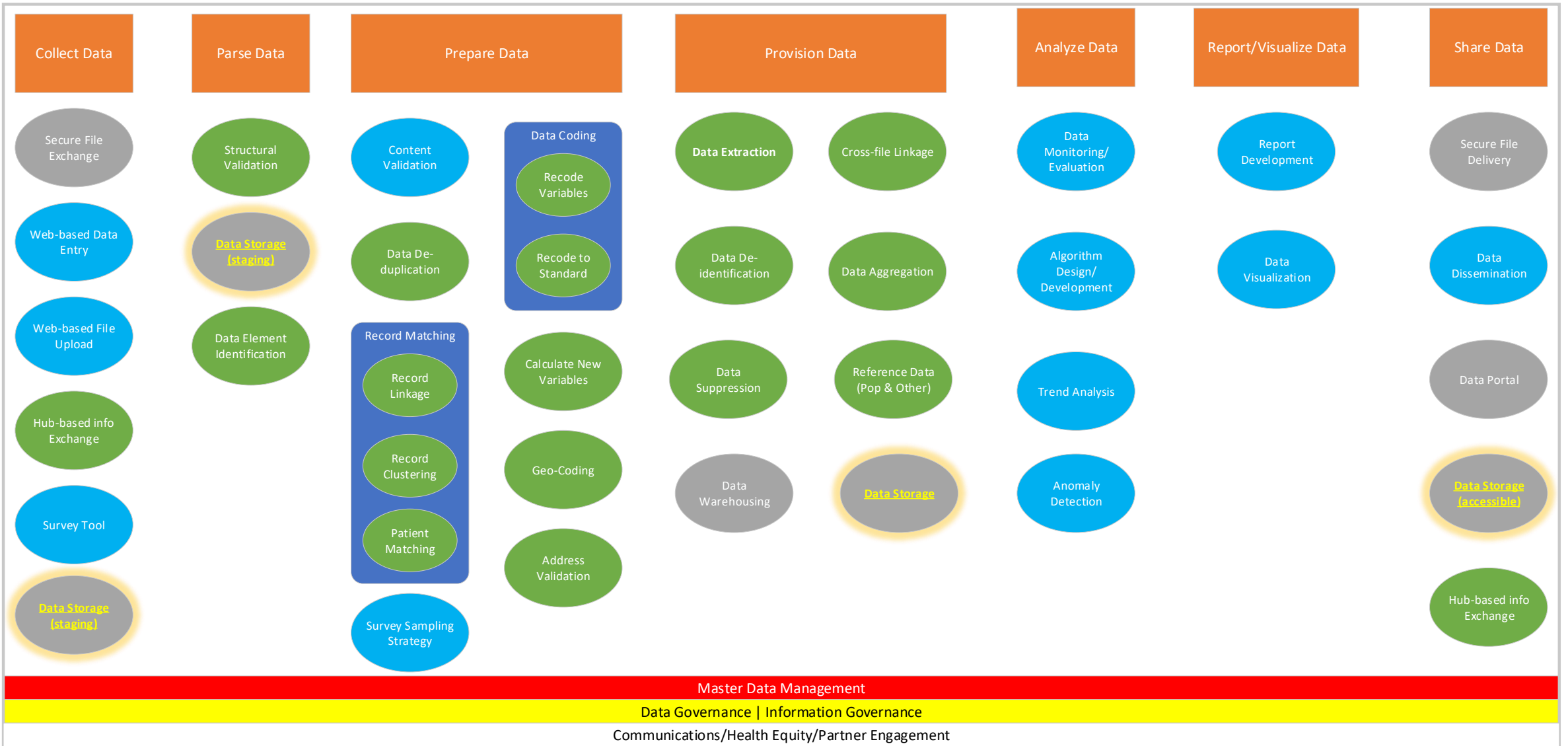
1. Use the CDC Data Collection Cycle and CDC Model for Building a PH Information System to define high level roles
2. Develop a RASCI Diagram to flesh out further interactions between each group for each business capability (data cycle) and step (new PH Info System)

How we Turn [Data -> Info -> Knowledge -> Wisdom] - The Data Cycle



Note: This was created for surveillance data and can be also leveraged for operational data.

