MARYLAND
Department of Health

Larry Hogan, Governor · Boyd K. Rutherford, Lt. Governor · Robert R. Neall, Secretary

February 24, 2020

The Hon. Larry Hogan
Governor
State of Maryland
100 State Circle
Annapolis, MD 21401–1991

The Hon. Bill Ferguson
President of the Senate
Maryland General Assembly
H-107 State House
Annapolis, MD 21401–1991

The Hon. Adrienne A. Jones
Speaker of the House
Maryland General Assembly
H-101 State House
Annapolis, MD 21401–1991

Re: Section 1 of House Bill 922 (2018), Chapter 211 of the Acts of 2018—Overdose Report

Dear Governor Hogan, President Ferguson, and Speaker Jones:

Pursuant to Section 1 of House Bill 922 (2018), Chapter 211 of the Acts of Maryland 2018—the Maryland Department of Health (Department) submits the attached annual overdose report. Chapter 211, Section 3, requires this law to remain effective until July 31, 2022. Therefore, this is the first of four annual overdose reports submitted by the Department.

If you have any questions regarding this report, please contact me or my Deputy Secretary of Operations at (410) 767–4557 or at Gregg.todd@maryland.gov.

Sincerely,

Robert R. Neall
Secretary

Overdose Report

Submitted by the Maryland Department of Health

Maryland Code Annotated, Health-General Article § 7.5–701

Table of Contents

I. Executive Summary

During the 2018 legislative session, the Maryland General Assembly passed House Bill 922 which was enacted as Chapter 211 of the Laws of Maryland of 2018 and then codified as Maryland Code Annotated, Health-General Article § 7.5–701. Section 7.5–701 instructs the Maryland Secretary of Health to publish an annual report describing the characteristics, opioid use history and treatment history of individuals who experienced opioid-related and other controlled-dangerous-substance-related overdoses in the preceding four calendar years. Execution of this mandate requires obtaining and linking data from multiple state agencies to produce a more comprehensive analysis. Between June 2018 and March 2019, the Maryland Department of Health (MDH) laid the foundation to execute § 7.5–701's requirements. MDH partnered with the Chesapeake Regional Information System for our Patients (CRISP), the state health information exchange, to create a secure virtual data warehouse, engaged with external and internal stakeholders, developed the specific study questions to be explored and areas for analysis, and identified staff to support project execution. This report summarizes the first-year accomplishments and provides a project work plan over the next three years.

II. Background

Section 7.5–701 of the Health-General Article requires the Maryland Secretary of Health to take the following four actions on or before July 1 of each year until 2022: (1) examine the prescription and treatment history, including court-ordered treatment or treatment provided through the criminal justice system, of individuals in the State who suffered fatal overdoses involving opiates and other controlled dangerous substances over the preceding four calendar years; (2) collaborate with the Department of Public Safety and Corrections (DPSCS), Department of Human Services (DHS), Department of Juvenile Services (DJS), Maryland Institute for Emergency Medical Services Systems (MIEMSS), and Department of Housing and Community Development (DHCD) and other state and local agencies deemed necessary to meet the requirements of this review; (3) beginning on July 1, 2019, and each year thereafter, submit a report on the findings of the above examination, including factors associated with fatal and nonfatal opioid overdose risk, programs targeted at opioid use and misuse, methods of intervening with at-risk populations, and recommendations for improving and providing statewide prevention, response, and data collection efforts; and (4) identify potential funding sources available to support the implementation of the project. These four actions required under § 7.5–701 will collectively be referred to as the 211 Project.

As of this report's July 2019 deadline, sufficient data is not available to address the requirements specifically outlined in § 7.5–701(c)(2)(i)1–9. Therefore, the following report will address the Department's approach to accomplish the § 7.5–701 requirements; the Department's progress in Year 1 of the four annual reports; and, finally, the Department's work plan for the remaining three years of reports.

III. Approach

The 211 Project work plan is designed to address the following overarching issues raised in § 7.5–701(c)(2):

1. What are the risk factors associated with fatal opioid overdoses? (See subparagraph (i)).
2. What existing programs are targeting opioid use and misuse? (See subparagraph (i)).
3. What is the utilization of behavioral health and related services? (See subparagraph (i)(1)–(4)).
4. What are the methods of intervening with populations found to be at risk of overdose or substance use disorder? (See subparagraph (ii)).
5. What are the recommendations for improving programs and treatment services? (See subparagraph (iii)).

