Using the Massachusetts
Public Health Data Warehouse (PHD):
From Application to Dissemination

Contents

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Background

The [Public Health Data Warehouse](#) (PHD) is an innovative analytic environment that draws on multi-sector data to answer critical public health questions while ensuring data security and individual privacy. Initially established by statute to inform the Commonwealth's response to the opioid epidemic, the PHD was subsequently authorized by [M.G.L. c. 111, §237](#) which allows for the analysis of population health trends focusing on opioids as well as other health priorities as determined by the Commissioner of the Massachusetts Department of Public Health (DPH). The current public health priorities include:

1. Trends among the population of persons affected by substance use disorders, and specifically opioid use disorder including fatal and nonfatal opioid overdoses.
2. Trends related to maternal and child health.
3. COVID-19
4. Trends related to the impact of climate change on health

In developing the PHD, datasets were selected to ensure optimal coverage and identification of several priority populations in Massachusetts who experience inequitable outcomes on an array of health conditions. These populations include individuals who:

- Individuals who identify as Black, Indigenous, and People of Color
- Individuals with disabilities and those who have access and functional needs
- Individuals experiencing homelessness or housing instability
- Individuals with mental illness and/or substance use disorders
- Individuals with a history of incarceration
- Individuals who are pregnant or post-partum
- Individuals living in rural settings
- Individuals who are veterans
- Individuals under the age of 22 (infants, children, and youth)
- Individuals who do not speak English, or who prefer to speak in another language

We anticipate that future analyses will allow us to identify additional populations at disproportionate risk for negative health outcomes.

All analytic work using the PHD is informed by a population health approach and racial equity frame that acknowledges the differential impact of substance use among historically marginalized communities and supports the mission of DPH including promoting wellness and health equity for *all* people in the Commonwealth. PHD provides a unique opportunity for public, private, and non-profit organizations to collaborate on analyses of population health trends in service to the Commonwealth. The authorizing statute enables DPH to collect and analyze these data. As such, please note that **all data analyses and subsequent outputs derived from the PHD are generated for, and are owned by, DPH on behalf of the residents of the Commonwealth**.

Introduction

DPH appreciates that collaborators who wish to use the Massachusetts PHD are motivated not only by the opportunity to improve the health of residents of the Commonwealth but also to advance scientific knowledge through peer-reviewed publications. For those interested in working with the PHD and disseminating findings, it is important to understand all the phases of this work. They are:

- [Application process](#)

- [Onboarding](#)

- [Data Analysis](#)

- [Submitting Final Report to DPH](#)

- [Submitting Publication/Dissemination Material for Approval](#)

This document will guide you through that process.

Application Process

There are two pathways to accessing the PHD:

1) Via a Notice of Opportunity (NOO), which will be posted on DPH's Commbuys website. A blank NOO application can be found in [Appendix A](#) of this document. A completed NOO application for PHD work must include:

   - Contact information

   - Context or purpose for the work

   - Anticipated timeline

   - Details about funding (if applicable)

   - Details about community engagement processes

   - A hypothesis or hypotheses

   - A statement of the public health value of this work

   - Population examined, including inclusion/exclusion criteria

   - Variables and data tables used in the analysis

   - A brief analytic plan

2) For projects with sufficient grant funding and where a portion of this funding will be directed to DPH to support the PHD, there is a rolling application process

   a. For groups interested in this access route:
      i. They must contact MA DPH (specifically Dana Bernson & Amy Bettano) as soon as possible. Dana & Amy will then set up time to learn more about their project and discuss feasibility, the PHD fee structure, and the process for obtaining a letter of support.
   b. Costs:
      i. To use this access route, the project must cover the PHD fee. Groups without sufficient experience in PHD analysis since 2021 will need to also cover 10% of a DSRE' staff member's time to help with the project. Experience to be defined by DPH.
      ii. If a team obtains additional funding during the course of the project (to support the ongoing work), they need to contact MA DPH to re-evaluate the cost structure.
   c. Topics for projects:
      i. Permissible topics for PHD use are those outlined as PHD priority topics, with a particular focus on the established priority topics (currently substance use and MCH).
         1. For less established priority topics, (currently. COVID-19 and Climate Change)- determination will be decided on a case-by-case basis.
   d. Additional considerations:

i. Clearly defined start and end dates must be provided; additional no cost extensions will be considered on a case-by-case basis.
ii. Teams will need to have sufficient staffing and appropriate composition for their projects (i.e. enough team support, more than one analyst, statistical expertise, subject matter expertise).
iii. Teams must perform their cohort development and construct coding in SAS, additional analytic modeling may be performed in R as desired.