Public Health Data Capabilities (Surveillance) – Updated 2/1/22



Primary Lead/Responsible



Informatics



DATA



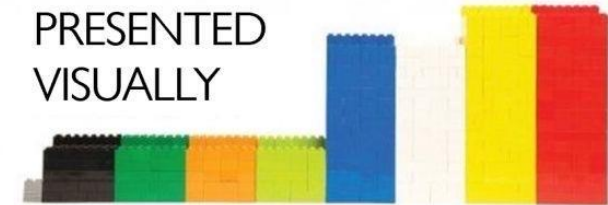
SORTED



ARRANGED



PRESENTED VISUALLY



EXPLAINED WITH A STORY



Epidemiology



Creating a PH IT System	Epi	Informatics/Data	EA	Security	IT
Step 1 – Vision & Planning					
Envision solutions, opportunities, and application of IT In PH	Bus Requirements	Data exchange standards, interoperability	Roadmaps for solutions, shared tech	Assess category data for security	Provide Expertise during Solutions Teams meetings
Step 2 – Health Data Standards and Integration					
Define/design health data standards and health domain integration (e.g. ELR, EMR, CMS, HIE, Surv, demographics)	Requirements for data linking	Data exchange standards and interoperability	Master Data Management		Database design
Design and implement databases, tables, columns, data formats, and keys for linking. Data to support defined health data standards and integration			Provide architecture solution		Expertise in database design and management
Step 3 – Data Privacy and Security					
Define and implement health data privacy and HIPAA Regulations	SME on health data privacy	SME on health data privacy	Master Data Management (Privacy)	IT Security policy/process	
Implement and enforce data, systems, and communication security				IT Security Assessment	Follow ITSO and OCS standards/policies in implementation
Step 4 – Systems Design and Implementation					
Define/design methods for PH functions, data elements, data flow, case definitions, and message mapping	SME for requirements	Expertise in health systems and interoperability	Ongoing Engagement	Ongoing Engagement	PM and BA services
Implement IT for defined functions, data elements, data flow and case definitions	UAT	UAT	Ongoing Engagement		Manage IT systems dev
Step 5 – Visualizations, Analysis and Reporting of Health Data	Expertise in PH practice, BI and use of analytic software	Collect, Parse, Prepare and Provision data			Maintain systems

RASCI Definitions

Role	Description
Responsible	This party has the primary duty to complete the capability or step. Every capability or step needs at least one Responsible party, but it's okay to assign more.
Accountable	This party has been delegated authority as the owner (ultimately answerable for the operations/completion) of a capability or step. In some cases, the Responsible party may also serve as the Accountable one. Just be sure you only have one Accountable party assigned to each capability or step.
Service	The party(ies) assigned as resources to assist the party who is responsible. Unlike consulted, who may provide input to the capability or step only, this party does work to help support or their work is a dependency for the capability or step.
Consulted	The party(ies) that need to be consulted for details, criteria or additional info on each capability or step. Typically, the party to be consulted will be the subject matter expert.
Informed	The party(ies) who are kept up-to-date on progress, often only on completion of the capability or step; and with whom there is just one-way communication.

Recommendations for Next Steps

- Decide what business capabilities and steps occur at the agency, division and program levels
- Review RASCI's with Communications and Health Equity to ensure their roles are properly defined
- Enhance the RASCI to incorporate Consults with Partners/Stakeholders (Local Health Jurisdictions, Tribes, etc...)
- Align operational data (HR, finance, etc...) and program data (licensing, registrations, etc...) to the data model and the RASCI
 - Epi column gets replaced with appropriate SME Group

Additional Future State Needs

- To align with our Data Modernization Initiative for Workforce Development DOH should:
 - Create a new job class series for Informatics and Data Science
 - Align current job positions to align with the future state business capabilities outlined in the data cycle
 - Train staff on how to use modern tools hosted in the cloud
- Based on the Creating a new PH IT System RASCI processes for solution design and Governance should be adjusted