These questions provide conceptual direction for the project and serve as a guide to all project planning, data infrastructure development, methodology, analysis, and reporting activities.

To address the overarching questions, the evaluation plan focuses on five key strategies and activities:

A. **Partner Engagement and Project Coordination**, which includes project activities related to establishing an internal project team, identifying and engaging internal and external project data partners and stakeholders, and the development and implementation of a project coordination strategy;
B. **Targeted Research Questions**, which includes outreach to internal and external partners to identify and develop targeted research questions to be addressed through focused analytic studies between Year 2 and Year 4 of the 211 Project;
C. **Data and Analytic Infrastructure and Process**, which includes identification and acquisition of both internal and external datasets required to complete the 211 Project, use of a virtual data warehouse for the storage and transfer of data, and the establishment of data governance and security protocols;
D. **Data Analytics and Reporting**, which includes targeted data analysis to answer identified research questions, conducting focused data studies, and designing and preparing the annual reports;
E. **Data Reporting and Quality Review Process**, which includes the design and implementation of an MDH review process, establishing a Data and Quality Review Committee, review and approval of analytic study plans, review and evaluation of annual report of findings, and developing recommendations pertaining to system and service delivery improvement priorities and actions.

IV. Year 1 (June 2018-June 2019)

A. Partner Engagement and Project Coordination

1. MDH

MDH formed an internal team to manage all tasks required of the 211 Project through the plan outlined above. The 211 Project team worked to identify a potential process to obtain and analyze both internal and external data required for the annual report.

The Maryland Secretary of Health, along with the 211 Project team, hosted the Chapter 211 Kickoff Meeting on June 1, 2018. This meeting convened key MDH stakeholders to establish internal awareness and support for the 211 Project.

Also, early in September 2018, the project team identified and held the first of several exploratory meetings with internal MDH data stewards to identify key contacts and the datasets required to support the study. Additional meetings were held through FY19 to learn more about the different datasets available within MDH.

2. Federal agencies

One of the tasks completed as a result of the June 2018 session was to identify potential funding to support the activities prescribed in Health-General Article § 7.5–701(e). Following this meeting, the project team applied for and received federal grant funding from the Centers for Disease Control and Prevention (CDC) Opioid Public Health Crisis Response Cooperative Agreement and the Department of Justice Bureau of Justice Assistance (BJA). The amounts of the grants received are $289,000 from the CDC and $994,523 from BJA for a total of $1,283,523. These grants are being used to support these efforts through Year 1 (FY19), Year 2 (FY20), and most of Year 3 (FY21). A necessary component to ensuring the project's continued success will be to secure additional funding to support efforts in Year 4 (FY22).

3. Other state agencies

MDH conducted outreach during July and August 2018 to the leadership of the state agencies named in Health-General Article § 7.5–701(b). The purpose of these interactions was to make the leaders aware of the requirements of the statute and to initiate conversations about the data residing in their agency and actions needed to access it. In early September, the Secretary sent a proposed data use agreement (DUA) template to each of the agencies named in the statute for their consideration. There was consensus that specific research questions needed to be developed to ascertain the types of data needed before a DUA could be signed.

To further describe the project and MDH's intended data request, the project team conducted meetings with state partner agencies to identify and obtain specific information regarding the key datasets and data elements agencies could potentially provide to address the overarching research questions. The following meetings were held in 2018 with key state agency partners, including:

- September 14: Maryland State Police and DJS;
- September 21: DHCD;
- September 25: High Intensity Drug Trafficking Areas and Health Services Cost Review Commission; and
- September 27: DPSCS and the MIEMSS.

4. CRISP

Additionally, MDH established a partnership with CRISP to provide technical oversight, data collection, de-identification of data, data storage functions required to complete requirements, and credential users for data access. CRISP is a nationally-recognized leader in healthcare informatics and health information exchange (HIE) technology. CRISP is currently designated as Maryland's statewide HIE platform and supports Maryland's Prescription Drug Monitoring Program (PDMP).

