

# Project Introduction

The purpose of the Public Health Data Modernization Assessment is to provide CDC and your jurisdiction with a comprehensive understanding of your jurisdiction's capabilities and capacities related to data modernization. The findings from this annual assessment are intended to help identify strengths, areas for improvement, and technical assistance needs and will inform development and updates to your Data Modernization Plan.

The following questions ask you to consider capabilities and capacities across your jurisdiction and may require input from multiple stakeholders. The DMI Lead should identify and engage the appropriate staff to provide information.

**Please consider your jurisdiction's activities, systems, and workforce capacity within the past year unless otherwise indicated. However, when considering challenges and opportunities, we would like you to think beyond the COVID-19 response, including challenges your jurisdiction faced before the pandemic began and opportunities you may have after COVID-19 response efforts de-escalate.**

Although the following questions ask whether your jurisdiction has considered implementing various technologies, we understand that every technology referenced will not be the right fit for your jurisdiction. The purpose of the assessment is to help your jurisdiction consider options for modernization and whether or not those options make sense for your jurisdiction's specific programmatic needs.

More information about completing the assessment is included in the[**Public Health Data Modernization User Guide**](https://www.cdc.gov/csels/dmi-support/guidance-portal/assessment-and-evaluation.html)**.**

1. **Jurisdiction**

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1. **Name of person responsible for submitting the assessment.**

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1. **Role (in your jurisdiction)**

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1. **Email (e.g. Jane.Doe@healthdepartment.gov)**

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| --- |
|  |

1. **Phone**

|  |
| --- |
| xxx-xxx-xxxx |

1. **Date (month/year)**

|  |
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| xx/yyyy |

1. **Other than this Public Health Data Modernization Assessment, since 2019, has your jurisdiction conducted a formal assessment of needs and opportunities related to workforce capabilities and coordination, data quality, completeness, timeliness, and health information systems, data sharing, and interoperability?**

Yes radio button Yes No radio button No

# Section 1: Overview of Data Modernization Efforts

*Please note, if your jurisdiction has not completed a formal data modernization assessment, it is likely that you have not yet created a Data Modernization Plan*. *You will use the results from this assessment to develop or update your plan.*

1. **Has your jurisdiction identified a Data Modernization Initiative (DMI) Lead (e.g., Chief Information Officer, Chief Digital Officer, State Epi, Informatics Lead) with cross-agency responsibility, authority, and influence over the health department's vision, strategies, and policies?**

Yes radio button Yes In Progress radio button In Progress No radio button No Don't Know radio button Don't Know

*If Yes or Don't Know, skip to Question 2*

*1a. If response to Question 1 is "No" or "In Progress",* *describe any challenges that your jurisdiction has encountered related to identifying a DMI Lead with cross-agency responsibility and authority. Consider challenges unrelated to COVID-19 response efforts.**If response to Question 1 is "In Progress" also describe where your jurisdiction is in the identification process.*

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1. **Has your jurisdiction developed a Data Modernization Plan with information and data systems modernization objectives?**

Yes radio button Yes In Progress radio button In Progress No radio button No Don't Know radio button Don't Know

*If No or Don't Know, skip to Question 4.*

***2a. If response to Question 2 is "Yes", when was the Data Modernization Plan completed?***

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| mm/yyyy |

**2b. *If response to Question 2 is "In Progress", describe where your jurisdiction is in   
 the process of developing the Data Modernization Plan.***

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1. **Please describe any challenges or anticipated challenges to developing or updating your jurisdiction's Data Modernization Plan.**

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**Section 2: Assessment of Health Information Systems (Domain 1)**

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| *This section includes questions about activities your jurisdiction has completed to assess health information systems and the outcomes of those assessments. These questions also aim to document your jurisdiction's capacity and capability to:*   * *identify business needs and determine solutions to business problems,* * *analyze, define, document, and manage requirements, and* * *initiate, plan, execute, and manage projects to ensure objectives are met.*   *In this section, please consider all of your jurisdiction's information systems. You may need to consult with various stakeholders to answer these questions.* |

## Processes

1. **Has your jurisdiction conducted the following activities?** *[If a vendor hosts and/or manages your jurisdiction's IT infrastructure (data systems), you may need to consult with them to complete this section.]*

| *Activities* | Select | *i. If Yes*, describe the outcome of the assessment (i.e., any plans that resulted). Include the year(s) that the activity was last completed. | *ii. If In Progress*, describe where you are in the process. | *iii. If No or In Progress,*  what are the challenges related to this activity? | *iv. If N/A,*  describe why this activity does not apply to your jurisdiction |
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| 1. *Conducted an environmental scan and/or facilitated an application rationalization exercise to streamline, simplify, and reduce redundancies across the public health IT department* | Yes – Fully implemented across information system(s)  In Progress – Implementation ongoing or partially implemented  No  Don't Know  N/A |  |  |  |  |
| 1. *Identified stand-alone, monolithic legacy systems that would benefit from a modern, configurable, componentized platform to enable data-sharing across the enterprise (e.g., STD systems, disease registries, Access databases, Excel spreadsheets)* | Yes – Fully implemented across information system(s)  In Progress – Implementation ongoing or partially implemented  No  Don't Know  N/A |  |  |  |  |
| 1. *Identified stand-alone systems that are not interoperable with other public health information systems* | Yes – Fully implemented across information system(s)  In Progress – Implementation ongoing or partially implemented  No  Don't Know  N/A |  |  |  |  |
| 1. *Identified antiquated, inefficient legacy systems that can no longer be updated and/or are difficult to maintain due to custom- or hard-coding and would benefit from modern programming languages and technologies* | Yes – Fully implemented across information system(s)  In Progress – Implementation ongoing or partially implemented  No  Don't Know  N/A |  |  |  |  |
| 1. *Identified systems that can only be run on legacy operating systems* | Yes – Fully implemented across information system(s)  In Progress – Implementation ongoing or partially implemented  No  Don't Know  N/A |  |  |  |  |
| 1. *Conducted an analysis of alternatives (AoA) to evaluate whether migrating health information systems (HIS) to a cloud-based computing platform would be more cost-effective, strengthen data security, improve processing/performance efficiency, enable scalability, sustainability, and stability* | Yes – Fully implemented across information system(s)  In Progress – Implementation ongoing or partially implemented  No  Don't Know  N/A |  |  |  |  |
| 1. *Evaluated open standards or open-source tools as alternative(s) to proprietary technologies* | Yes – Fully implemented across information system(s)  In Progress – Implementation ongoing or partially implemented  No  Don't Know  N/A |  |  |  |  |
| 1. *Identified a need for a new, core-critical system for laboratory or other data,(e.g., Laboratory Information Management Systems [LIMS], Syndromic Surveillance System [SyS])* | Yes – Fully implemented across information system(s)  In Progress – Implementation ongoing or partially implemented  No  Don't Know  N/A |  |  |  |  |
| 1. *Identified a need for application modernization to improve navigation, features, and functionality that could be improved with modern programming languages (e.g., Java, JavaScript, C#, Python)* | Yes – Fully implemented across information system(s)  In Progress – Implementation ongoing or partially implemented  No  Don't Know  N/A |  |  |  |  |

## Workforce

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| *The following questions aim to document whether or not your jurisdiction has the workforce capacity and capability to conduct activities involving assessment of health information systems and your jurisdiction's plans to meet related workforce gaps.*  *Workforce proficiency levels are defined as follows:*  ***None****: Jurisdiction does not have any staff with proficiency related to the competency.*  ***Awareness:*** *Jurisdiction has staff that demonstrates awareness of the concepts and processes. Staff can conduct preliminary assessment and analysis in the simplest situations with close and extensive guidance.*  ***Basic****: Jurisdiction has staff that demonstrate familiarity with concepts and processes. Staff can conduct preliminary assessment and analysis in somewhat difficult situations requiring frequent guidance.*  ***Intermediate****: Jurisdiction has staff that demonstrate understanding of concepts and processes. Staff can conduct preliminary assessment and analysis in difficult situations requiring occasional guidance.*  ***Advanced****: Jurisdiction has staff that demonstrate broad understanding of concepts and processes. Staff can conduct preliminary assessment and analysis in considerably difficult situations with little to no guidance.*  ***Expert****: Jurisdiction has staff that demonstrate a comprehensive, expert understanding of concepts and processes. Staff can conduct preliminary assessment and analysis in exceptionally difficult situations and can serve as a key resource to advise others.*  ***N/A****: The concepts and processes are not applicable to our jurisdiction.* |