Resources/References

- <https://www.cdc.gov/training/publichealth101/informatics.html>
- <https://phii.org/informatics-for-everyone/>
- <https://www.phii.org/defining-public-health-informatics>
- <https://phii.org/course/reframing-public-health-informatics-a-communications-toolkit/>
- https://journals.lww.com/jphmp/Fulltext/2016/07000/What_Is_Informatics_.15.aspx
- <https://www.infectioncontrolday.com/view/surveillance-informatics-and-epidemiology-triangle>

A green, rectangular sign with rounded corners and a white border, mounted on a metal pole. The sign features the word "Questions" in a large, white, sans-serif font. The background of the sign is a textured green. The sign is set against a bright blue sky with scattered white clouds. The pole is silver and appears to be made of metal.

Questions



To request this document in another format, call 1-800-525-0127. Deaf or hard of hearing customers, please call 711 (Washington Relay) or email civil.rights@doh.wa.gov.

Public Health Data Modernization Reframing the Concept of DM in Connecticut

Nancy L Barrett and Gary V Archambault
Infectious Disease Section Informatics Program
Connecticut Department of Public Health
DMI Conference, May 2022



COVID-19 Pandemic in CT - Year 3 Status

- Response at Steady State, i.e., Pandemic in Name Only
 - Reframing which Data Metrics are Most Useful and Informative
 - Tracking Outbreaks and Impact of New Variants
- Systems are Working As Expected
 - Downtime of Key Systems Minimal and Usually an External Cause
 - Deploying Continuous System Improvements
- Highlighted Inter-relationship of Core Public Health Systems
 - State Lab LIMS, Integrated Surveillance, Immunization Registry, Vital Records, Syndromic Surveillance
 - Participation in CDC Data Modernization Assessment
 - Leveraging New Methods for Data Integration
 - Improved Staff Collaboration
- Demonstrated Informatics Program Value
 - Higher Visibility at the Agency Leadership Level
 - Value Proven for Program Level Staff



How the Pandemic Pushed Public Health Data Modernization Efforts In Connecticut

- Increased Staffing for Informatics and IT (Improved People Infrastructure)
 - System Expansion, Management and Support
 - Modernization Efforts
- Established Analytics/Integration Platform for Mission Critical Data Sharing
 - Platform has Low Cost, High Efficiency, and is Expandable and Sustainable beyond COVID-19
 - Data Pulled from Surveillance or Other Systems so Minimized Impact on System Resources
 - Brought in New Analytic Tools like R
 - Data Available for Use in Dashboards for Leadership and Public Publishing of Data
 - Integration Meets “Interoperability” Needs
- Modernization – Improve vs Replace Key Systems
 - Update/Upgrade Systems with Proven Value and Capacity
 - Replace if Outdated or Legacy
 - Add external solutions/services as needed (eMPI, geocoder, etc.)
 - Implement Continuous Improvement Methodologies

Successes and Foundations for Next Generation Public Health

- Built/Improved Collaboration between Program Staff in Different Sections at DPH
 - Expanded or Established
 - Team Approach – Informatics/Information Technology/Surveillance and Subject Matter Experts
- Establish and Maintain Key Relationships Between State Agencies
 - Improved Collaboration – DPH Informatics, DPH IT, State Central IT
 - Ongoing Meetings to Keep Communication Open
 - DPH ‘at the table’ with State IT Changes
- Funding State IT to Build a New Private Cloud-based Data Center
 - Foundation for Enhancing Scalability and Flexibility of PH Technology Solutions
 - Making Systems and Processes “Pandemic Proof”
- Bringing in External Services to Improve Data Quality
 - Universal Master Patient Index
 - Vendor hosted Solution to Support and Improve Provider Reporting



Identifying Challenges and Overcoming Barriers

Findings from DMI Assessment and Pandemic

- DMI Assessment Emphasized the Need for Governance
 - Need to Make This Happen with Cross Agency Participation
 - Need to Demonstrate Value for Better Data Management, Security, Confidentiality
- Introducing the “Data Ecosystem” Concept to CT DPH Leadership
 - People
 - Systems
 - Technology
- Recognizing Effective Change Takes Time
 - Thoughtful instead of Responsive/Reactive
 - Meaningful instead of the New Next Thing
- Sustainability Over the Next 10 Years
 - Decrease in Funding Over Time is the Norm
 - Need Sustainable Funding at Sufficient Levels to Meet Needs and Expectations
 - Leveraging Financial Support for Long Term Gain for All Programs