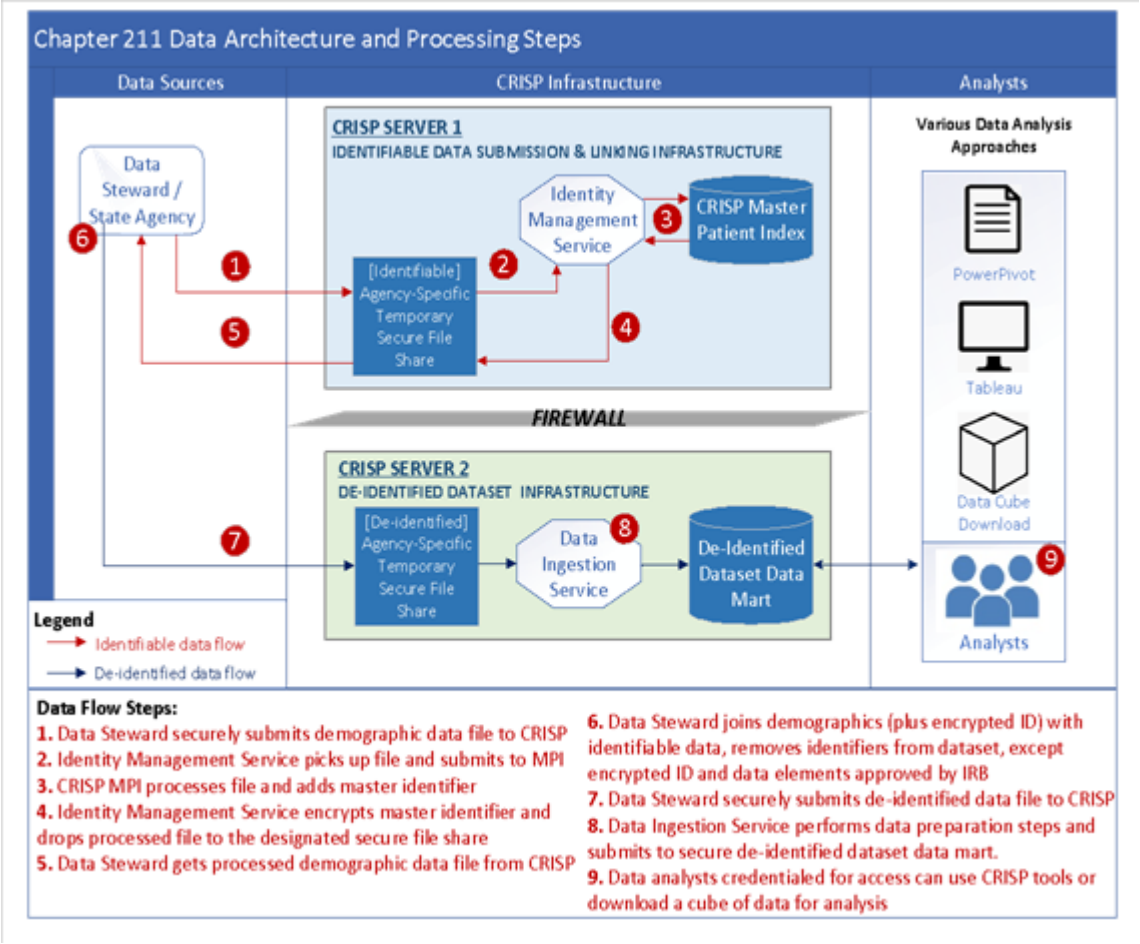
B. Targeted Research Questions

A common theme identified by 211 Project partners during the data exploration meetings was the need for the MDH to develop targeted research questions that could inform the selection of datasets and specific data elements to support the subsequent analysis of the data. The first action taken to address this issue was the identification of specific research questions, see *infra* pp. 1–2, to be explored using the datasets resident within MDH to support the initial study efforts. This activity took place over several months and required review and adjustments based on available scope of effort. MDH has finalized research questions specific to data sets residing in its agencies. Data questions relevant to non-MDH agencies can be substantively different and so MDH continues to refine the targeted questions relevant to our partner agencies. These questions will reap data that will support the multiple data studies to be completed beginning in Year 2 and every year thereafter. A collaborative approach will be implemented to ensure that research questions addressing the study results are actionable and provide value to each partnering agency.

