



Consortium for State and Regional Interoperability  
**Health Data Utility Maturity Model**

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Version 1.0



**Consortium for State and  
Regional Interoperability**



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# About the CSRI HDU Maturity Model and How to Apply It

The concept of the Health Data Utility (HDU) has generated great interest, discussion, and debate. The Consortium for State and Regional Interoperability (CSRI) believes that each state should have a statewide HDU as the most effective, cost efficient, and justly governed approach to meeting the comprehensive health data needs in that state. We recognize that the lack of clarity over the definition of an HDU is an obstacle to the nationwide adoption of the HDU model; however, merely proposing a definition risks over-simplification and tempts unhelpful binary classification. There is value in providing an aspirational HDU model for states and health data organizations within the state. There is little or no value in using a definition to judge whether "Organization A" is an HDU, whereas "Organization B" is not. Therefore, a maturity model is the correct approach to clarify, advance, and apply the HDU concept because it provides the opportunity for a more robust description of the characteristics and services of an HDU and the segments of health care and government it serves. Importantly, a maturity model also recognizes that states are starting from different points and with different health data organizations as assets on which to build. The CSRI HDU maturity model offers a starting point and a path forward for health care, health data, and government leaders to follow in the way that is best for their state and model against which it can measure gaps with its current state.

The purpose of this document is threefold:

1. To serve as a means of communicating the HDU concept to interested parties including existing health data organizations and state governments.
2. To serve as a source of strategic guidance to existing health data organizations to inform their planning and strategic decision making.
3. To give some standardization to the HDU concept and begin the process of building on and refining an agreed upon industry maturity model for HDUs.

## **NOTE:**

This is version 1.0 of the CSRI HDU maturity model. There will be future versions as the model evolves. CSRI welcomes input and fully expects discussion and experience to inform future versions that will make the CSRI HDU maturity model more valuable over time. Send feedback and suggestions to [info@thecsri.org](mailto:info@thecsri.org).



## Part I: Concept of a Health Data Utility

We understand that some would find this relatively thorough exploration of the HDU concept incomplete without an attempt at defining a **Health Data Utility (HDU)**. Despite the earlier cautions regarding a binary definition of HDU, we therefore reluctantly offer this definition of the HDU, within the context of the HDU maturity model, as a starting point for future debate:

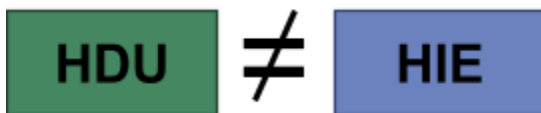
*An HDU is a single organization or a jointly governed cooperative of a small number of organizations, ideally operated by a not-for-profit organization with multi-stakeholder governance which, through its mission and function, seeks to meet the comprehensive health data and health data analytics needs of both the public and private sector within a state.*

Key considerations for understanding an HDU:

- It is an entity that serves the health data and analysis needs of its state and/or region—both the health care private-sector (e.g., providers, payers, employers) and state government entities.
- It is an entity that has cooperative relationships with state government and any other sector(s)
- It embraces the principle that secure access to information related to the health and health care of individuals and populations should be readily available within the constraints of patient privacy and state and federal laws.
- It is a not-for-profit entity responsible for basic connectivity and designated by the state to operate a minimally regulated network which everyone can access, like an electric or water utility model.
- The not-for-profit entity would:
  - Be governed by a multi-stakeholder board.
  - Be minimally regulated by the state or public-private regulatory commissions.
  - Coordinate with relevant government agencies including but not limited to public health departments and Medicaid.
  - Broadly serve the private sector health system's needs for health data sharing in support of treatment and health care operations.

## Health Information Exchanges Compared with Health Data Utilities

An HDU is not synonymous with a health information exchange (HIE). While health information exchange (the verb) is certainly a necessary capability of an HDU, and organizations which identify themselves as HIEs today are likely the best candidate in their given states to serve as the HDU, a paragon of an HDU would have a significantly broader profile of services than a typical HIE and have demonstrated value propositions across all three segments of health care, government, and academia. The basic functions and typical services of an HIE **should** be a part of an HDU—a subset. However, within each state, there are several programs, services, functions, and needs that require secure exchange, curation, and/or analysis of health data not typically performed by HIEs. Increasingly, these functions are being aggregated into a single statewide not-for-profit health data organization. Several states have robust, existing health data organizations which have grown to deliver diverse services at significant levels of adoption and stand as our best HDU models to date. No state can claim to have a fully developed HDU with nothing to learn from others.