DMI to PHDM

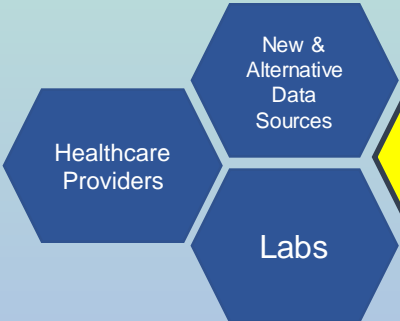
Need to Reframe the Narrative at the National Level

1. Approach PH in a Holistic Manner
 - a. This is not just about data
 - b. This is not just about systems
2. Modernization Concepts Need to Move Beyond Data and/or IT
 - a. One Approach Does Not Fit All and May Not Need to
3. Staffing, Framework, and Standards
 - a. Staffing Levels
 - b. Minimal Staffing Levels Metrics
 - c. Appropriate Job Classifications
4. Data Governance Framework
 - a. Sharing, Lifecycle, Standards
 - b. Improve Collection of Data Such as SOGI, Race, Ethnicity, and Language
5. Data EcoSystem
 - a. System of Systems Approach
 - b. Electronic Data Exchange **IS** a Critical Core System
 - c. Focus on Continuous Improvement

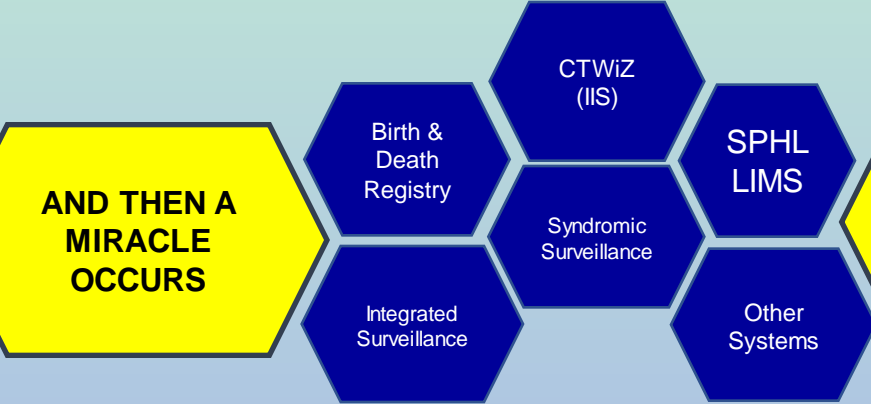


What Staff/Leadership Think Happen

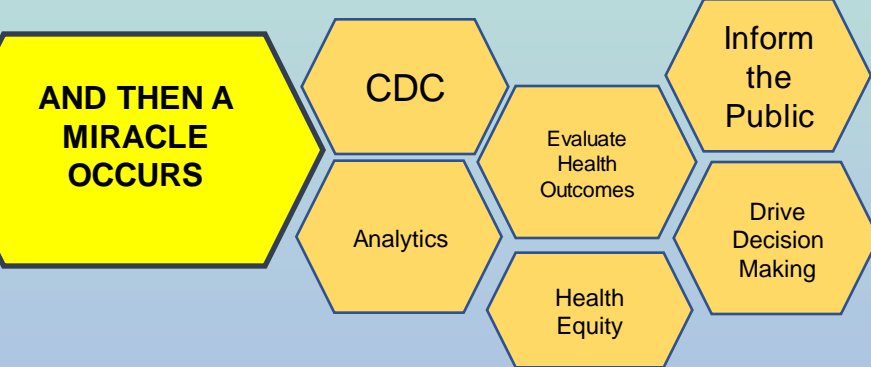
Data Providers



Core Systems



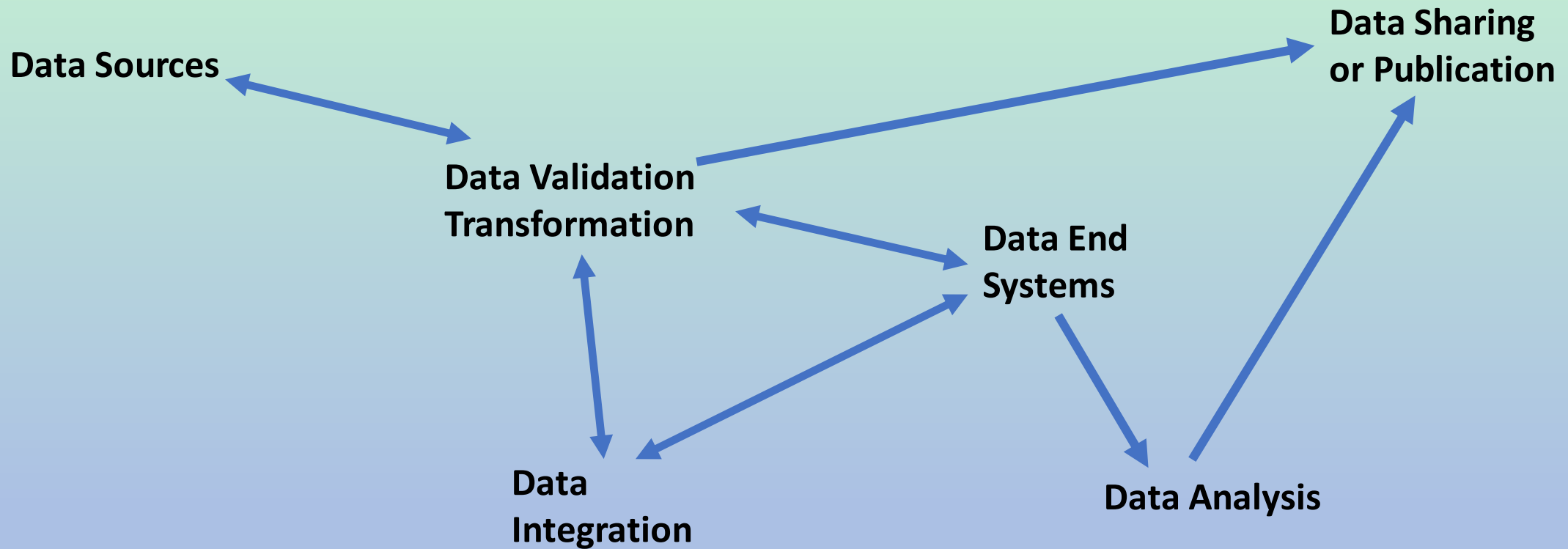
Impact



AND THEN A MIRACLE OCCURS

AND THEN A MIRACLE OCCURS

What Really Happens: Data Flow & Pipelines



Modernize Measures of Success

- Architecture of Choice
 - Cloud may not be Better - Jurisdictions need Options
 - It's Forcing the Focus on Technology Instead of Improving Data Processes or Data Flow