**What is your jurisdiction's current workforce proficiency level for the following?**

|  | *Select* | *If N/A, describe why* |
| --- | --- | --- |
| 1. *Assessment of Health Information Systems: Conducts activities to assess health information systems and infrastructure, gather user requirements, and identify actions for system improvement.* | None  Awareness  Basic  Intermediate  Advanced  Expert  N/A |  |
| 1. *Information Architecture: Leads or participates in the enterprise architecture activities that define an organization's information assets, as well as the assets' sources, structure, classification, and associations. Examples include:*  * *Applying architecture documentation methodologies* * *Understanding the interdependent nature of users, content, and context* * *Using industry and organization standards for creating, storing, accessing, and presenting information* | None  Awareness  Basic  Intermediate  Advanced  Expert  N/A |  |
| 1. *Emerging Technology: Maintains current knowledge of technological advancements and integrates suitable technology solutions into work products. Examples include:*  * *Using machines, tools, instruments, or equipment effectively* * *Using computers and computer applications to analyze and communicate information in the appropriate format* * *Using technology to support decision making* | None  Awareness  Basic  Intermediate  Advanced  Expert  N/A |  |

1. **What types of staff currently perform activities related to assessing health information systems and gathering user requirements?**

| *Types of Staff* | Select |
| --- | --- |
| 1. *Full-Time Equivalent (FTE)* | Yes No Don’t Know |
| 1. *Contract* | Yes No Don’t Know |
| 1. *Temporary* | Yes No Don’t Know |
| 1. *Fellows or Interns* | Yes No Don’t Know |
| 1. *CDC Direct Assistance (do not include CDC Foundation Direct Assistance here, include under Contract)* | Yes No Don’t Know |
| 1. *Other* | Yes No Don’t Know |
| * + 1. *If other, specify* |  |

1. **Which of the following best describes whether the number and proficiency level of staff (FTEs, contractors, fellows/interns) who work on assessing health information systems and gathering user requirements are sufficient to meet your agency's needs**?

Insufficient Sufficient Unsure

1. **What workforce enhancements are you considering to improve your jurisdiction's capacity and capability to meet your needs related to assessing health information systems and gathering user requirements? If no enhancements are needed, mark "No" for all.**

| Workforce Enhancements | Select | *If Yes*, describe (e.g., number of staff, position types, specific training/TA opportunities, desired time frame for action |
| --- | --- | --- |
| 1. *Full-Time Equivalent (FTE) staff* | Yes No Don’t Know |  |
| 1. *Contract Staff* | Yes No Don’t Know |  |
| 1. *Temporary Staff* | Yes No Don’t Know |  |
| 1. *Fellows or Interns* | Yes No Don’t Know |  |
| 1. *CDC Direct Assistance (Do not include CDC Foundation Direct Assistance here, include under Contract Staff)* | Yes No Don’t Know |  |
| 1. *Upskilling or reskilling current staff through training and technical assistance* | Yes No Don’t Know |  |
| 1. *Other* | Yes No Don’t Know |  |

## Challenges and Needs

1. **Describe the key challenges, gaps, or needs (e.g., staff capacity or capability, policies, processes) that your jurisdiction has related to assessing health information systems and gathering user requirements.**

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## Opportunities

1. **What opportunities or plans does your jurisdiction have to strengthen practices related to assessing health information systems and gathering user requirements**?

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**Section 3: Data Exchange and Systems Interoperability (Domain 2)**

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| *This section includes questions about data exchange and systems interoperability in your jurisdiction. These questions aim to document your jurisdiction's capacity and capability to:*   * *design and implement information systems, devices, and applications (systems) to access, exchange, integrate, and cooperatively use data in a coordinated manner, to provide timely and seamless portability of information, and optimize the health of individuals and populations.* * *apply principles of good ethical practice and value judgments related to data collection, dissemination, and use.*   *Unless indicated, please consider all of your jurisdiction's information systems. You may need to consult with various stakeholders to answer these questions.* |

## Processes and Systems

1. **How are the following received into your jurisdiction's systems?** *Please consider all of your jurisdiction's information systems. You may need to consult with various stakeholders to answer these questions.*

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|  | Received  <See table below for multi-select response options> | What opportunities or plans does your jurisdiction have for automation or enhancing automation? If no enhancements are needed, enter "None." |
| 1. *Patient immunization records* |  |  |
| 1. *Patient case reports* |  |  |
| 1. *Patient laboratory orders* |  |  |
| 1. *Patient laboratory results* |  |  |
| 1. *Patient vital records (e.g., birth and death)* |  |  |
| 1. *Patient encounter data/syndromic surveillance records [e.g., hospital EDs, urgent care facilities: admission, discharge, and transfer records (ADTs)]* |  |  |

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| --- | --- | --- |
| Received (response options for a-f above): <Multi Select> | | |
| * APHL Informatics Messaging Services (AIMS) | * **Paper-based, mail** | * **UPHN-lite** |
| * Direct | * **PHINMS** | * **VPN** |
| * Fax | * **Phone transcription** | * **Web Download** |
| * Hand-keyed | * **Route Not Read (RNR)** | * **Web Entry** |
| * HTTPS | * **S3** | * **Web Service APIs** |
| * Hypersend | * **SFTP** | * **Other** |
| * Nexus | * **SMTP** | * **Don't Know** |
| * NHIN | * **TCP/IP** | * **Not received into system** |

1. **Has your jurisdiction conducted the following data exchange and system interoperability activities to improve information flow between systems?**

*Please consider all of your jurisdiction’s information systems. You may need to consult with various stakeholders to answer these questions.*

| *Data Exchange and Systems Interoperability Activities* | Select | *i. If yes,*  describe the outcome of the activity. | *ii. If in progress,* describe where you are in the process. | *iii. If No or In Progress*  what are the challenges related to this activity? | *iv. If N/A,*  describe why this activity does not apply to your jurisdiction. |
| --- | --- | --- | --- | --- | --- |
| 1. *Develop Application Programming Interfaces (APIs) to enable rapid and flexible connectivity between applications, data, and devices (e.g., FHIR).* | Yes – Fully implemented across information system(s)  In Progress – Implementation ongoing or partially implemented  No  Don't Know  N/A |  |  |  |  |
| 1. *Develop microservices to enable shared services between systems*—*enabling connectivity between applications, data, and devices.* | Yes – Fully implemented across information system(s)  In Progress – Implementation ongoing or partially implemented  No  Don't Know  N/A |  |  |  |  |
| 1. *Employ an API Gateway or Enterprise Service Bus (ESB) for enterprise message brokerage and integration monitoring.* | Yes – Fully implemented across information system(s)  In Progress – Implementation ongoing or partially implemented  No  Don't Know  N/A |  |  |  |  |
| 1. *Integrate domains to promote interoperability between disparate systems; e.g., integrated surveillance and immunization registry, mortality, or environmental health; maternal and child health registry and immunization; public health surveillance and Medicaid; chronic and infectious disease surveillance; chronic, infectious, and immunization; hospital and newborn screening laboratory; other.* | Yes – Fully implemented across information system(s)  In Progress – Implementation ongoing or partially implemented  No  Don't Know  N/A |  |  |  |  |
| 1. *Enhance/upgrade infrastructure to support continuous data streaming and scalable storage for high-volume throughput, triage, and data retention.* | Yes – Fully implemented across information system(s)  In Progress – Implementation ongoing or partially implemented  No  Don't Know  N/A |  |  |  |  |
| 1. *Develop a case/patient matching and record linkage strategy which enables linkage within and between laboratory, epi, and clinical systems (e.g., ability to link case surveillance, immunization, and vital records).* | Yes – Fully implemented across information system(s)  In Progress – Implementation ongoing or partially implemented  No  Don't Know  N/A |  |  |  |  |
| 1. *Develop a universal outbreak ID that links an individual case report with an outbreak event.* | Yes – Fully implemented across information system(s)  In Progress – Implementation ongoing or partially implemented  No  Don't Know  N/A |  |  |  |  |
| 1. *Use a data lake, a centralized, scalable data storage repository capable of retaining vast amounts of structured, semi-structured, and unstructured data to introduce flexible configuration and agility in your surveillance architecture.* | Yes – Fully implemented across information system(s)  In Progress – Implementation ongoing or partially implemented  No  Don't Know  N/A |  |  |  |  |
| 1. *Employ a semantic layer to allow your jurisdiction to map disparate data sources into a single schema or a unified data model for the purposes of integrated surveillance.* | Yes – Fully implemented across information system(s)  In Progress – Implementation ongoing or partially implemented  No  Don't Know  N/A |  |  |  |  |
| 1. *Develop a cloud strategy that seeks to improve resource utilization and scalability, increase service responsiveness, and accrue meaningful benefits in efficiency, agility, and innovation by leveraging commercial cloud computing services or serverless architecture [e.g., Infrastructure as a Service (IaaS); Platform as a Service (PaaS), or Software as a Service (SaaS)].* | Yes – Fully implemented across information system(s)  In Progress – Implementation ongoing or partially implemented  No  Don't Know  N/A |  |  |  |  |
| 1. *Use of cloud computing services to support shared services such as: data transport; routing; analysis and visualization; geocoding; vocabulary; extract, transform and load (ETL); message testing and validation; linkage and integration; PII scrubbing; distributed network analysis, technical assistance, and consultative services; or others.* | Yes – Fully implemented across information system(s)  In Progress – Implementation ongoing or partially implemented  No  Don't Know  N/A |  |  |  |  |