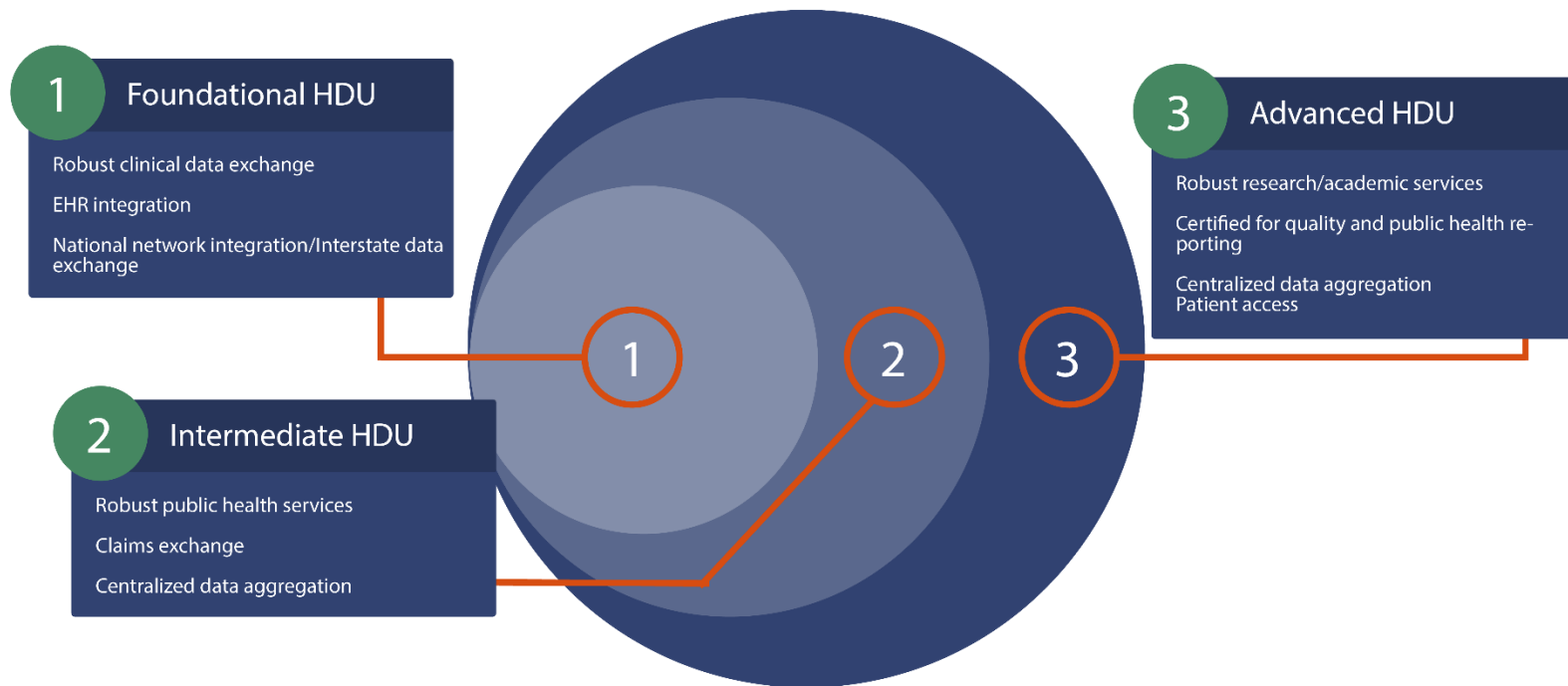


# Part II: The Health Data Utility Maturity Model

Figure 1





## Health Data Utility (HDU) Maturity Model Levels

An organization being guided by the HDU maturity model can build the depth and breadth of its value propositions.