- Add New Standards for Determining Success or Identifying Issues, e.g.,
 - Currently Evaluate by Number of Locations Enrolled or Messages Received
 - Start Measuring Using Processing Metrics, e.g., X Messages per Unit of Time
- Time Metrics – e.g., for a Positive Lab or Case Report
 - How Long Did it Take to Reach PH Agency?
 - How Long for it to be Consumed by the Integrated Disease Surveillance System?
 - How Long for it to be Submitted to the CDC via an NMI Message?
 - How Long for Related Data to be Presented to the Analytics Platform?
- For Each Step
 - Did a Human Need to Intervene?
 - Is the Process Fully Automated?
- Jurisdictions Will Need to Meet or Exceed these Standards

Exercise, Exercise, Exercise

- How Does the DoD Prepare For the Fight?
 - Exercise, Exercise, Exercise
 - Prepare People to Respond During a Crisis by Training During a Steady State
 - Realistic Exercises – Stress the Systems and People
- Develop Exercise Evaluation Criteria
 - Standards Based
 - Jurisdictions Must Meet the Standards
- Evaluate with Exercise Evaluation Teams
 - Performed by Disinterested Parties
 - Honest and Critical Feedback
 - Share Best Practices
- Use Results to Improve the Organization
 - Focuses Improvement
 - Eliminates Performance Issues



Thank You!