### INTEGRATED DISEASE SURVEILLANCE

1. **Review the following information about your jurisdiction's integrated disease surveillance system. Update the information if it is incorrect or outdated.**

**Select the integrated disease surveillance system you use in your jurisdiction.**

NBS | ASD | Maven | STC | EpiTrax | Other | Custom system | Not Applicable

*If "Custom System", or other*

***13a.* *Custom or Other System Name***

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1. **Do you have additional integrated disease surveillance systems?**

Yes No

*If "Yes",*

***14a.* *List additional integrated disease surveillance system(s).***

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1. **What are the key challenges, gaps, or needs that your jurisdiction has related to developing or enhancing an integrated disease surveillance system(s)?**

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1. **What opportunities or plans does your jurisdiction have related to developing or enhancing an integrated disease surveillance system?**

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**ELECTRONIC LAB REPORTING**

1. **Is your jurisdiction able to receive and process Electronic Laboratory Reporting (ELR) records?**

| *ELR* | Select | If yes or in progress, select: | *If In Progress*, describe where you are in the process. | *If Yes or In Progress*, If information is available, indicate the proportion received electronically  (0-100%) |
| --- | --- | --- | --- | --- |
| 1. *Laboratory Orders* | Yes – Fully implemented across information system(s)  In Progress – Implementation ongoing or partially implemented  No  Don't Know | Implementation Guide for Transmission of Laboratory-Based Reporting of Public Health Information using Version 2.3.1 of the Health Level Seven (HL7) Standard Protocol;  HL7 Version 2.5.1 Implementation Guide: Electronic Laboratory Reporting to Public Health, Release 1 (US Realm);  Web portal;  Other (Specify)\_\_\_\_\_\_\_\_\_\_\_\_ |  |  |
| 1. *Laboratory Results* | Yes – Fully implemented across information system(s)  In Progress – Implementation ongoing or partially implemented  No  Don't Know | Implementation Guide for Transmission of Laboratory-Based Reporting of Public Health Information using Version 2.3.1 of the Health Level Seven (HL7) Standard Protocol;  HL7 Version 2.5.1 Implementation Guide: Electronic Laboratory Reporting to Public Health, Release 1 (US Realm);  Web portal;  Other (Specify)\_\_\_\_\_\_\_\_\_\_\_\_ |  |  |

1. **What are the key challenges, gaps, or needs related to enhancing or accelerating the ELR reporting process?**

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1. **What opportunities or plans does your jurisdiction have to enhance or accelerate the ELR reporting process?**

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| **Additional Guidance for questions 20a, 20b, 21a, 21b: Proportion of test orders and results processed through Electronic Test Orders and Result Reporting (ETOR) at the PHL** This measure only applies to tests conducted at the public health laboratory and includes all orders and results received by electronic means such as a web portal or an HL7 message. The web portal needs to be directly integrated into the LIMS to be considered valid for counting as "received or sent through ETOR." Do not count tests transferred from portal to LIMS or vice versa by staff using mechanisms such as copy-pasting or exporting to files by portal and upload to LIMS or other similar. |

1. **Review the following information about the percent of test orders received through ETOR at the PHL. Update the information if it is incorrect or outdated.**

**20a. Numerator: Number of test orders processed through ETOR**

*Includes all orders received from a clinical or commercial laboratory by electronic means including a web portal or an HL7 message. The web portal needs to be directly integrated to the LIMS to be considered valid for counting as "received and sent through ETOR". Do not count tests which are transferred from portal to LIMS or vice versa by staff using mechanisms such as copy pasting or exporting to files by portal and upload to LIMS or other similar means for both orders and result reporting.*

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**20b. Denominator: Number of all test orders received by the PHL**

*This includes all test orders exchanged by the laboratory through all mechanisms (e.g., paper form, PDF Form, Email, through phone, mail, web portal, HL7 based message.*

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**20c. Percent of test orders processed through ETOR at the PHL**

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1. **Review the following information about the percent of test results sent through ETOR at the PHL. Update the information if it is incorrect or outdated.**

**21a. Numerator: Number of test results processed through ETOR.**

*Includes all results sent to a clinical or commercial laboratory by electronic means including a web portal or an HL7 message. The web portal needs to be directly integrated to the LIMS to be considered valid for counting as "received and sent through ETOR". Do not count tests which are transferred from portal to LIMS or vice versa by staff using mechanisms such as copy pasting or exporting to files by portal and upload to LIMS or other similar means for both orders and result reporting.*

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**21b. Denominator: Number of all test results sent by the PHL**

*This includes all test results exchanged by the laboratory through all mechanisms (e.g., paper form, PDF Form, Email, through phone, mail, web portal, HL7 based message.*

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**21c. Calculated automatically in REDCap: Percent of test results processed through ETOR at the PHL**

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1. **Is your state public health laboratory able to receive, process and analyze, and transmit electronic test orders and results (ETOR), including key demographic variables (e.g., gender, age, and race), to support outbreaks and emergency response, or other use cases (e.g., Newborn Screening, Antimicrobial Resistance) via the following:**

| *ETOR data exchange mechanisms* | Select | *If In Progress,* describe where you are in the process. |
| --- | --- | --- |
| 1. *Standardized data exchange in adherence to HL7 Version 2.5.1 Implementation Guide: S&I Framework Laboratory Orders from EHR, Release–1 - US Realm* | Yes – Fully implemented across information system(s)  In Progress – Implementation ongoing or partially implemented  No  Don't Know |  |
| 1. *Standardized data exchange in adherence to HL7 Version 2.5.1 Implementation Guide: Laboratory Results Interface, Release 1 STU Release–3 - US Realm* | Yes – Fully implemented across information system(s)  In Progress – Implementation ongoing or partially implemented  No  Don’t Know |  |
| 1. *Web Portal* | Yes – Fully implemented across information system(s)  In Progress – Implementation ongoing or partially implemented  No  Don’t Know |  |
| 1. *Laboratory Information Management System (LIMS)* | Yes – Fully implemented across information system(s)  In Progress – Implementation ongoing or partially implemented  No  Don’t Know |  |
| 1. *Other* | Yes – Fully implemented across information system(s)  In Progress – Implementation ongoing or partially implemented  No  Don’t Know |  |
| * 1. *If Other, please specify* |  |  |

1. **Describe the key challenges, gaps, or needs (e.g., staff capacity or capability, policies, processes) that your jurisdiction has related to enhancing or accelerating the ETOR reporting process.**

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1. **What opportunities or plans does your jurisdiction have to enhance or accelerate the ETOR reporting process?**

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**ELECTRONIC CASE REPORTING**

1. **Has your jurisdiction conducted workflow analyses for reportable conditions to evaluate the feasibility of receiving and processing electronic initial case reports (eICR) and reportability responses (RR)?**

Yes In progress No

If No, skip to 26

* 1. *If Yes, describe the results of the analyses or opportunities for enhanced workflow. If in progress, describe where you are in the process.*

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1. **Is your jurisdiction receiving and consuming electronic Initial Case Reports (eICR) and Reportability Response (RR) records from AIMS for disease surveillance via the following?**

| *eICR data exchange mechanism* | *Select* | *If In Progress, describe where you are in the process.* | *What are the challenges of transmitting electronic case reports across systems and ensuring epidemiologists have access to data using this eICR data exchange mechanism?* | *What opportunities or plans does your jurisdiction have for transmitting electronic case reports across systems and ensuring epidemiologists access data using this eICR data exchange mechanism?* |
| --- | --- | --- | --- | --- |
| 1. *HL7 CDA® R2 Implementation Guide: Public Health Case Report, Release 2: the Electronic Initial Case Report (eICR), Release 1, STU Release 1.1 - US Realm* | Yes – Fully implemented across information system(s)  In Progress – Implementation ongoing or partially implemented  No  Don't Know |  |  |  |
| 1. *Electronic Case Reporting (eCR) Version: 0.1.0 FHIR Version: 3.1.1 in adherence to the HL7 FHIR® Implementation Guide: Electronic Case Reporting (eCR) v.1.0.0* | Yes – Fully implemented across information system(s)  In Progress – Implementation ongoing or partially implemented  No  Don't Know |  |  |  |
| 1. *Other* | Yes – Fully implemented across information system(s)  In Progress – Implementation ongoing or partially implemented  No  Don't Know |  |  |  |
| * 1. *If other, specify* |  | | | |