C. Data and Analytic Infrastructure and Process

MDH has partnered with CRISP to create a secure virtual data warehouse, engaged with external and internal stakeholders, developed the specific research questions to be explored and areas for analysis, and identified staff to support project execution. CRISP has developed the capacity to store and transfer data. Data from MDH and external state agencies will be transmitted to the virtual data warehouse managed by CRISP. Selected datasets will be linked and prepared for analysis to address the targeted research questions to enhance the current understanding of the opioid epidemic. Personal health information will be submitted to CRISP. This information will be linked and de-identified by CRISP data architects in preparation for analysis. The data architecture and processing steps are presented in Figure 1 below. For a more in-depth description of the data warehouse infrastructure, see Appendix.

Figure 1: Virtual Data Warehouse Structure



In Years 2–4 of the project, MDH will work with internal and external agency data stewards to transfer selected data sets to CRISP for processing and inclusion in the virtual data warehouse to support on-going analyses once all of the DUAs are fully executed.

1. Mandated DUAs

A vital step in constructing the data governance framework is the establishment of formalized DUAs with the MDH and other state partner agencies that were specifically identified in the statute. Agreements will be executed with the following five agencies: MIEMSS, DHS, DJS, DHCD, and DPSCS.

2. Data governance and security

A critical component of this project requires engagement of leadership across all partners and at all levels in order to develop a multidisciplinary data governance framework. Key issues to be addressed in the framework include the coordination and sharing of data across state partners; identification of data sets that provide value and inform decision-making; development of a comprehensive data management plan that outlines policies and procedures for the linking of datasets, preventing redundant data collection and analysis, maintaining data quality, data

privacy, security and accessibility, and maintaining and updating health information technology and electronic data storage procedures.

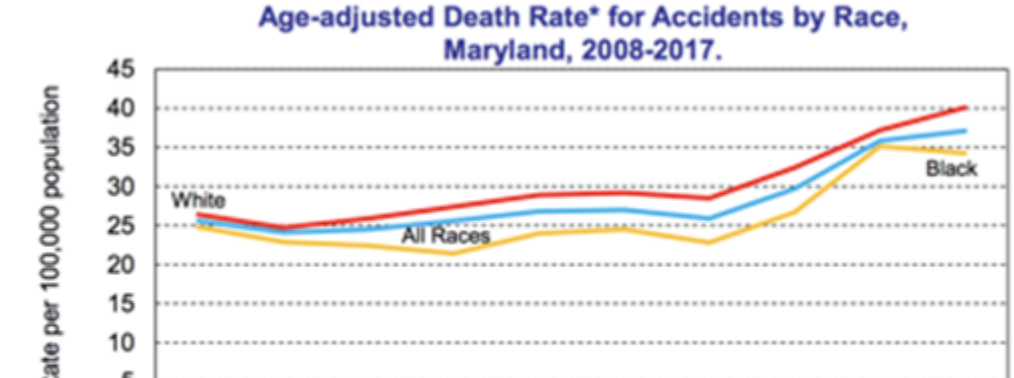
D. Data Analysis and Reporting

A data report is required during each year of the 211 Project. This Year 1 report is comprised of an analysis of publicly available data that describes the current status of the opioid epidemic in Maryland. Reports published by Vital Statistics Administration (VSA), the Office of the Chief Medical Examiner, and Beacon Health Options, the State's Administrative Services Organization was analyzed and synthesized to produce this document. The results of the analysis are presented below.

Finding 1: Life expectancy in Maryland is declining

One of the key findings is that life expectancy in Maryland is declining, in part due to increased mortality rates from overdoses from opioid and other controlled dangerous substances. Life expectancy in Maryland began declining in 2015, which was the first year this occurred in recent history. The life expectancy for an infant born in 2014 was 79.8, declining to 79.5 in 2015, and 79.1 in 2016 and 2017 (VSA 2015–2017). This trend was a consequence of increased mortality rates, attributable in part to increases in "accidental" deaths, which include deaths from unintentional drug overdose. In 2015, accidental deaths were the fifth leading cause of death in Maryland; in 2016 and 2017, they were the fourth leading cause of death (VSA 2015–2017). The age-adjusted mortality rate for accidents increased 14.7% between 2014 and 2015, 20.5% between 2015 and 2016, and 3.6% between 2016 and 2017 (VSA 2015–2017). The data related to this finding is presented in the table below.