## Overview of the HDU Maturity Model

Figure 2

	FOUNDATIONAL	INTERMEDIATE <i>[Including Foundational...]</i>	ADVANCED <i>[Including Foundational &amp; Intermediate...]</i>
 <p><b>Governance &amp; Infrastructure</b></p>	<ul style="list-style-type: none"> <li>Multi-stakeholder representation on governing Board with stated mission and vision</li> <li>Organized for the public interest; serves as a trusted neutral party amongst diverse stakeholder groups</li> <li>Incorporated as 501c3 or State-based organization</li> <li>HIPAA Privacy and Security Compliance</li> <li>Digital Identity Management</li> <li>Clinical data repository</li> </ul>	<ul style="list-style-type: none"> <li>Develop and implement policies and procedures for data governance</li> <li>Established committee structure with member participation, such as: privacy &amp; security, data governance, product/project prioritization</li> <li>Clinical &amp; Claims data repository (semantically normalized)</li> <li>Industry security certification (e.g., HITRUST, SOC)</li> </ul>	<ul style="list-style-type: none"> <li>Evidence of public-private partnerships with established avenues to provide input</li> <li>Involvement from State and public health entities (e.g., state designation)</li> <li>Ongoing and active engagement from providers, payers, public health entities, and (optionally) patients</li> <li>&gt;60% of revenues from sources other than grants and state contracts</li> <li>Independent capability for sophisticated analytics</li> </ul>
 <p><b>Network Breadth</b></p>	<ul style="list-style-type: none"> <li>Multiple private sector segments* <b>participating</b> (either contributes data or uses services)</li> </ul>	<ul style="list-style-type: none"> <li>Participation with National Networks (e.g., eHealth Exchange, TEFCA)</li> <li>Multiple private sector segments* <b>contributing</b> data and <b>utilizing</b> services</li> </ul>	<ul style="list-style-type: none"> <li>All private sector segments* <b>utilizing</b> services</li> <li>Actively <b>informing</b> research (e.g., clinical or academic)</li> </ul>
 <p><b>Network Depth</b></p>	<ul style="list-style-type: none"> <li>Significant proportion of Hospitals/IDNs <b>contributing</b> data</li> </ul>	<ul style="list-style-type: none"> <li>Significant proportion of Hospitals/IDNs, Payers, Government, Laboratories <b>contributing</b> data</li> </ul>	<ul style="list-style-type: none"> <li>Significant proportion of all private sector segments* <b>contributing</b> data</li> </ul>
 <p><b>Service Breadth</b></p>	<ul style="list-style-type: none"> <li>Basic value propositions offered to multiple segments, e.g. private sector, government, academia</li> </ul>	<ul style="list-style-type: none"> <li>Diverse value propositions offered across most maturity model segments, e.g. private sector, government, academia</li> </ul>	<ul style="list-style-type: none"> <li>Advanced value propositions offered across all maturity model segments, e.g. private sector, government, academia</li> </ul>

- **Governance & Infrastructure** refers to the governance, corporate structure, and organizational maturity of the HDU.
- **Network Breadth** refers to the different sectors from which the HDU has participating data contributors and service users.
- **Network Depth** refers to the fraction of a given segment contributing data to the HDU.



- **Service Breadth** describes the diversity of service offerings across maturity model segments (e.g. private sector, government agencies).

## Service Breadth

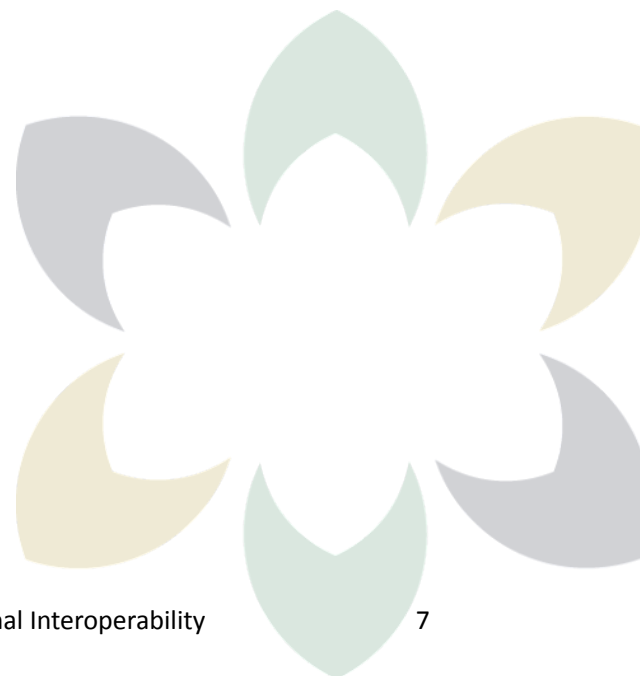
The following section describes the diversity of service offerings across maturity model segments (e.g. private sector, government agencies, academia). In each segment, there are value propositions across patient care, care management/population health, health care quality, public health, and health care operations and administration. Future iterations of this maturity model will explore these segments in greater detail. Additionally, some of the boxes in Tables 1-3 state “For refinement in Version 2.0 of the CSRI HDU Maturity Model.” We will continue to add detail in evolving versions.