1. **What key challenges, gaps, or needs does your jurisdiction have with utilizing eICR data, and how does your jurisdiction plan to address these challenges?**

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1. **What opportunities or plans does your jurisdiction have to enhance the eICR and RR integration into data systems and utilize data from eCR?**

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1. **Reportable Conditions Knowledge Management System (RCKMS) is an authoring interface, knowledge repository, and decision support service (DSS) which automates the process of determining whether a case is reportable; when, and how the case should be reported; and facilitates the transition to electronic case reporting (eCR). Are any reporting requirements authored for available conditions in RCKMS?**

Yes No

*If no, skip to 30*

* 1. What proportion has been authored?

|  |
| --- |
| (Scale 1-100%) |

1. **What plans does your jurisdiction have in place related to authoring and updating reporting requirements for available conditions in RCKMS? If work is in progress, please describe.**

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1. **What are your standard operating procedures for reviewing messages for quality improvement, evaluating the eICRs and RRs, and turning off parallel production to reduce the burden on healthcare organizations?**

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1. **What services and tools are needed to support data evaluation and quality assurance processes? How does this fit into your modernization planning?**

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### IMMUNIZATION

1. **Describe how your jurisdiction is engaged in expanding or enhancing immunization-related information systems (e.g., registries, Vaccine Administration Management System (VAMS), vaccine finder). Include any plans that your jurisdiction has to implement immunization-related information systems.**

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1. **Is your jurisdiction able to receive and process electronic immunization records via the following?**

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| *Immunization data exchange mechanism* | *Select* | *If In Progress, describe where you are in the process.* |
| 1. *Standardized data exchange in adherence to HL7 Version 2.5.1 Implementation Guide for Immunization Messaging* | Yes – Fully implemented across information system(s)  In Progress – Implementation ongoing or partially implemented  No  Don't Know |  |
| 1. *Web Portal* | Yes – Fully implemented across information system(s)  In Progress – Implementation ongoing or partially implemented  No  Don't Know |  |
| 1. *Other* | Yes – Fully implemented across information system(s)  In Progress – Implementation ongoing or partially implemented  No  Don't Know |  |
| * 1. *If other, specify* |  |  |

1. **What key challenges, gaps, or needs does your jurisdiction have related to enhancing or accelerating the immunization reporting process?**

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1. **What opportunities or plans does your jurisdiction have to enhance or accelerate the immunization reporting process*?***

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1. **Can your jurisdiction securely transmit electronic COVID-19 immunization records from a centralized Immunization Information System (IIS) to CDC via the following?**

| *Immunization data exchange mechanism* | *Select* | *If In Progress describe where you are in the process* |
| --- | --- | --- |
| 1. *HL7 Version 2.5.1 Implementation Guide for Immunization Messaging via Vaccine Administration Management System (VAMS)* | Yes – Fully implemented across information system(s)  In Progress – Implementation ongoing or partially implemented  No  Don't Know |  |
| 1. *COVID-19 Vaccination Reporting Specification (CVRS)* | Yes – Fully implemented across information system(s)  In Progress – Implementation ongoing or partially implemented  No  Don't Know |  |
| 1. *Other* | Yes – Fully implemented across information system(s)  In Progress – Implementation ongoing or partially implemented  No  Don't Know |  |
| * 1. *If other, specify* |  |  |

1. **What key challenges, gaps, or needs does your jurisdiction have related to enhancing or accelerating the immunization reporting process to CDC?**

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1. **What opportunities or plans does your jurisdiction have to enhance or accelerate the immunization reporting process to CDC?**

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### SYNDROMIC SURVEILLANCE

1. **Do providers within your jurisdiction transmit standardized Admission, Discharge, and Transfer (ADT) electronic patient records to the National Syndromic Surveillance Program (NSSP) in adherence to the following?**

| *SyS data exchange mechanism* | *Select* | *If In Progress, describe where you are in the process.* |
| --- | --- | --- |
| 1. *HL7 Version 2.5.1 Implementation Guide: Syndromic Surveillance, Release 1* | Yes – Fully implemented across information system(s)  In Progress – Implementation ongoing or partially implemented  No  Don't Know |  |
| 1. *Other* | Yes – Fully implemented across information system(s)  In Progress – Implementation ongoing or partially implemented  No  Don't Know |  |
| *i. If other, specify* |  |  |

1. **Are you using syndromic surveillance data to inform public health actions?**

Yes No

*If no, skip to Question 43*

1. If yes, please provide examples of products or use*.*

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1. **Describe the key challenges, gaps, or needs (e.g., staff capacity or capability, policies, processes) that your jurisdiction has related to enhancing or accelerating syndromic surveillance reporting from provider to jurisdiction.**

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1. **What opportunities or plans does your jurisdiction have to enhance/accelerate syndromic surveillance reporting from provider to jurisdiction (e.g., data quality, coverage completeness)?**

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1. **Describe the key challenges, gaps, or needs (e.g., staff capacity or capability, policies, processes) that your jurisdiction has related to enhancing or accelerating syndromic surveillance reporting from jurisdiction to the NSSP?**

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1. **What opportunities or plans does your jurisdiction have to enhance/accelerate the reporting process from jurisdiction to the NSSP (e.g., data quality, coverage completeness)?**

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### CASE NOTIFICATIONS

1. **Review the following information about the NNDSS message mapping guides that are in full production. Update the information if it is incorrect or outdated.**

|  |  |  |
| --- | --- | --- |
| Generic v2.0 | Tuberculosis (TB) and Latent TB Infection (LTBI) | Lyme and Tickborne Rickettsial Diseases (TBRD |
| Hepatitis v1.0 | Mumps | Measles |
| STD v1.0 | Pertussis | Rubella |
| Congenital Syphilis v1.0 | Varicella | Congenital Rubella Syndrome |
| Arboviral v1.3 | Malaria | Healthcare-Associated Infections, Multidrug-Resistant Organisms (HAI MDRO) |
| Foodborne and Diarrheal Disease (FDD) | Trichinellosis | Carbon Monoxide Poisoning |
| Respiratory and Invasive Bacterial Diseases (RIBD) | Babesiosis | COVID-19 |
|  |  | None of the above |

1. **Review the following information about the NNDSS message mapping guides that you are currently working on. Update the information if it is incorrect or outdated.**

|  |  |  |
| --- | --- | --- |
| Generic v2.0 | Tuberculosis (TB) and Latent TB Infection (LTBI) | Lyme and Tickborne Rickettsial Diseases (TBRD |
| Hepatitis v1.0 | Mumps | Measles |
| STD v1.0 | Pertussis | Rubella |
| Congenital Syphilis v1.0 | Varicella | Congenital Rubella Syndrome |
| Arboviral v1.3 | Malaria | Healthcare-Associated Infections, Multidrug-Resistant Organisms (HAI MDRO) |
| Foodborne and Diarrheal Disease (FDD) | Trichinellosis | Carbon Monoxide Poisoning |
| Respiratory and Invasive Bacterial Diseases (RIBD) | Babesiosis | COVID-19 |
|  |  | None of the above |

1. **Describe the key challenges, gaps, or needs (e.g., staff capacity or capability, policies, processes) that your jurisdiction has related to enhancing or accelerating data collection, surveillance, and/or reporting processes.**

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1. **What opportunities or plans does your jurisdiction have to enhance or accelerate these data collection, surveillance, and/or reporting processes?**

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### VITAL RECORDS

1. **Does your jurisdiction operate an Electronic Birth Registration System (EBRS) and Electronic Death Registration System (EDRS)?**