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Gary Archambault

gary.Archambault@ct.gov



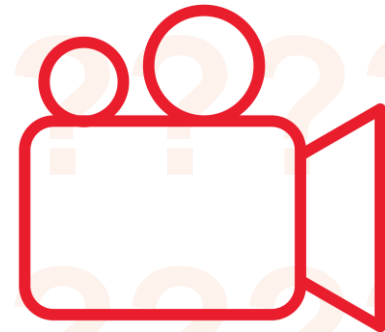
Questions and answer



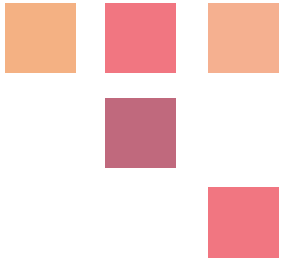
Post in the chat



Raise your hand

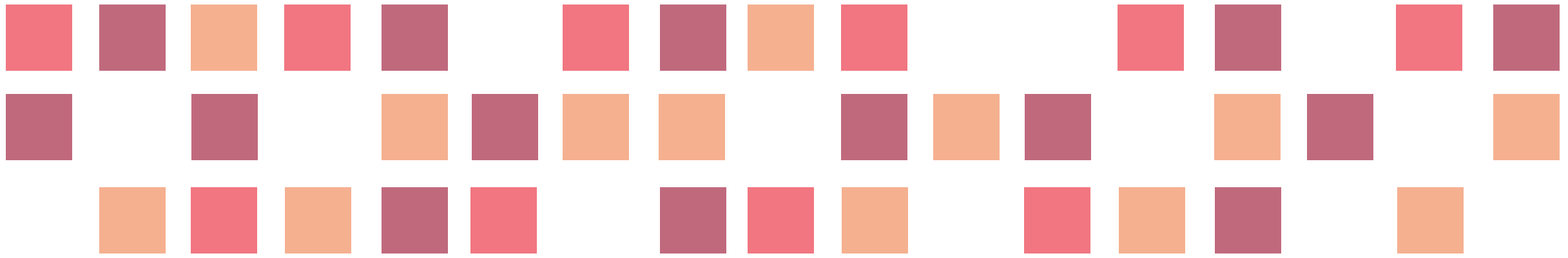


Turn on your video

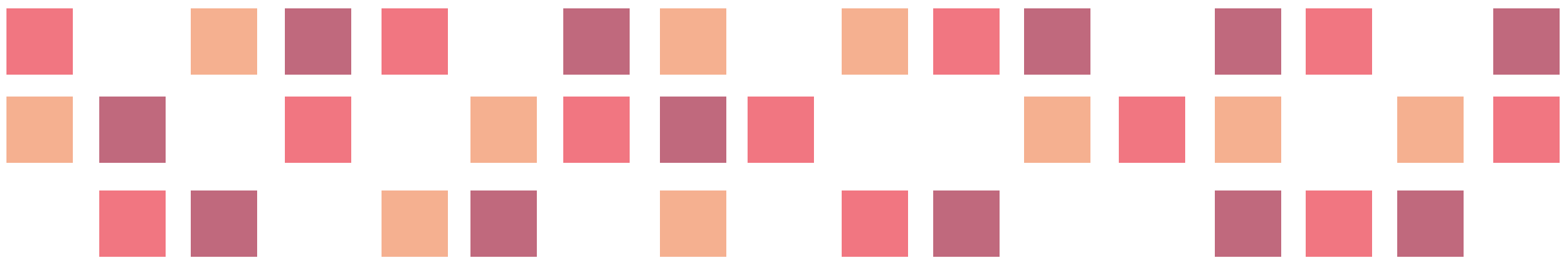


Next Steps

- Post additional questions on Circle - link provided in the chat
- Twenty minute break 1:35– 1:55 PM EST
- Next session 1:55 PM EST
 - *Maker Session: Building Blocks (invite only)*



Thank you.



Better data. Better decisions. Better health.