Figure 2: Age-Adjusted Death Rate in Maryland



	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
All Races	25.6	24.1	24.5	25.6	26.8	27.0	25.9	29.7	35.8	37.1
White	26.4	24.7	25.9	27.4	28.9	29.2	28.5	32.4	37.2	40.1
Black	24.8	22.9	22.4	21.4	24.0	24.5	22.8	26.7	35.1	34.3

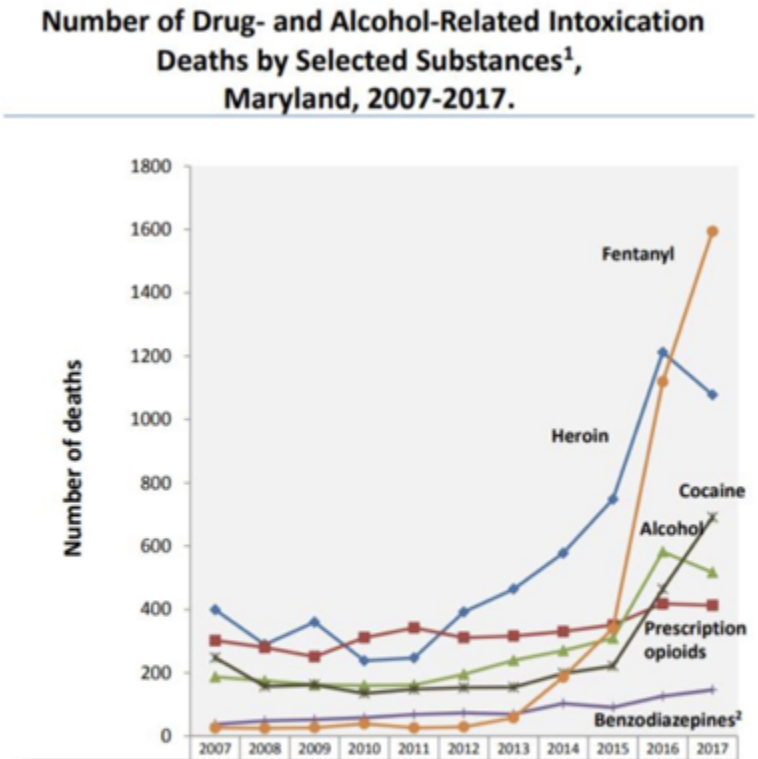
Source: VSA 2017.

Finding 2: Fentanyl is a major contributor to increases in overdose fatality rates in Maryland.

Opioids, including prescription opioids, heroin, and non-pharmaceutical fentanyl, are significant contributors to intoxication-related deaths in Maryland, contributing to over 85% of all intoxication-related deaths in 2015, 2016, and 2017 (MDH 2015–2017). The number of opioid-related deaths increased by 23% between 2014 and 2015, 70% between 2015 and 2016, and 8% between 2016 and 2017 (MDH 2015–2017).

Notably, heroin-related deaths and prescription opioid-related deaths declined between 2016 and 2017 and preliminary data demonstrates that they may have continued to decline in 2018. It is clear that the dramatic increases in fentanyl-related deaths drove increases in opioid-related deaths: they increased 83% between 2014 and 2015, 229% between 2015 and 2016, and 42% between 2016 and 2017. Fentanyl-related deaths have increased among all age groups for both men and women across all regions of the State, as can be seen in Figure 3 (MDH 2017).