For any projects (NOO or grant-funded), groups should review the following documents before applying:

1. **PHD User Agreement.** There are two versions of this agreement - one is for members of the state work force and the other for external users. It is critical to carefully review and sign the version of this document that corresponds to the applicant. Once your project application is approved, <u>all members</u> of your analytic team <u>must</u> sign this document, without exception, regardless of whether they analyze data or participate in the development of manuscripts or have another role on the project team. User Agreements can be found in [Appendix B1](). No one may by an author on a PHD manuscript without having completed the PHD User Agreement.

2. **PHD Analytic Data Dictionaries.** To further guide you in completing your application, examine these closely. These [data dictionaries]() will help identify key variables needed for your analysis. Please contact [DPH.PHD@mass.gov]() to request the most recent copies of the data dictionaries, discuss any questions you have about the variables, or for clarification of any kind. A current list of datasets included in the PHD can be found in [Appendix C]() of this document.

All applications are reviewed by a PHD review team comprised of staff from the Office of Population Health, relevant subject matter experts from across DPH, and may include representatives from state agencies whose data are being requested. This team may request revisions before submitting its' recommendations to the Commissioner of the Department of Public Health who makes the final decision. The following will be considered:

1. If submitted in response to an NOO, the ability of the proposal to answer the Department of Public Health's research questions listed in this NOO.
2. The quality of the proposed analysis description.
3. The scientific rigor of the proposed approach.
4. Whether there is a high likelihood of success, e.g., the analyses can be completed on time using the available data.

5. Whether the analyses inform future public policy or public health program planning, interventions, and/or evaluation.

6. Applicant's or team's knowledge of SAS programming and ability to work at the DPH office during standard working hours.

7. Degree to which a community engaged approach guided the development of the project proposal and is used throughout the project cycle.

8. Priority will be given to applications that include a health equity and/or disparities researcher(s) on the project team and to those that incorporate an explicit health equity lens. This includes discussion of theories used, data elements and stratifications proposed, and linking analytic questions to historical context and current inequities. Please see the racial equity data road map for more information on how DPH incorporates health and racial equity into our data practices. https://www.mass.gov/doc/racial-equity-data-road-map-pdf/download

Important Note: Most individuals/teams who complete an analysis are interested in disseminating or seeking to publish the work. Appendix D includes examples of types of dissemination materials for which prior permission to release must be requested. Before any group begins analyses, it is important that all team members understand the steps and timeframe for the DPH publication approval process, summarized in Appendix E.

Onboarding

If your project is selected, you will be introduced to your PHD project liaison, an epidemiologist in the Data Science, Research, and Epidemiology Division (DSRE) within the Office of Population Health. Your liaison will serve as your point of contact at DPH as well as a subject matter expert on the PHD datasets. Your liaison will help you determine the start date for your analytic work.

 Before starting, each analytic team member must complete the following steps:

1. Return a signed PHD NOO User agreement.
2. Complete the required privacy and confidentiality and onboarding trainings. See [Appendix G](#).
3. Attend a live PHD orientation webinar or watch a recorded version and submit a statement attesting to completion.
4. If direct access to the PHD analytic environment is needed, provide required information to complete paperwork needed to establish 2 sets of login IDs and passwords: one to access a DPH computer and one to access the SAS Studio application.
5. As a last step before accessing the data, PHD's Research & Surveillance Coordinator must confirm receipt of all required training completion certificates. See [Appendix G](#).

Analytic team members are defined as anyone reviewing the results of PHD analyses before they have been approved for dissemination by DPH – this includes team members participating in meetings discussing PHD findings, and those who are co-authors on PHD manuscripts.