- Basic value propositions offered to multiple segments, e.g. private sector, government, academia

- Diverse value propositions offered across most maturity model segments, e.g. private sector, government, academia

- Advanced value propositions offered across all maturity model segments, e.g. private sector, government, academia





**Figure 3**

## Three Entities That Have Relationships with HDUs

To serve these three key segments, the HDU must have a significant level of engagement within each.



### Private Sector

- Hospitals/integrated delivery networks
- Physician practices & clinics
- Long-term/Post-acute care
- Behavioral health
- Employers across all non-governmental sectors



### Government/Nonprofit Sector

- State departments of health
- Medicaid agencies
- Prescription Drug Monitoring Programs
- All Payer Claims Databases
- Social services/Community service organizations



### Academia

- Universities
- Research institutions

**Table 1: Service Breadth Across Private Sector Segments**

	<b>Foundational</b>	<b>Intermediate [including Foundational]</b>	<b>Advanced [including Foundational &amp; Intermediate]</b>
<b>Hospitals/ Integrated Delivery Networks (IDNs)</b>	<ul style="list-style-type: none"> <li>- Clinician portal with longitudinal records</li> <li>- Single Sign On (SSO) to clinician portal</li> <li>- Electronic results delivery (to physician community)</li> <li>- Admission Discharge Transfer (ADT) and clinical event notifications to clinicians and care managers</li> <li>- Push delivery of clinical information (e.g. Consolidated Clinical Document Architecture [CCDA])</li> <li>- Capturing advanced directives in repository</li> <li>- Providing Emergency Medical Services (EMS) portal access</li> <li>- Analysis and reporting based on clinical and/or claims data</li> <li>- Supplying clinical supplemental data for quality measurement</li> <li>- Electronic Case Reporting (eCR) delivery from source Electronic Health Record (EHR) to Public Health Agency (PHA)</li> <li>- Notifiable condition reporting to PHA (Electronic Lab Reporting [ELR] to PHA)</li> <li>- Public health surveillance reporting to PHA</li> <li>- Support for federally-required reporting (e.g. Health &amp; Human Services [HHS] Covid)</li> </ul>	<ul style="list-style-type: none"> <li>- Electronic Case Reporting (eCR) generation on behalf of provider to Public Health Agency (PHA)</li> <li>- Electronic results delivery integrated with EHR</li> <li>- Patient to provider attribution/active care relationship</li> <li>- Medication reconciliation</li> <li>- Capability of sharing active problem list</li> <li>- Patient consent</li> <li>- Clinician portal with longitudinal records – access for care managers</li> <li>- ADT and clinical event notifications to care managers in near-real time</li> <li>- National Committee for Quality Assurance (NCQA)-certified supplemental data</li> <li>- Bi-directional sharing with PHA</li> <li>- Immunizations</li> <li>- Vital records</li> <li>- Newborn screening orders and results</li> <li>- Support for interorganizational organization image sharing</li> </ul>	<ul style="list-style-type: none"> <li>- FHIR-based integration of clinical data into EHR</li> <li>- Results delivery with provider-specific patient matching</li> <li>- Providing portal access/upload/edit of advanced directives</li> <li>- Support for interorganizational organization image sharing across multiple organizations</li> <li>- Support for disaster recovery as a redundant source of clinical data</li> </ul>
<b>Physician Practices &amp; Clinics</b>	<ul style="list-style-type: none"> <li>- Clinician portal with longitudinal records</li> <li>- Electronic results delivery (with EHR integration)</li> <li>- Admission Discharge Transfer (ADT) and clinical event notifications to clinicians</li> <li>- Push delivery of clinical information (e.g. Consolidated Clinical Document Architecture [CCDA])</li> </ul>	[For refinement in Version 2.0 of the CSRI HDU Maturity Model]	[For refinement in Version 2.0 of the CSRI HDU Maturity Model]