Figure 3: Substance-Related Deaths in Maryland, by Substance



	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Heroin	399	289	360	238	247	392	464	578	748	1212	1078
Prescription opioids	302	280	251	311	342	311	316	330	351	418	413
Alcohol	187	175	162	160	161	195	239	270	309	582	517
Benzodiazepines	37	48	52	58	68	73	69	103	91	126	146
Cocaine	248	157	162	135	148	153	154	198	221	464	691
Fentanyl	26	25	27	39	26	29	58	186	340	1119	1594

[1]Since an intoxication death may involve more than one substance, counts of deaths related to specific substances do not sum to the total number of deaths.
[2]Includes deaths caused by benzodiazepines and related drugs with similar sedative effects.

Source: MDH 2019.

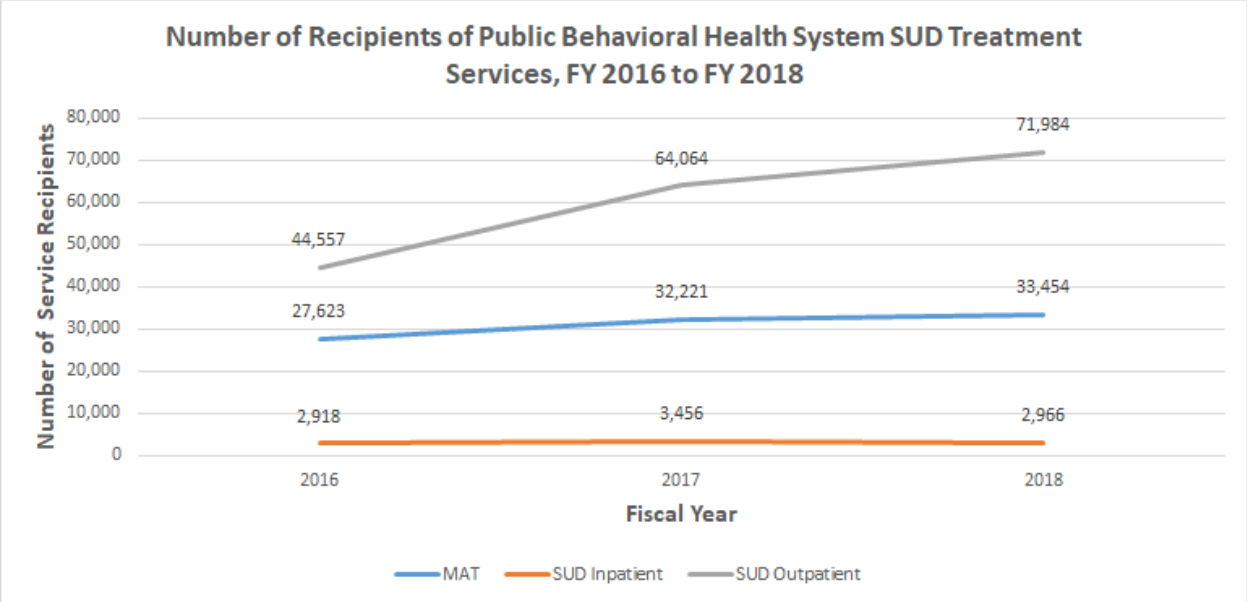
Finding 3: Prescription opioid-related deaths declined slightly in recent years, but not for all populations.

The number of prescription opioid-related deaths had been rising since 2012, but declined slightly between 2016 and 2017 (MDH 2017). Preliminary data suggests that prescription overdose deaths may have continued to decline between 2017 and 2018 (MDH 2018). However, deaths due to prescription overdose did not decrease for people over 55 (MDH 2017).

Finding 4: Use of Medication Assisted Treatment (MAT) and Outpatient Substance Use Disorder (SUD) Treatment Services in the Public Behavioral Health System (PBHS) have increased each year between FY 2016 and FY 2018.

As shown in Figure 4, use of both SUD outpatient treatment services and MAT among PBHS service recipients have increased between FY16 and FY18, while the use of SUD inpatient services have remained relatively stable over this period. Utilization of SUD outpatient treatment services has shown the greatest increase from 44,557 users in FY16 to 71,984 users in FY18, reflecting a 62% increase, while the number of individuals receiving MAT services increased by 21%, from 27,623 in FY16 to 33,454 in FY18.

Figure 4: Recipients of Public Behavioral Health System SUD Treatment Services by Treatment Type, FY16 and FY18



Note: Data based PBHS claims data paid through March 31, 2019.