Data Analysis

Before Arriving at DPH

- To facilitate your work, the [Mass.gov website includes "dummy" data sets](). These dummy datasets mimic the analytic datasets with "fake" data. The variable structure is the same as the analytic data and allows users to work on and debug SAS Studio code remotely, before running analyses on the larger PHD. We strongly encourage users to practice coding on the dummy datasets before working on the actual data and onsite at DPH. While the dummy data sets mimic the attributes of actual PHD data, all information was generated randomly. Therefore, the data sets are suitable for testing code but not for generating or testing hypotheses.

Working at DPH

- You must reserve time on one of the DPH working stations through your project liaison. Please submit your request at least 24 hours (including at least one business day) before your visit. A member of the PHD team will confirm your time via email and notify the building security. If it is your first day working with the PHD, a member of the PHD team will be in contact with more details. If your schedule changes, it is imperative to notify your liaison as soon as possible as there are a limited number of workstations that are shared by all users. Please note that there is no direct remote access to the data. Please see below for how to submit code via your project liaison.

- As questions frequently arise regarding the use of PHD, members of the PHD team will be available by appointment. PHD team members work on multiple projects simultaneously and appointments should be scheduled. Office hours and cross-project meetings will be offered to address specific questions and to facilitate learning opportunities for analytic team members. Online groups may also form, in which teams share progress, code, tips, and other information. DPH strongly encourages teams to avail themselves of the "office hours," groups meetings, and online discussions including a PHD Analytic Team Channel in Microsoft Teams for approved research groups.

- In the legal requirements for the PHD, datasets must remain separate except when analyses are actively being run. Permanent datasets cannot be saved in the SAS environment. **If it is discovered that a PHD analyst creates datasets or line-level files that are not summarized results (as a permanent SAS dataset, exported to another format, etc.), the analytic project will immediately be terminated from PHD**.

- Any PHD data results that are between 1-10 must be suppressed. Additionally, complementary suppression must be applied if only one cell is suppressed, and the suppressed value can be calculated.

- i.e., you have 20 patients seen in a year and you show a stratification that 15 are male and *<suppressed>* are female – someone can calculate from your table that the suppressed number is 5 so complementary suppression must be applied.

- Before you can share outside your onboarded PHD analytic team any dissemination product, presentation, or results (excluding only conference abstracts), you must submit either a data brief or the PHD deliverable template to PHD of the summarized results. Examples of data briefs and the PHD deliverable template can be found in the external Teams page: [Sample Data Brief Format.](#) The review process for PHD products is in the PHD [External Teams](#) channel.

- Finally, it is important to note that ***DPH conducts routine audits of all queries and operations*** on the PHD to assure that work conduct follows PHD guidelines. Audits will include full review of the first two code sets submitted for each project, followed by spot audits of randomly selected code. Any violation of the User Agreement or PHD guidelines may lead to the revocation of access rights to the PHD.

  - Please note, you may not create datasets in any library location except for work. Creating or saving a permanent dataset from PHD data is a violation of PHD use rules and can result in loss of privileges to analyze the data.

Code Audit Process

- Initial code auditing
  Project Phase: When the project first begins accessing PHD data.
  - In the initial stage of a new PHD project, analysts will need to submit their code for **the first two times for the whole project** (not for each analyst in the project) before visiting DPH or submitting an electronic run through their DPH Liaison.
    - **Analysts should use the dummy datasets to write the draft code they will be working on.**
    - Analysts will send the draft code to their DPH Liaison for review no later than 48 hours before their scheduled visit.
      - If analysts are only submitting code electronically and not in person, then their liaison will review the first two code submissions that they submit.
  - The DPH Liaison will briefly review:
    - The code to make sure the code is in general achieving what the researcher is intending for it to achieve and that the correct variables are being used. The DPH Liaison is not responsible for ensuring that the code is correct.
    - That procedures are not being used to view datasets such as:
      - Using Proc Print to view observations in a dataset that are not summary level.
      - Proc SQL without a create table statement (as that will print out the resulting dataset in the output).
      - Procedures that produce small cell sizes (i.e. less than 10).
- Ongoing code auditing
  Project Phase: For the duration of the project (if it is still accessing PHD data through AWS).