Yes In Progress No

*If "No" or "In Progress", skip to Question 53.*

1. **Does your jurisdiction utilize the following:**

| *Data exchange mechanism* | Specify | *If In Progress, describe where you are in the process.* |
| --- | --- | --- |
| 1. *Steve 2.0 - State and Territorial Exchange of Vital Events System interface, developed by the National Association for Public Health Statistics and Information Systems (NAPHSIS) to securely transfer electronic vital records into the National Vital Statistics System (NVSS) at the National Center for Health Statistics (NCHS)* | Yes – Fully implemented across information system(s)  In Progress – Implementation ongoing or partially implemented  No  Don't Know |  |
| 1. *Vital Records Death Reporting FHIR Implementation Guide v0.1.0* | Yes – Fully implemented across information system(s)  In Progress – Implementation ongoing or partially implemented  No  Don't Know |  |
| 1. *Other* | Yes – Fully implemented across information system(s)  In Progress – Implementation ongoing or partially implemented  No  Don't Know |  |
| * 1. *If Other, specify* |  |  |

1. **What key challenges, gaps, or needs does your jurisdiction have related to operating or enhancing a Vital Records System, Electronic Birth Registration System (EBRS), or Electronic Death Registration System (EDRS)?**

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1. **What opportunities or plans does your jurisdiction have to enhance or accelerate these data sharing and reporting processes? If work is in progress, please describe where you are in the process and the data exchange mechanism that will be utilized (e.g., Steve 2.0, FHIR).**

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### CONTACT TRACING

1. **Review the following information about your jurisdiction's contact tracing tools and systems. Update the information if it is incorrect or outdated.** 
   1. **What contact tracing tools are you using?**

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| --- | --- | --- |
| Salesforce | CommCare (Dimagi) | MTX |
| REDCap | Microsoft Arias | Other |
| Sara Alert | Domo | N/A |

*If not other, skip to C.*

* 1. **What system are you using for contact tracing?**

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* 1. **Is your contact tracing system interoperable with:**

**(For other, this does NOT include your HIE)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Integrated Disease surveillance System | Immunization Information System or Registry | Vital Records | Other | Not interoperable with another system or registry |

*If not other, skip to Question 56.*

* + 1. **Please specify what system(s) your contact tracing system is interoperable with.**

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1. **Describe the key challenges, gaps, or needs (e.g., staff capacity or capability, policies, processes) that your jurisdiction has related to contact tracing.**

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1. **What opportunities or plans does your jurisdiction have to enhance or accelerate contact tracing?**

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### SHARED SERVICES

1. **Review the following information about the shared services your jurisdiction uses. Update the information if it is incorrect or outdated.**

**Which shared services does your jurisdiction use (select all that apply):**

|  |  |  |
| --- | --- | --- |
| iConnect Lab Web Portal (LWP) | FHIR Server | ESSENCE and NSSP Platform (Location: CDC cloud environment) |
| Validation Services | File Routing | None of the above |
| Analytics Support Services | RCKMS - for eCR Implementation | Other |

*a. If other, please specify:*

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1. **What key challenges, gaps, or needs does your jurisdiction have related to shared services?**

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1. **Describe opportunities or plans that your jurisdiction has to enhance shared service(s) currently in use or implement shared service(s) not currently in use at the jurisdiction to address critical gap(s) which have not been formerly cited in this assessment? If there are no opportunities, please indicate.**

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## Workforce

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| *The following questions aim to document whether or not your jurisdiction has the workforce capacity and capability to conduct activities involving data exchange and systems interoperability and your jurisdiction's plans to meet related workforce gaps.*  *Workforce proficiency levels are defined as follows:*  ***None****: Jurisdiction does not have any staff with proficiency related to the competency.*  ***Awareness:*** *Jurisdiction has staff that demonstrate awareness of the concepts and processes. Staff can conduct preliminary assessment and analysis in the simplest situations with close and extensive guidance.*  ***Basic****: Jurisdiction has staff that demonstrate familiarity with concepts and processes. Staff can conduct preliminary assessment and analysis in somewhat difficult situations requiring frequent guidance.*  ***Intermediate****: Jurisdiction has staff that demonstrate understanding of concepts and processes. Staff can conduct preliminary assessment and analysis in difficult situations requiring occasional guidance.*  ***Advanced****: Jurisdiction has staff that demonstrate broad understanding of concepts and processes. Staff can conduct preliminary assessment and analysis in considerably difficult situations with little to no guidance.*  ***Expert****: Jurisdiction has staff that demonstrate a comprehensive, expert understanding of concepts and processes. Staff can conduct preliminary assessment and analysis in exceptionally difficult situations and can serve as a key resource to advise others.*  ***N/A****: The concepts and processes are not applicable to our jurisdiction.* |

1. **What is your jurisdiction's current workforce proficiency level for the following activities?**

|  | *Select* | If N/A, describe why |
| --- | --- | --- |
| 1. *Data Exchange, Interoperability, and Standards: Develops and implements standards-based approaches that solve complex, multi-organizational interoperability problems. Examples include:*  * *Contributing to the development of data standards to provide consistent meaning to data shared among different information systems, programs, and agencies throughout its life cycle* * *Publishing data using processes such as Health Level 7 (including Fast Healthcare Interoperability Resources (FHIR) and bulk FHIR), Digital Imaging and Communication in Medicine (DICOM), Direct Standard, International Organization for Standardization, Integrating the Healthcare Enterprise, and International Health Terminology Standards Development Organization* * *Implementing appropriate open data standards to make data accessible* * *Designing solutions for electronic case reporting, electronic laboratory reporting, and other public health reporting from healthcare that require bi-directional health information exchange* | None  Awareness  Basic  Intermediate  Advanced  Expert  N/A |  |
| 1. *IT Platforms, Systems, and Software:* *Understands the specifications, uses, and types of IT platforms and related services supported by the agency. Understands and uses operating systems and software to manage the end-to-end data processes in the data life cycle. Examples include:*  * *Using on-premise, cloud-based and cloud-native services and systems* * *Leveraging Platform as a Service (PaaS) technologies such as serverless and container-based deployments* * *Using Agency specific systems, such as BioSense, Laboratory Response Network, and National Notifiable Disease Surveillance System* * *Using commercial off the shelf software, development, and production software, database engines, web servers, and other platform software* | None  Awareness  Basic  Intermediate  Advanced  Expert  N/A |  |

1. **What types of staff at your jurisdiction currently perform activities related to data exchange and systems interoperability?**

| *Types of Staff* | Select |
| --- | --- |
| 1. *Full-Time Equivalent (FTE)* | Yes No Don’t Know |
| 1. *Contract* | Yes No Don’t Know |
| 1. *Temporary* | Yes No Don’t Know |
| 1. *Fellows or Interns* | Yes No Don’t Know |
| 1. *CDC Direct Assistance (do not include CDC Foundation Direct Assistance here, include under Contract)* | Yes No Don’t Know |
| 1. *Other* | Yes No Don’t Know |
| * + 1. *If other, specify* |  |

1. **Which of the following best describes whether the number and proficiency level of staff (FTEs, contractors, fellows, interns) who work on activities related to data exchange and systems interoperability are sufficient to meet your agency's needs?**

Insufficient Sufficient Unsure

1. **What workforce enhancements are you considering to improve your jurisdiction's capacity and capability to meet your needs related to data exchange and systems interoperability? If no enhancements are needed, mark "No" for all.**

| *Workforce Enhancements* | Select | *If Yes*, describe (e.g., number of staff, position types, specific training,/TA opportunities, desired time frame for action) |
| --- | --- | --- |
| 1. *Full-Time Equivalent (FTE) staff* | Yes No Don’t Know |  |
| 1. *Contract Staff* | Yes No Don’t Know |  |
| 1. *Temporary Staff* | Yes No Don’t Know |  |
| 1. *Fellows or Interns* | Yes No Don’t Know |  |
| 1. *CDC Direct Assistance (Do not include CDC Foundation Direct Assistance here, include under Contract Staff)* | Yes No Don’t Know |  |
| 1. *Upskilling or reskilling current staff through training and technical assistance* | Yes No Don’t Know |  |
| 1. *Other* | Yes No Don’t Know |  |

## Challenges and Needs

1. **What are the key challenges, gaps, or needs (e.g., staff capacity or capability, policies, processes) that your jurisdiction has related to implementing data exchange and interoperability efforts?**

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## Opportunities

1. **Where has your jurisdiction identified places for integration? Of those, indicate 3-5 that are a priority for implementation? What other opportunities or plans does your jurisdiction have related to data exchange and systems interoperability?**

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# Section 4: Data and Information Technology (IT) Governance (Domain 3)

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| *This section includes questions about your jurisdiction's Data and IT governance activities. These questions aim to document your jurisdiction's capacity and capability to:*   * *formulate an information systems strategic plan for a public health informatics program or project.* * *examine organizational issues related to information systems projects to manage change and recommends solutions that assure confidentiality, security, and integrity while maximizing availability of information for public health.* * *solve problems using knowledge of the historical development, structure, and interaction of public health and health care systems.*   *DMI Leads may need support from the jurisdictions' IT Subject Matter Experts to respond to these questions.* |