	Foundational	Intermediate [including Foundational]	Advanced [including Foundational & Intermediate]
	<ul style="list-style-type: none"> <li>- Analysis and reporting based on clinical and/or claims data</li> <li>- Notifiable condition reporting to PHA</li> </ul>		
<b>Long-term/ Post-acute Care</b>	<ul style="list-style-type: none"> <li>- Clinician portal with longitudinal records</li> <li>- Make standard Long-Term Post Acute Care (LTPAC) datasets available in hospital setting (e.g. emergency department)</li> <li>- Electronic results delivery (with EHR integration)</li> <li>- ADT and clinical event notifications to clinicians</li> <li>- Push delivery of clinical information (e.g. Consolidated Clinical Document Architecture [CCDA])</li> <li>- Support pre-admission process with data for clinical context</li> <li>- Notifiable condition reporting to public health agency (PHA)</li> <li>- Support for federally-required reporting (e.g. Health &amp; Human Services [HHS] Covid)</li> </ul>	[For refinement in Version 2.0 of the CSRI HDU Maturity Model]	[For refinement in Version 2.0 of the CSRI HDU Maturity Model]
<b>Behavioral Health</b>	<ul style="list-style-type: none"> <li>- Clinician portal with longitudinal records</li> <li>- Electronic results delivery (with EHR integration)</li> <li>- ADT and clinical event notifications to clinicians</li> <li>- Push delivery of clinical information (e.g. Consolidated Clinical Document Architecture [CCDA])</li> <li>- Support for federally-required reporting (e.g. HHS Covid-19)</li> </ul>	- SDOH referrals	[For refinement in Version 2.0 of the CSRI HDU Maturity Model]
<b>Employers</b>	<ul style="list-style-type: none"> <li>- Analysis and reporting based on clinical and/or claims data</li> <li>- ADT and clinical event notifications to benefits managers</li> </ul>	- Analytics dashboard	[For refinement in Version 2.0 of the CSRI HDU Maturity Model]
<b>Payers/Health Plans</b>	<ul style="list-style-type: none"> <li>- Clinical event notifications to care managers</li> <li>- Analysis and reporting based on clinical and/or claims data</li> <li>- Push delivery of clinical information (e.g. CCDAs)</li> <li>- Clinician portal with longitudinal records</li> <li>- Sharing payer-relevant public health information (e.g. members' immunization status)</li> </ul>	<ul style="list-style-type: none"> <li>- Claims exchange, centralized data aggregation</li> <li>- Analytics</li> </ul>	[For refinement in Version 2.0 of the CSRI HDU Maturity Model]



	Foundational	Intermediate [including Foundational]	Advanced [including Foundational & Intermediate]
<b>Pharmacies</b>	<ul style="list-style-type: none"> <li>- Clinician portal with longitudinal records</li> <li>- Push delivery of clinical information (e.g. CCDAs)</li> <li>- Analysis and reporting based on clinical and/or claims data</li> </ul>	[For refinement in Version 2.0 of the CSRI HDU Maturity Model]	[For refinement in Version 2.0 of the CSRI HDU Maturity Model]
<b>Laboratories &amp; Imaging Centers</b>	<ul style="list-style-type: none"> <li>- Clinician portal with longitudinal records</li> <li>- Electronic results delivery (to physician community)</li> <li>- Analysis and reporting based on clinical and/or claims data</li> <li>- Electronic Lab Reporting (ELR) to PHA</li> <li>- Electronic Case Reporting (eCR) to PHA</li> <li>- Notifiable condition reporting to PHA</li> <li>- Public health surveillance reporting to PHA</li> <li>- Support for federally-required reporting (e.g. HHS Covid)</li> </ul>	[For refinement in Version 2.0 of the CSRI HDU Maturity Model]	[For refinement in Version 2.0 of the CSRI HDU Maturity Model]