- After a project has moved past the initial audit phase, the DPH Liaison will spot-check code going forward. There is no need for the analyst to complete the appendix form for these reviews.
  - For researchers sending code electronically, the DPH Liaison **will review one code a month per project** (selected at random by the DPH Liaison) for inappropriate procedures or outputs.
  - For analysts coming to DPH in person to run their code, DPH Liaisons will request a copy of a saved code and output at the end of a randomly selected visit **once a month, or after ten consecutive days onsite** to review for inappropriate procedures or outputs

- Cohort and construct review
Project Phase: After the cohort is defined and variable constructs are completed but before running the main statistical analyses of the project plan.
  - After a team is finished creating their cohort and variable constructs and **PRIOR to beginning statistical analyses** the final cohort and variable construction creation code(s) must be provided to their DRSE Liaison for review**.** The DSRE team will perform an assessment of accuracy and completeness. This step reduces the need for revisions later in the project.

- Final code review
Project Phase: After the main statistical analyses of the project plan are completed but before writing up project deliverables.
  - When a team has finished their statistical analyses, their final code must be provided to their DSRE Liaison for review **prior to working on your project deliverable**. This step reduces the need for revisions later in the project.

Submitting Code to Your Project Liaison by email

- When your code is near final (it will run without errors), you may submit it to your liaison who will run it and email back the SAS Studio output and log(s). Online submission is a good option for programs that may take several hours to run, as your liaison can "background" submit multiple programs at the same time and code can run during "off" hours.

- Please note, you must apply format-based suppression to your code. To do so, please include the following code at the top of any submissions to your DSRE Liaison:

```
ods path(prepend) DPH.template(READ) SASUSER.TEMPLAT (READ);

proc format;
  value supp010_ 1-10=' * ';
run ;

proc template;
%include "/sas/data/DPH/OPH/PHD/template.sas";
run;
```

Final Report to DPH (Project Deliverable)

Analytic teams are required to submit a final data brief or a completed PHD Deliverable template (henceforth called "report") of the approved analysis to DPH. The format requirements will be provided by DPH. This report must link the results to programmatic and policy actions that can be taken and must include a health equity framing or discussion. The DPH team will review the report to ensure that it is scientifically sound, meets the established analysis goals, and requirements set forth by DPH at the time of application. If revisions are required, the PHD team will contact analytic teams.

Teams must also include an excel workbook with a graph, graphic, and/or table for every key finding. Please additionally provide the underlying data in the excel so we can format the graphs/tables as needed.

Teams must also include the SAS code used to run the analyses in the report.

All final reports will be submitted to the Commissioner's Office for final Departmental approval. Teams must not make any kind of "publication" including presentations, abstracts, etc., prior to receiving final DPH approval. (See Appendix D for details about what DPH considers publications.) ***Moreover, no "publication" can be submitted to any external group before the final report is approved.***

As an analytic team nears the end of its analytic work, members are encouraged to re-review the PHD NOO User Agreements, Types of Publications/Dissemination Materials (Appendix D), the Process and Timeline for Review of All Dissemination Materials (Appendix E), and the Authorship Guidelines (Appendix F).

The next section describes the procedure to obtain approval for any publication or dissemination of findings.

Submitting Publication/Dissemination Material(s) for Approval

Each publication or dissemination material must be separately approved by the Department. The approval process includes a review of the publication by the PHD team, DPH Bureaus and Offices whose data were used in the study, the DPH Commissioner, and any other state agencies whose data were used and who have requested review. Standard review forms will be distributed to each entity whose review is requested. Responses from all parties will be collated by the PHD team and returned to the publication lead. If revisions or clarifications are requested, they must be submitted in writing to the PHD team. Please see Appendix E for a flowchart depicting the review process.

Since there are many formats for publications (Appendix D), no template for submitting these materials to DPH is provided. All submissions for the review process must be complete, including but not limited to tables, figures, and any supplementary materials. Review processes often take longer than expected given competing priorities at the agency. To better understand the timeline for the review of publications, please see Appendix E.

Only after an analytic team has been notified that a publication was approved by the Department may the team submit that work to the journal, conference (final presentation product, either a poster or oral presentation), publisher, or other external group for consideration.

Appendix A: Notice of Opportunity

Analytic Plans and Data Analysis Sought

The Department of Public Health (DPH or the Department) is providing the opportunity for a limited number of parties to participate on behalf of the Department to use a large complex data set to analyze population health trends including substance use in the Commonwealth. No funds will be awarded by the Department. This effort led by the Department is authorized pursuant to Massachusetts statute, G.L. c. 111, § 237, and seeks to identify trends among the populations affected by substance use disorder, including opioid use disorder, and subsequent outcomes including fatal and non-fatal overdose. This work is informed by a health and racial equity frame and incorporates a population health approach that acknowledges the differential impact of substance use among historically marginalized communities and supports the mission of DPH to promote wellness and health equity for *all* people in the Commonwealth.