## Processes

1. **Is your jurisdiction implementing the following data and health IT governance activities?**

| *Data and IT Governance Activities* | Select | *i. If yes,*  what was the outcome of the activity? | *ii. If In Progress*, what stage in the process are you in? | *iii. If No or In Progress, w*hat are the challenges to implementing this activity? | *iv. If N/A,*  describe why this activity does not apply to your jurisdiction |
| --- | --- | --- | --- | --- | --- |
| 1. *develop an Innovation Management strategy to promote and govern innovation efforts* | Yes – Fully implemented across information system(s)  In Progress – Implementation ongoing or partially implemented  No  Don't Know  N/A |  |  |  |  |
| 1. *adopt an iterative, continuous-delivery development model, e.g., Lean-Agile [e.g., Scaled Agile Framework (SAFe)* | Yes – Fully implemented across information system(s)  In Progress – Implementation ongoing or partially implemented  No  Don't Know  N/A |  |  |  |  |
| 1. *adopt a DevOps / DevSecOps continuous integration and continuous delivery (CI/CD) model* | Yes – Fully implemented across information system(s)  In Progress – Implementation ongoing or partially implemented  No  Don't Know  N/A |  |  |  |  |
| 1. *perform a Security Risk Assessment (SRA) to identify vulnerabilities, evaluate threats, and implement key security controls in software applications and/or applied Server Hardening techniques to improve the security and resiliency of your jurisdiction's infrastructure* | Yes – Fully implemented across information system(s)  In Progress – Implementation ongoing or partially implemented  No  Don't Know  N/A |  |  |  |  |
| 1. *engage in routine Business Continuity Planning (BCP) to plan and execute processes and systems to effectively manage potential threats and keep facilities operational (e.g., disaster recovery and failover)* | Yes – Fully implemented across information system(s)  In Progress – Implementation ongoing or partially implemented  No  Don't Know  N/A |  |  |  |  |
| 1. *employ a Data Quality Management (DQM) governance framework to employ and optimize processes, methods, and technologies* | Yes – Fully implemented across information system(s)  In Progress – Implementation ongoing or partially implemented  No  Don't Know  N/A |  |  |  |  |
| 1. *employ Master Data Management (MDM) [e.g., Master Patient Index (MPI)] to provide governance, processes, and standards for critical data which benefit from a single reference point* | Yes – Fully implemented across information system(s)  In Progress – Implementation ongoing or partially implemented  No  Don't Know  N/A |  |  |  |  |
| 1. *engage in Data Lifecycle Management (DLM) to govern the creation or receipt, management, and usage (e.g., publication, data sharing), archive (e.g., retention policies and system backups), and disposition of records at end of life* | Yes – Fully implemented across information system(s)  In Progress – Implementation ongoing or partially implemented  No  Don't Know  N/A |  |  |  |  |
| 1. *adopt a standard operating procedure (SOP) for establishing and renewing memorandums of understanding (MOU) and data sharing agreements (e.g., DUAs)* | Yes – Fully implemented across information system(s)  In Progress – Implementation ongoing or partially implemented  No  Don't Know  N/A |  |  |  |  |
| 1. *establish policies and procedures to ensure confidentiality and informed consent* | Yes – Fully implemented across information system(s)  In Progress – Implementation ongoing or partially implemented  No  Don't Know  N/A |  |  |  |  |
| 1. *engage in digital IT Asset Inventory Management to dynamically catalog and manage hardware and software assets, licenses, networks/network devices, configuration, processes, documentation, and other HIT resources* | Yes – Fully implemented across information system(s)  In Progress – Implementation ongoing or partially implemented  No  Don't Know  N/A |  |  |  |  |
| 1. *develop an API Strategy/API Management Plan that includes goals and objectives, documentation methods, version control, API policies, API lifecycle; e.g., plan, design, implement, test, publish, operate, maintain, monitor, and retire* | Yes – Fully implemented across information system(s)  In Progress – Implementation ongoing or partially implemented  No  Don't Know  N/A |  |  |  |  |

1. **Is your jurisdiction engaged in any, or all, of the following Continuous Monitoring (CM) activities?**

| Continuous monitoring activities | Select | *If In Progress,* describe where you are in the process |
| --- | --- | --- |
| 1. *Continuous Discovery (Discovering and maintaining near real-time inventory of all networks and information assets including hardware and software; identifying and tracking confidential and critical data stored on desktops, laptops, and servers)* | Yes – Fully implemented across information system(s)  In Progress – Implementation ongoing or partially implemented  No  Don't Know |  |
| 1. *Continuous Assessment (Automatically scanning and comparing information assets against industry and data repositories to determine vulnerabilities, prioritizing findings, and providing detailed reporting by department, platform, network, asset, and vulnerability type)* | Yes – Fully implemented across information system(s)  In Progress – Implementation ongoing or partially implemented  No  Don't Know |  |
| 1. *Continuous Audit (Continuously evaluating client, server, and network device configurations and comparing with standards and policies; gaining insight into problematic controls, usage patterns, and access permissions of sensitive)* | Yes – Fully implemented across information system(s)  In Progress – Implementation ongoing or partially implemented  No  Don't Know |  |
| 1. *Continuous Patching (Automatically deploying and updating software to eliminate vulnerabilities and maintain compliance; correcting configuration settings including network access and provision software according to end-user role and policies)* | Yes – Fully implemented across information system(s)  In Progress – Implementation ongoing or partially implemented  No  Don't Know |  |
| 1. *Continuous Reporting (Aggregating disparate scanning results from different departments, scan types, and organizations into one central repository; automatically analyzing and correlating unusual activities in compliance with regulations)* | Yes – Fully implemented across information system(s)  In Progress – Implementation ongoing or partially implemented  No  Don't Know |  |

## Workforce

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| *The following questions aim to document whether or not your jurisdiction has the workforce capacity and capability to conduct activities involving data and IT governance and your jurisdiction's plans to meet related workforce gaps.*  *Workforce proficiency levels are defined as follows:*  ***None****: Jurisdiction does not have any staff with proficiency related to the competency.*  ***Awareness:*** *Jurisdiction has staff that demonstrate awareness of the concepts and processes. Staff can conduct preliminary assessment and analysis in the simplest situations with close and extensive guidance.*  ***Basic****: Jurisdiction has staff that demonstrate familiarity with concepts and processes. Staff can conduct preliminary assessment and analysis in somewhat difficult situations requiring frequent guidance.*  ***Intermediate****: Jurisdiction has staff that demonstrate understanding of concepts and processes. Staff can conduct preliminary assessment and analysis in difficult situations requiring occasional guidance.*  ***Advanced****: Jurisdiction has staff that demonstrate broad understanding of concepts and processes. Staff can conduct preliminary assessment and analysis in considerably difficult situations with little to no guidance.*  ***Expert****: Jurisdiction has staff that demonstrate a comprehensive, expert understanding of concepts and processes. Staff can conduct preliminary assessment and analysis in exceptionally difficult situations and can serve as a key resource to advise others.*  ***N/A****: The concepts and processes are not applicable to our jurisdiction.* |

1. **What is your jurisdiction's current workforce proficiency level for the following data and IT governance-related activities?**

|  | Select | If N/A, describe why |
| --- | --- | --- |
| 1. *Data Governance: Formulates and implements processes that ensure that data assets are formally managed such that agency needs are met. Examples include:*    * + - *Formulating an information systems strategic plan for a public health informatics program or project*        - *Examining organizational issues related to information systems or projects to manage change*        - *Recommending solutions that assure confidentiality, security, and integrity while maximizing availability of information for public health*  * *Solving problems using knowledge of the historical development, structure, and interaction of public health and health care systems* | None  Awareness  Basic  Intermediate  Advanced  Expert  N/A |  |
| 1. *Data Operations: Participates in collaborative data management practices to deliver value faster by creating predictable delivery and change management of data, data models, and related artifacts. Examples include:*  * *Improving the communication, integration, and automation of data flows between data managers and data consumers across an organization* * *Using technology to automate the design, deployment, and management of data delivery with appropriate levels of governance* * *Using metadata to improve the usability and value of data in a dynamic environment* | None  Awareness  Basic  Intermediate  Advanced  Expert  N/A |  |
| 1. *Data Security: Administers data security processes and associated tools that protect the organization's sensitive data assets, either in transit or at rest. Examples include:*    * + - *Encrypting data at rest and in transit*        - *Implementing role-based security requirements*        - *Developing practices for protecting privacy in public data releases*        - *Ensuring security and mitigating vulnerabilities across the data life cycle*        - *Establishing continuous monitoring to ensure only authorized access to cloud storage*        - *Preserving data integrity in a cloud environment* | None  Awareness  Basic  Intermediate  Advanced  Expert  N/A |  |
| 1. *Data Policy and Ethics: Consistently applies the organization's legal requirements and system of values and moral principles related to the responsible collection, use, and sharing of data. Examples include:*  * *Evaluating the human impact of methods* * *Incorporating privacy laws and governmental policies into data collection, dissemination, and uses* * *Integrating ethics guidelines and principles when collecting, disseminating, or using data* * *Evaluating ethical practices to adapt communication style and techniques to culturally diverse situations* | None  Awareness  Basic  Intermediate  Advanced  Expert  N/A |  |