Given the overdose epidemic in Maryland, there have been considerable efforts made in prevention, treatment, and recovery services. Future data will contribute to a better understanding of the factors associated with overdose death. These data will also inform the selection of general and targeted prevention, treatment and recovery interventions to be implemented in Maryland.

E. Data Reporting and Quality Review Process

Section 7.5–701 requires that MDH, on an annual basis, conduct a comprehensive review and evaluation of the available data and develop targeted recommendations for improving SUD/opioid use disorder prevention, treatment, and data collection efforts statewide. MDH will develop a Data Quality and Review Committee that will develop a plan to satisfy the annual reporting requirement. The plan will include a description of the targeted studies to be conducted each year.

The Data and Quality Review Committee will include representation from both internal and external partner agencies and other stakeholders organizations as deemed necessary. Members will be responsible for determining targeted research questions to be addressed, determining analytic study plans, reviewing the data analysis, and developing recommendations on improving statewide SUD prevention and treatment efforts. The results of these actions will be presented in an annual report.

V. Years 2–4

MDH has developed a work plan for Years 2–4 of the 211 Project. These activities build upon each other to allow for sub-studies using the data retrieved from the data sets provided by state partner agencies. Each step in the work plan below has been created to align with the five strategies developed by the project team and identified in Part III of this report. The strategies are:

1) Partner Engagement and Project Coordination;
2) Targeted Research Questions;
3) Data and Analytic Infrastructure and Process;
4) Data Analytics and Reporting, and
5) Data Reporting and Quality Review Process.

Table 1: 211 Project Work Plan for Years 2–4

Strategies	Work Plan Actions	Target Date
1, 2, 3	Finalize DUAs for MDH data.	Q1 of FY20
1 & 3	Submit and execute data requests and DUAs for required MDH data ● Schedule meetings as needed to discuss.	Q1 of FY20
5	Establish a Data and Quality Review Committee.	Q1 of FY20
3	Transfer of MDH data to CRISP.	Q1 of FY20
2	Review and finalize targeted research questions for Year 2 of the study.	Q1 of FY20

Strategies	Work Plan Actions (cont.)	Target Date
1, 2 & 3	Work with external state data stewards in DPSCS, DHS, DJS, MIEMSS, and DHCD to review identified research questions, available data sources, and identify specific data elements required to address identified research questions. Meetings scheduled as needed.	Q1 of FY20 and on-going
3 & 5	Develop Year 2 data analysis plan to address approved research questions.	Q2 of FY20
3	Submit and execute data requests and DUAs to access data from external state agencies. ● Exchange data between entities and CRISP.	Q2 of FY20 and on-going
3	Receipt of external state agency data by CRISP.	Q3 of FY20
4	Design and conduct focused data studies to answer identified research questions for Year 2 report.	Q3 of FY20
5	MDH Data and Quality Review Committee to review focused study findings in Year 2 report.	Q4 of FY20
1, 4, 5	Review and discuss focused study findings with state partner agencies to discuss findings, formulate programmatic recommendations.	Q4 of FY20
2	Finalize research questions for Year 3 of the study.	Q4 of FY20
2 & 5	MDH Data and Quality Review Committee to refine and update analytic plan for Year 3. Identify focused studies to be addressed in Year 3 of the study.	Q4 of FY20
3 & 5	Determine if any further data requests or DUAs are needed for Year 3 or if existing DUAs need to be updated. ● Transfer any new data to CRISP.	Q1 of FY21
4	Design and conduct focused data studies to answer identified research questions for Year 3 report.	Q2 of FY21 and on-going
5	MDH Data and Quality Review Committee to review focused study findings in Year 3 report.	Q3 of FY21
1, 4, 5	Meet with state partner agencies to discuss findings, formulate programmatic recommendations	Q4 of FY21 and on-going
1, 4, 5	Meet with state partner agencies to discuss findings, formulate programmatic recommendations.	Q4 of FY21 and on-going
2	Finalize research questions for Year 4 of the study.	Q1 of FY22