By this Notice of Opportunity (NOO), the Department is accepting applications from parties interested in developing analytic plans and/or conducting analyses on behalf of the Department. The results of the analyses will be used by the Department, at its discretion, to assess health status or evaluate programmatic or policy initiatives. The results may also be included in reports issued by the Department.

The data set to be analyzed, known as the Public Health Data Warehouse (PHD), was initially assembled to enable the Department to report on analyses of fatal and non-fatal opioid overdose as required by Chapter 55 of the Acts of 2015, as amended by Chapter 133 of the Acts of 2016 (Chapter 55). Details on the dataset and results of prior analyses are available on the [Public Health Data Warehouse (PHD)](#) webpage.

These initial Chapter 55 analyses helped to identify several priority populations disproportionately negatively impacted by substance use including individuals who:
- have a history of incarceration
- are pregnant and post-partum
- have co-occurring mental health and substance use disorders
- are experiencing housing instability or homelessness
- are members of communities of color

While these populations are the focus of this NOO, it is anticipated that future analyses will support identification of additional populations at disproportionate risk for negative outcomes related to substance use.

Analyses should be designed to inform current policy and programmatic decisions aimed at reducing morbidity and mortality in the Commonwealth, including reducing disparate health outcomes which result from health and racial inequities, and the analyses should fit within one of the Department's key priority areas, listed below in order of importance:

1. Analyses related to Medications for Opioid Use Disorder (MOUD), especially that which is focused on:
    1. Outcome analysis of MOUD including an analysis of potential cost savings.
    2. Calculating rates of MOUD initiation and retention through 2019 (or the most recent year available in the data) by one or more of the Department's priority populations.
    3. The overall impact of health insurance type and transitions between health insurance providers/plans on MOUD treatment.

2. Substance use related program/policy evaluations, especially as they relate to one or more of the Department's priority populations.
3. Analyses of inequities in the access and quality of care for individuals with substance use disorders, specifically with a focus on outcomes for one or more of the Department's priority populations.
4. Estimation of opioid use disorder (OUD) prevalence through 2019, with a preferred focus on prevalence among one or more of the Department's priority populations.
5. Understanding access to naloxone, especially among one or more of the Department's priority populations
6. The intersection of occupational health and the opioid crisis, with a specific focus on:
    1. The risk of fatal and non-fatal overdose following work-related injury.
    2. Determining whether work-related injury serves as a gateway to opioid use.
7. The intersection of infectious diseases and drug use, with a specific focus on:
    1. One or more of the Department's priority populations.
    2. Estimating the prevalence of persons who use drugs (PWUD) and developing risk models for HIV acquisition, disease progression, and loss to follow up among PWUD.
    3. Evaluating the impact of pregnancy on OUD treatment services and retention in Hepatitis C treatment services.
8. Evaluation of stimulant prescribing, specifically
    1. Linking risky stimulant prescribing to outcomes including risk of psychosis, overdose (stimulant, opioid, all drug), risk of opioid overdose among those co-prescribed stimulants and opioids.
    2. Among one or more of the Department's priority populations.
9. Advanced modeling of substance related outcomes, especially among the Department's priority populations, to inform policy and practice.
10. Changes in opioid prescribing over time, among the Department's priority populations, and associated outcomes.

Applicants selected to participate on behalf of the Department will be qualified to conduct and complete analyses at DPH using DPH computers within a specified period or to provide tested code to DPH staff to run on DPH computers. All analyses will be conducted in SAS Studio. The number of applicants chosen is solely within the discretion of the Department and its determinations as to feasibility, relevance to public health priorities, and capacity to provide adequate computing time between time of selection and the deliverable deadlines as follows.

Successful applicants will be required to produce a data brief. These data briefs will need to tie the results to policy actions and must include a health equity framing or discussion. A deadline to produce the data brief will be provided once final decisions on applications are made. If additional analyses are needed, projects may be granted continued access to the data but will still be required to produce additional brief(s) with new findings from this additional work. Analytic teams need to be available beyond the date of delivery of their final product(s) to answer any questions that may arise at DPH or conduct any additional analyses that DPH may request to finalize the brief.