1. **What types of staff at your jurisdiction currently perform activities related to data and IT governance?**

| *Types of Staff* | Select |
| --- | --- |
| 1. *Full-Time Equivalent (FTE)* | Yes No Don’t Know |
| 1. *Contract* | Yes No Don’t Know |
| 1. *Temporary* | Yes No Don’t Know |
| 1. *Fellows or Interns* | Yes No Don’t Know |
| 1. *CDC Direct Assistance (do not include CDC Foundation Direct Assistance here, include under Contract)* | Yes No Don’t Know |
| 1. *Other* | Yes No Don’t Know |
| * + 1. *If other, specify* |  |

1. **Which of the following best describes whether the number and proficiency level of staff (FTEs, contractors, fellows/interns) who work on activities related to data and IT governance are sufficient to meet your agency's needs?**

Insufficient Sufficient Unsure

1. **What workforce enhancements are you considering to improve your jurisdiction's capacity and capability to meet your needs related to data and IT governance? If no enhancements are needed, mark "No" for all.**

| *Workforce Enhancements* | Select | *If yes,* describe (e.g., number of staff, position types, specific training, TA opportunities, desired time frame for action.) |
| --- | --- | --- |
| 1. *Full-Time Equivalent (FTE) staff* | Yes No Don’t Know |  |
| 1. *Contract Staff* | Yes No Don’t Know |  |
| 1. *Temporary Staff* | Yes No Don’t Know |  |
| 1. *Fellows or Interns* | Yes No Don’t Know |  |
| 1. *CDC Direct Assistance (Do not include CDC Foundation Direct Assistance here, include under Hire Contract Staff)* | Yes No Don’t Know |  |
| 1. *Upskilling or reskilling current staff through training and technical assistance* | Yes No Don’t Know |  |
| 1. *Other* | Yes No Don’t Know |  |

## Challenges and Needs

1. **Describe the key challenges, gaps, or needs (e.g., staff capacity or capability, policies, processes) that your jurisdiction has related to implementing data and IT governance? (For example, needs related to strengthening cybersecurity or infrastructure improvements needed to facilitate disaster recovery (e.g., backups, redundancy, multiple environments, load balancers).**

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## Opportunities

1. **What opportunities or plans does your jurisdiction have in place to address gaps related to data and IT governance?**

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**Section 5: Data Analytics, Visualization, and Reporting (Domain 4)**

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| *This section includes questions about data analytics, visualization, and reporting in your jurisdiction. These questions aim to document your jurisdiction's capacity and capability to:*   * *understand and implement basic data management organization techniques;* * *store data in a useful and meaningful way;* * *develop methods to extract knowledge from structured and unstructured data;* * *apply data analytics and visualization principles and methods to inform public health action; and* * *articulate and distribute data, data analysis, and outcomes to appropriate audiences.* |

## Processes

1. **Is your jurisdiction implementing the following data analytics, visualization, and reporting activities?**

| *Data analytics, visualization, and reporting activities* | Select | *i. If yes,*  What was the outcome of the activity? | *ii. If In Progress,* What stage in the process are you in? | *iii. If No or In Progress,*  What are the challenges related to this activity? | *iv. If N/A,*  Describe why this activity does not apply to your jurisdiction |
| --- | --- | --- | --- | --- | --- |
| 1. *Employ advanced analytics, visualization, and reporting technologies to effectively enable integrated surveillance to inform public health action in real-time* | Yes – Fully implemented across information system(s)  In Progress – Implementation ongoing or partially implemented  No  Don't Know  N/A |  |  |  |  |
| 1. *Does your site have a shared analytics platform to support data analysis, visualization and data synthesis across domains (e.g., infectious, chronic, immunization, vital records) where data scientists can use their 'tool-of-choice,' e.g., R, SAS, SQL, Python to analyze datasets? The platform might include secure access controls to allow users to pull specific data sets, reducing performance degradation on the primary surveillance systems.* | Yes – Fully implemented across information system(s)  In Progress – Implementation ongoing or partially implemented  No  Don't Know  N/A |  |  |  |  |
| 1. *Publish de-identified datasets, data visualizations, or dashboards on public-facing website(s) and/or other channels to equip communities with diverse, real-time public health data that reflect local realities and enable faster decision-making.* | Yes – Fully implemented across information system(s)  In Progress – Implementation ongoing or partially implemented  No  Don't Know  N/A |  |  |  |  |
| 1. *Maintain a web portal and/or other mechanisms by which local partners may securely access identifiable data sets, as appropriate, to support public health preparedness and response.* | Yes – Fully implemented across information system(s)  In Progress – Implementation ongoing or partially implemented  No  Don't Know  N/A |  |  |  |  |
| 1. *Employ predictive analytics and/or other forms of computational modeling technologies to effectively engage in predictive modeling, analytics, and forecasting.* | Yes – Fully implemented across information system(s)  In Progress – Implementation ongoing or partially implemented  No  Don't Know  N/A |  |  |  |  |
| 1. *Utilize artificial intelligence (e.g., machine learning, natural language processing) methods to link and process data from disparate sources and enable spatial clustering and enhanced temporal predictions.* | Yes – Fully implemented across information system(s)  In Progress – Implementation ongoing or partially implemented  No  Don't Know  N/A |  |  |  |  |

## Workforce

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| *The following questions aim to document whether or not your jurisdiction has the workforce capacity and capability to conduct activities involving data analytics, visualization, and reporting and your jurisdiction's plans to meet related workforce gaps.*  *Workforce proficiency levels are defined as follows:*  ***None****: Jurisdiction does not have any staff with proficiency related to the competency.*  ***Awareness:*** *Jurisdiction has staff that demonstrate awareness of the concepts and processes. Staff can conduct preliminary assessment and analysis in the simplest situations with close and extensive guidance.*  ***Basic****: Jurisdiction has staff that demonstrate familiarity with concepts and processes. Staff can conduct preliminary assessment and analysis in somewhat difficult situations requiring frequent guidance.*  ***Intermediate****: Jurisdiction has staff that demonstrate understanding of concepts and processes. Staff can conduct preliminary assessment and analysis in difficult situations requiring occasional guidance.*  ***Advanced****: Jurisdiction has staff that demonstrate broad understanding of concepts and processes. Staff can conduct preliminary assessment and analysis in considerably difficult situations with little to no guidance.*  ***Expert****: Jurisdiction has staff that demonstrate a comprehensive, expert understanding of concepts and processes. Staff can conduct preliminary assessment and analysis in exceptionally difficult situations and can serve as a key resource to advise others.*  ***N/A****: The concepts and processes are not applicable to our jurisdiction.* |