Strategies	Work Plan Actions (cont.)	Target Date
2 & 5	MDH Data and Quality Review Committee to refine and update analytic plan for Year 4. Identify focused studies to be addressed in Year 4 of the study.	Q1 of FY22
3 & 5	Determine if any further Data Requests/ DUAs are needed for Year 4 or if existing DUAs need to be updated ● Transfer any new data to CRISP	Q1 of FY22
3 & 5	Determine if any further Data Requests or DUAs are needed for Year 4 or if existing DUAs need to be updated. ● Transfer any new data to CRISP.	Q1 of FY22
4	Design and conduct focused data studies to answer identified research questions for Year 4 report.	Q2 of FY22 and on-going
5	MDH Data and Quality Review Committee to review focused study findings in Year 3 report.	Q3 of FY22
1, 4, 5	Meet with state partner agencies to discuss findings, formulate programmatic recommendations.	Q4 of FY22

VI. Conclusion

This project is designed to advance information sharing and partnerships across state agencies, develop innovative data-driven strategies, and directly support stakeholders with timely and accurate data to develop well-informed programs and interventions. Maryland has experience building partnerships to quickly address public health emergencies. It remains vital that the MDH continues to partner with the state agencies identified in Health-General Article § 7.5–701(b) in order to successfully carry out the responsibilities of statute. However, it is also critical to reinforce and institutionalize these relationships through formalizing data governance, establishing mutually beneficial partnerships, and planning for ongoing resourcing and data management.

To accomplish these tasks, MDH is creating the foundational elements necessary to pursue these responsibilities. Specifically, MDH established an infrastructure to support execution of the mandate required § 7.5–701. MDH has partnered with CRISP to create a secure virtual data warehouse, engaged with external and internal stakeholders, developed the specific research questions to be explored and areas for analysis, and identified staff to support project execution.

For Years 2–4, MDH will be focusing on finalizing the DUAs with MDH and other state partners, creating the Data and Quality Review Workgroup, conducting analyses on selected data sets, and developing recommendations for strategic interventions.

APPENDIX

Data Flow and Protection Mechanisms

As part of Health-General Article § 7.5–701(c)(3), assessment of the data shall include accessing and where feasible, links to a specific list of data sets. CRISP is experienced in linking large datasets at the case-level, using identifiable patient demographic data (such that it is stamped with a master identifier unique to the specific effort), which is later de-identified for analysis (with the common identifier still appended). To support this effort from a data architecture perspective, four primary steps need to occur: (1) data submission, (2) linking the datasets, (3) de-identification and data storage, and (4) access management.

1. **Data submission**: CRISP will supply the data submitter with a unique secure login to a secure file server at CRISP. That login will be to a location specifically dedicated to submitting identifiable data to CRISP for data linking purposes. Data submitters will provide only the patient demographic information (local patient identifier, first name, last name, date of birth, gender, address, phone number, Social Security number, as available) in a flat file format to that secure location at CRISP. The data submitter will not have any ability to access any other location on the CRISP server and the secure file location for identifiable data submission is in a completely separate location than where the de-identified dataset for analysis will be stored, so there is no risk of any re-identification.

2. **Linking the datasets**: CRISP will process the patient demographics through the Master Patient Index (MPI) to append a project-specific (encrypted) master identifier that can be used to link the disparate datasets together. This file will be placed back in the original secure file location specific to the data submitter. The data submitter can then download the file and append the master identifier to their full dataset the data submitter maintains locally.

3. **Secure storage of de-identified datasets**: The data submitter can then perform the steps to de-identify the full datasets, except for the master identifier and any limited demographic elements agreed upon by MDH and the data submitter for research purposes (*i.e.*, year of birth, zip code, and gender). Once completed, the data submitter would submit the de-identified datasets to a second secure file location at CRISP using a second set of login credentials. The data submitter will not have the ability to access any other location on the CRISP server and the secure file location for de-identified data submission is in a completely separate location than where the demographic data were submitted so there is no risk of any re-identification.

4. **Credentialing users for access to de-identified data**: CRISP will credential the data analysts, as designated and approved by MDH, for access to a secure connection to the de-identified database. Data analysts will only be able to access the de-identified datasets and will not be able to access any identifiable data. CRISP may have some basic software that can be used, such as PowerPivot or Tableau, but would need to undergo a security review for any other requested software.