All approved applicants, all members of their analytic team, and, if applicable, any individual representing their respective organizations will be required to sign the User Agreement that is posted with this Notice. All work must be conducted in compliance with the PHD User Manual that is posted with this Notice.

To aid in the application process the following files are posted along with this Notice: analytic data dictionaries, dummy SAS datasets, and a PHD User Manual.

Scope of Service

1. Respond to DPH questions about your application, clarify and finalize analytic plan before final approval by DPH.
2. Perform analytics on PHD as per the approved analytic plan or provide tested code to DPH staff to run on the PHD.
3. Submit a data brief using the DPH template summarizing the results from the analysis of the data for the question approved by DPH, within the timeframes specified above. Participants are required to notify DPH of any results that are outside the boundaries of the PHD analysis in a separate report.
4. Work with DPH staff to clarify any issues or unclear results contained within the report.

<u>Application Evaluation Criteria</u>

Applications will be reviewed by the Department and approval is within the Department's discretion. The application form is posted with this Notice. Evaluation criteria include:
1. The ability of the proposal to answer the Department of Public Health's research questions listed in this NOO.
2. The quality of the material submitted describing the proposed analysis.
3. The scientific rigor of the proposed approach.
4. Whether there is a high likelihood of success, e.g., the analyses can be completed on time using the available data.
5. Whether the analyses inform future public policy or public health program planning, interventions, and/or evaluation.
6. Applicant's or team's knowledge of SAS programming and ability to be onsite at DPH during normal working hours.
7. Degree to which a community engaged approach guided the development of the project proposal and continues to be used throughout the project cycle.
8. Priority will be given to applications that incorporate an explicit health equity lens and include a health equity and/or disparities researcher(s) on the project team. This includes discussion of theories used, data elements and stratifications proposed, and linking analytic questions to historical context and current inequities. Please see the racial equity data road map for more information on how DPH is working to incorporate health and racial equity into our data practices. https://www.mass.gov/doc/racial-equity-data-road-map-pdf/download

Instructions for Submission of Responses: One copy of the *Application - Public Health Data Warehouse Analytic Plan* should be sent by email to: DPH.PHD@mass.gov. Priority will be given to applications received within one month of this posting. Applications received after this date will be reviewed on a rolling basis, at the discretion of the Department.

Appendix B: PHD Analytic Team Member User Agreement (External User)

Public Health Data Warehouse Analytic Plan

<u>ANALYTIC TEAM MEMBER USER AGREEMENT: NON-STATE WORKFORCE</u>

I am a member of an Analytic Team working on an approved Analytic Plan submitted in response to a Notice of Opportunity posted by the Department of Public Health (DPH), to analyze population health trends pursuant to G.L. c. 111, s. 237. The Analytic Plan, specified below, or as may be updated in the future (the Approved Analytic Plan) is incorporated herein by reference

I understand that all aspects of my work on the Approved Analytic Plan are conducted on behalf of DPH. In this capacity, I may be granted access to query a multi data set system. I understand that access to this system and the associated computing resources at DPH are provided for the sole purpose of allowing me to conduct analyses for the Approved Analytic Plan, and I may not under any circumstances use the data system or results for any other purpose or in any other capacity without explicit written prior approval from DPH. I also understand if I am provided system access, this access authorization is solely for my use and I may not provide access to or share access with any other individuals,

I understand that I may conduct only queries which are part of the Approved Analytic Plan; unapproved additional queries would constitute an abuse of the access to data systems I am granted and may be a basis for my removal from the Analytic Team.

I recognize that the unauthorized use or disclosure of any data system information may cause damage to individuals, programs, and DPH. Such unauthorized use or disclosure is inconsistent with my role as an invited member of the Analytic Team, against ethical standards of my profession, may violate state and/or federal law, and may be sufficient cause to terminate my association with DPH.

Analyses will be conducted on record level data, but access to the data will be configured such that analysts cannot see the actual records. Univariate analyses will show only aggregate data above accepted cell-suppression levels; I understand that the calculation of suppressed values is prohibited.