1. **What is your jurisdiction's current workforce proficiency level for the following *Data Analytics, Visualization, and Reporting* activities?**

|  | Select | If N/A, describe why |
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| * 1. Research and Evaluation Design: *Develops a systematic plan to study a scientific problem. Examples include:* * *Identifying the research and evaluation questions, hypothesis, or problem statement* * *Selecting the study design (such as interventional, observational, process evaluation, cost-benefit)* * *Developing the analytic, interpretation, and dissemination plans.* | None  Awareness  Basic  Intermediate  Advanced  Expert  N/A |  |
| * 1. *Statistical, Geospatial, and Qualitative Analysis: Through the application of various tools, uses both predictive and prescriptive statistical methods, qualitative methods, and geospatial methods to interpret and summarize data. Examples include:* * *Applying a comprehensive and evolving knowledge of statistical theory, methods, and techniques* * *Using methods such as linear, survival, time series, and hierarchical models* * *Performing activities related to the capturing, managing, analyzing, and displaying of various forms of geographically referenced information* * *Translating non-numerical unstructured data by indexing, searching, translating, and theorizing text data and other unstructured data like images* * *Using appropriate tools such as SPSS, SAS, Stata, R, GIS Information Systems, ATLAS.ti, and MAXQDA* | None  Awareness  Basic  Intermediate  Advanced  Expert  N/A |  |
| * 1. *Programming and Scripting:* *Creates, modifies, and tests computer code, forms, and script to ensure operability of applications. Analyzes user needs to recommend software solutions and designs. Uses programming language to develop and write computer programs to store, locate, and retrieve specific documents, data, and information. Examples include:* * *Using computer programming languages such as Visual Basic, Microsoft SQL Server, ASP, Microsoft .NET, Visual Studio, Java, Access, and GIS Information Systems*   + - *Using code repositories such as GitHub, Git, Bitbucket, GitBucket, and AWS CodeCommit* | None  Awareness  Basic  Intermediate  Advanced  Expert  N/A |  |
| * 1. *Artificial Intelligence: Develops computer systems able to perform tasks normally requiring human intelligence to deliver solutions that can automate routine tasks, draw data-based insights, or augment human activities. Examples include:*      + *Using machine learning algorithms to filter, organize, and recognize patterns in data*      + *Using Natural Language Processing to allow computers to examine, extract, and interpret data that is structured within a language*      + *Applying deep learning models for processing images at scale to classify, identify objects, and segment* | None  Awareness  Basic  Intermediate  Advanced  Expert  N/A |  |
| * 1. *Exploratory Analysis: Use exploratory data analysis approaches to identify general patterns and possible anomalies in the data. Examples include:*      + *Identifying outliers and other characteristics of the data that might be unexpected*      + *Using graphical approaches (such as histograms and line graphs) to examine the distribution of the data*      + *Establishing data specifics and relationships through preliminary descriptive analyses such as mean, median, frequencies, and correlations* | None  Awareness  Basic  Intermediate  Advanced  Expert  N/A |  |
| * 1. *Data Visualization:* *Designs and showcases visual representations of data findings via visualization tools to ensure understanding of core users to facilitate decision-making. Examples include:* * *Communicating data insights using charts, graphs, plots, and dashboards* * *Using appropriate tools such as Tableau, Power BI, R Shiny, SAS Visual Analytics, and Python visualization libraries for static and dynamic representations* * *Using augmented reality and virtual reality technologies to model and analyze data within multi-dimensional visualizations* | None  Awareness  Basic  Intermediate  Advanced  Expert  N/A |  |
| * 1. *Data Synthesis and Dissemination:* *Synthesizes data to draw conclusions from a body of evidence. Formulates action-oriented recommendations for appropriate audiences (e.g., scientific colleagues, constituents, partners, and the public) for adoption. Examples include:* * *Identifying intended audiences and tailoring information dissemination to their needs* * *Evaluating the best format for disseminating outputs and story telling* * *Presenting complex findings and impact as it relates to the domain-specific problem or question to be addressed* | None  Awareness  Basic  Intermediate  Advanced  Expert  N/A |  |
| * 1. *Predictive Analytics: Uses predictive analytics methods to forecast future trends and focus research on health-related states and events (such as emerging outbreaks, patterns of chronic diseases, or environmental health) across various populations to increase efficacy in determining causes and generate actionable solutions applicable to specified public health outcomes. Examples include:* * *Using quantitative techniques, such as decision analysis, constrained optimization, and simulation modeling to inform decision-making at the individual and population levels* * *Using analytic methods to characterize and mitigate potential biases from using observational data at large and small scales* * *Using tools and technologies to process and analyze high-volume, high-velocity, and/or high-variety information assets to enable enhanced insight, decision making, and process automation* |  |  |
| * 1. *Data Collection and Storage: Designs, implements, and supports the organization's data assets to ensure effective collection, storage, backups, and retrieval. Maintains and ensures efficient performance of the technologies that make data accessible. Plans and executes effective data storage, backups, and retrieval within the organization. Examples include:* * *Establishing Extract, Transform, and Load (ETL) operations* * *Collaborating with investigators to facilitate data collection or data access that is consistent with the analytic plan* * *Identifying and collecting the data required to construct usable data assets* * *Applying knowledge of special-purpose programming language such as structured query language (SQL) to design and manage relational database systems* * *Building Data Lakes for undefined data that can be accessed and used with NoSQL data management systems to manage and integrate data* * *Storing data in a useful and meaningful way, including in cloud environments* |  |  |
| * 1. *Data Quality Management: Determines the fitness of data for use in the specified context and monitors the ongoing condition of the data. Contributes to root cause analysis of data issues and helps the organization identify business processes and technical improvements that contribute to higher quality data. Examples include:* * *Determining if data are fit for their intended use in the specified context* * *Conducting data quality assessments to determine the validity of available data* * *Taking appropriate actions such as profiling, cleaning, imputing, and standardizing to improve data utility* |  |  |

1. **What types of staff at your jurisdiction currently perform activities related to data analytics, visualization, and reporting?**

| *Types of Staff* | Select |
| --- | --- |
| 1. *Full-Time Equivalent (FTE)* | Yes No Don’t Know |
| 1. *Contract* | Yes No Don’t Know |
| 1. *Temporary* | Yes No Don’t Know |
| 1. *Fellows or Interns* | Yes No Don’t Know |
| 1. *CDC Direct Assistance (do not include CDC Foundation Direct Assistance here, include under Contract)* | Yes No Don’t Know |
| 1. *Other* | Yes No Don’t Know |
| * + 1. *If other, specify* |  |

1. **Which of the following best describes whether the number and proficiency level of staff (FTEs, contractors, fellows/interns) who work on data analytics, visualization, and reporting in your jurisdiction are sufficient to meet your agency's needs?**

Insufficient Sufficient Unsure

1. **What workforce enhancements are you considering to improve your jurisdiction's capacity and capability to meet your needs related to data analytics, visualization, and reporting?**

| *Workforce Enhancements* | Select | *If Yes*, describe (e.g., number of staff, position types, specific training, TA opportunities, desired time frame for action.) |
| --- | --- | --- |
| 1. *Full-Time Equivalent (FTE) staff* | Yes No Don’t Know |  |
| 1. *Contract Staff* | Yes No Don’t Know |  |
| 1. *Temporary Staff* | Yes No Don’t Know |  |
| 1. *Fellows or Interns* | Yes No Don’t Know |  |
| 1. *CDC Direct Assistance (Do not include CDC Foundation Direct Assistance here, include under Hire Contract Staff)* | Yes No Don’t Know |  |
| 1. *Upskilling or reskilling current staff through training and technical assistance* | Yes No Don’t Know |  |
| 1. *Other* | Yes No Don’t Know |  |

## Challenges and Needs

1. **Describe the key challenges, gaps, or needs (e.g., staff capacity or capability, policies, processes) your jurisdiction has related to data analytics, visualization, and reporting?**

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## Opportunities

1. **What opportunities or plans does your jurisdiction have to strengthen your jurisdiction's data analytics, visualization, and reporting capability?**

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**Section 6: Conclusion**

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| *Please provide additional information about additional opportunities and targeted enhancements or innovations not described in other sections of this assessment in this final section.* |

1. **Considering how the SARS-CoV-2/COVID-19 outbreak may have revealed the need to expand, improve or implement new information systems, technologies, or other solutions within your jurisdiction, what resources are needed to optimize these systems to make progress toward your jurisdiction's modernization goals (e.g., integrated surveillance systems, standards-based data exchange, and interoperability, enterprise shared services)?** **If none, indicate "none."**

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1. **Describe any other targeted enhancements or innovations to health information systems that support emergency preparedness and response (e.g., outbreak management, case investigation, exposure notifications) that your jurisdiction is engaged in which have not been formerly cited in this assessment? If none, indicate "none."**

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1. **Describe any other targeted enhancements or innovations in health information systems that enable interoperability and data exchange between public health, clinical care systems, private laboratories, or among multiple public health partners that your jurisdiction is engaged in that have not been formerly cited in this assessment. If none, indicate "none."**

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1. **Describe any other targeted enhancements or innovations that demonstrate enriched, streamlined and/or improved data exchange reporting that your jurisdiction is engaged in that have not been formerly cited in this assessment. If none, indicate "none."**

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1. **Describe any other targeted enhancements that your jurisdiction is engaged in that include identifying new data sources to improve surveillance, situational awareness, and response that has not been formerly cited in this assessment. If none, indicate "none."**

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1. **If you have any other comments, questions, or concerns related to this assessment or your jurisdiction's data modernization efforts, please include them below.**

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***Thank you for completing the assessment.***