**Table 2: Service Breadth Across Government Agencies and Functions**

	<b>Foundational</b>	<b>Intermediate [including Foundational]</b>	<b>Advanced [including Foundational &amp; Intermediate]</b>
<b>State Department of Health</b>	<ul style="list-style-type: none"> <li>- Automated public health reporting</li> <li>- Near-real time surveillance reporting</li> <li>- Electronic Lab Reporting (from labs and hospitals)</li> <li>- Electronic Case Reporting (from labs and hospitals)</li> <li>- Automated notifiable condition reporting</li> <li>- Sharing of patient-specific data with providers</li> <li>- Sharing of population-level information with provider community</li> <li>- Analysis and reporting based on clinical and/or claims data</li> </ul>	<ul style="list-style-type: none"> <li>- Race and ethnicity data enrichment</li> <li>- Certified for quality and public health reporting</li> <li>- Government products &amp; reports/dashboards</li> <li>- Access to clinical portal for epidemiologists (state and local)</li> <li>- Support public health emergency response</li> </ul>	<ul style="list-style-type: none"> <li>- Closed-loop exchange between providers and public health officials</li> <li>- Emergency disaster response               <ul style="list-style-type: none"> <li>- Access to clinical data</li> <li>- Bed management</li> <li>- Family reunification</li> </ul> </li> </ul>
<b>Medicaid</b>	<ul style="list-style-type: none"> <li>- Social Determinants of Health Referrals</li> <li>- Government Products &amp; Reports/Dashboards</li> <li>- Supporting care of Medicaid members by providing contextual clinical data at the point of care</li> <li>- Analysis and reporting based on clinical and/or claims data</li> <li>- ADT and clinical event notifications</li> </ul>	[For refinement in Version 2.0 of the CSRI HDU Maturity Model]	[For refinement in Version 2.0 of the CSRI HDU Maturity Model]
<b>Prescription Drug Monitoring Program (PDMP)</b>	<ul style="list-style-type: none"> <li>- Government products &amp; reports/dashboards</li> <li>- Analysis and reporting based on clinical and/or claims data</li> </ul>	<ul style="list-style-type: none"> <li>- Bi-directional sharing of medication data</li> </ul>	<ul style="list-style-type: none"> <li>- Outsource program to HDU</li> </ul>
<b>All-Payer Claims Database (APCD)</b>	<ul style="list-style-type: none"> <li>- Analysis and reporting based on clinical and/or claims data</li> <li>- Government products &amp; reports/dashboards</li> </ul>	<ul style="list-style-type: none"> <li>- Ingestion and data quality validation engine</li> </ul>	<ul style="list-style-type: none"> <li>- Outsource program to HDU</li> </ul>
<b>Public Health Registries (e.g. IIS)</b>	<ul style="list-style-type: none"> <li>- Immunization Information Systems (IIS) sending</li> <li>- Electronic Lab Reporting</li> <li>- Syndromic Surveillance</li> <li>- Opioid Surveillance</li> </ul>	[For refinement in Version 2.0 of the CSRI HDU Maturity Model]	<ul style="list-style-type: none"> <li>- Data analytics informing public health</li> </ul>



	Foundational	Intermediate [including Foundational]	Advanced [including Foundational & Intermediate]
Social Services and/or Community Support Organizations	<ul style="list-style-type: none"> <li>- Social Determinants of Health Referrals</li> <li>- Appropriate contextual information regarding clients</li> <li>- Means of sharing data back to provider community</li> </ul>	<ul style="list-style-type: none"> <li>- Analytics dashboard</li> </ul>	<ul style="list-style-type: none"> <li>- Consolidated (or Continuity of) Care Documents (CCDs) &amp; reports; patient history</li> </ul>

**Table 3: Service Breadth for Research and Academia**

	Foundational	Intermediate [including Foundational]	Advanced [including Foundational & Intermediate]
Universities/Research Institutions	<ul style="list-style-type: none"> <li>- Researchers are permitted to use de-identified data for research</li> <li>- Aggregated data asset that is useful for research</li> <li>- Processes are in place for data governance including Institutional Review Board (IRB) approval</li> <li>- Processes are in place for researchers to request and receive data</li> </ul>	<ul style="list-style-type: none"> <li>- Researchers are permitted to use limited data set</li> <li>- Growing depth and breadth of aggregated data asset</li> </ul>	<ul style="list-style-type: none"> <li>- Researchers are permitted to use fully identified data set</li> <li>- Robust statewide, aggregated data asset</li> </ul>

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