I therefore acknowledge and agree that:

1. I will use access to the query system provided to me by DPH exclusively for Analytic Team activities as described in the Approved Analytic Plan.
2. My participation in the Analytic Team is not in violation of any policies of institutions with which I may be affiliated.

3. DPH and/or the entity which is the source of the data own all the data to which I have access to query as part of my Analytic Team responsibilities.
4. I will not attempt to manipulate results in a way that could lead to the identification of individuals, and I understand that my query history may be audited.
5. If a query does result in identifiable information appearing, I will immediately notify my DPH liaison.

6. I will not share any data or results with anyone other than an approved Analytic Team member.
7. I will follow all security provisions required by DPH and its Acceptable Use Policy, including but not limited to:
   a. not sharing with anyone the password/s assigned to me for accessing DPH systems and project information.
   b. being accountable for all actions I take or that are untaken with my account credentials.
   c. not using the system for anything other than that for which I am specifically authorized.
   d. following all policies and procedures relating to the use of the PHD data and associated system.
   e. including on all authorized email transmissions of data to approved Analytic Team members the following notice: "*If you are not the intended recipient of this email, do not read, copy, use, forward or disclose the email or any of its attachments. Instead, immediately notify the sender by separate email and immediately double delete the misdirected email from your system.*" and notifying the DPH liaison immediately of any instances of misdirected information.
8. I will immediately report to DPH any unauthorized access to systems or breach of project information of which I am aware and will assist DPH in mitigating any unauthorized disclosure or breach with which I am involved.
9. I have completed the on-boarding training, appropriate to my role on the Analytic Team and have provided proof of such training to DPH.
10. I will conduct my responsibilities for the Analytic Team in accordance with the PHD User Manual dated 04/09/2021 or as may be updated.

In consideration of the opportunity to participate in the Analytic Team for the Approved Analytic Plan, I further acknowledge and agree:

11. DPH is entitled to sole ownership and possession of any intellectual property rights associated with my work as a member of the Analytic Team. I have no rights to any of the potential intellectual property generated in the performance of the Approved Analytic Plan.
12. Potential intellectual property generated in the performance of the Approved Analytic Plan includes, but is not limited to, queries, results, print out of results, summary of results, interpretation of the results, and process related questions and results.
13. As such, I will not use access to the system, or anything derived from project information for my own research or for publication without independently applying for and receiving permission from DPH.
14. As the sole owner of any potential intellectual property, DPH may in its sole discretion, upon review by DPH and by any other necessary data owners, grant a license to use for the purpose of effectuating journal publication or inclusion in proceedings associated with professional or educational activities. In

granting such a license DPH will retain a royalty- free, non-exclusive, irrevocable license to reproduce, publish, or otherwise use any derivative works created by licensee, and to authorize others to do so for state or public health purposes.

I have read and agree to the terms of this User Agreement.

X _____
   Team Member's Signature

Team Member's Name (Printed): _____

Team Member's Title: _____

Approved Analytic Plan:

      Primary Applicant:

      Title:

      Date Submitted:

Appendix C: List of PHD 2.0 Data Sets

Number	Abbreviation	Name	Description	libname.datasetname
1	APCD	MA All Payer Claims Database	Medical, Pharmacy, and Dental claims from commercial payers, third party administrators and public programs (Medicare/MassHealth)	PHDAPCD.MEDICAL PHDAPCD.PHARMACY PHDAPCD.DENTAL PHDAPCD.MHEE PHDAPCD.ME PHDAPCD.ME_MTH PHDAPCD.PRODUCT PHDAPCD.PROVIDER
2	Births	Registry of Vital Records and Statistics (RVRS) Birth Certificates	Birth certificates from RVRS	PHDBIRTH.BIRTH_INFANT PHDBIRTH.BIRTH_MOM
3	BSAS	Bureau of Substance Addiction Services	BSAS funded substance addiction treatment records	PHDBSAS.BSAS PHDBSAS.HOCMOUD PHDBSAS.HOCMOUD_DIS PHDBSAS.HOCMOUD_PERIOD PHDBSAS.HOCSURV
4	Case Mix	MA Acute Care Hospital Discharge	Inpatient hospitalizations, emergency department visits, and outpatient observation in acute care hospitals	PHDCM.ED PHDCM.ED_DIAG PHDCM.ED_PROC PHDCM.ED_ORG PHDCM.HD PHDCM.HD_DIAG PHDCM.HD_PROC PHDCM.HD_ORG PHDCM.HD_SERV PHDCM.OO PHDCM.OO_ORG
5	COVID-19 (MAVEN)	Massachusetts Virtual Epidemiologic Network, COVID-19	COVID-19 cases among Massachusetts residents recorded in MAVEN	PHDCOVID.COVID_MAVEN

Number	Abbreviation	Name	Description	libname.datasetname
6	COVID-19 (MIIS)	Massachusetts Immunization Information System, COVID-19	COVID-19 vaccinations among Massachusetts residents using the Massachusetts Immunization Information System	PHDMIIS.COVID
7	Deaths	Registry of Vital Records and Statistics (RVRS) Death Certificate Data	Death certificates from RVRS	PHDDEATH.DEATH
8	EOHLC (previously DHCD)	Executive Office of Housing and Livable Communities	Subset of the records of families (heads of household) who received services from the Emergency Assistance Program	PHDDHCD.DHCD
9	DIA	Department of Industrial Accidents	Worker's Comp claims data	PHDDIA.DIA
10	DMH	Department of Mental Health	Medical and demographic information for individuals served by DMH	PHDDMH.DMH PHDDMH.DMH_RAP
11	DOC	Department of Correction	Entry and release from an MA prison	PHDDOC.DOC
12	DTA	Department of Transitional Assistance	Supplemental Nutrition Assistance Program (SNAP) benefit program participation	PHDDTA.DTA
13	EOVS (previously DVS)	Executive Office of Veterans' Services	Data on persons who received EOVS medical, housing, or other benefits from EOVS through communities.	PHDDVS.DVS_ANN PHDDVS.DVS_CH115

Number	Abbreviation	Name	Description	libname.datasetname
14	EI	Early Intervention	EI program participation	PHDEI.EI_CLIENTS PHDEI.EI_DIAGNOSESTABLE PHDEI.EI_EVALUATION PHDEI.EI_DISCHARGES
15	FETALDTH	Fetal Deaths	Fetal death certificates from RVRS	PHDFETAL.FETALDEATH
16	HEPA	Hepatitis A	Hepatitis A surveillance	PHDHEPA.HAV
17	HEPC	Hepatitis C	Hepatitis C surveillance	PHDHEPC.HCV
18	HIDTA	The New England High Intensity Drug Trafficking Area (NEHIDTA)	Confirmed drug seizures within MA by date, drug type, quantity, unit, and county	PHDCENS.DRUG_SEIZURE
18	HIV	HIV	HIV surveillance	PHDHIV.HIV_PREV PHDHIV.HIV_PREV_CD4 PHDHIV.HIV_INC
19	HOC	Houses of Correction	Entry and release from an MA jail	PHDHOC.HOC
20	Final Demo	Final Demographic File	A person-level file with best available demographic indicators and flag fields for certain measures of interest	PHDSPINE.DEMO
21	MATRIS	Massachusetts Ambulance Trip Record Information System	Incident data from licensed ambulance services	PHDEMS.MATRIS
22	MCR	Massachusetts Cancer Registry	All incident cancer diagnoses	PHDMCR.MCR
23	PMP	Prescription Monitoring Program	Filled prescriptions for schedule II through V medications	PHDPMP.PMP PHDPMP.PMP_RS

Number	Abbreviation	Name	Description	libname.datasetname
24	TOX	Postmortem toxicology (data from state police, but owned by OCME)	Postmortem toxicology results	PHDTOX.TOX
25	WIC	Women, Infants, and Children program	WIC program participation data	PHDWIC.WIC_KID PHDWIC.WIC_MOM
26	Opioid overdose dataset	Opioid overdose dataset	Combination of information on opioid overdoses from Case Mix (ED, ED_DIAG, OO, OO_DIAG, HD), MATRIS, and Death	PHDSPINE.OVERDOSE
27	MOUD	Medications for Opioid Use Disorder	Combination of the MOUD data from across the PHD (APCD, BSAS, DOC, & PMP) into one dataset. The medications covered are Buprenorphine, Methadone, and Naltrexone.	PHDSPINE.MOUD
28	POP_TOWNTOTAL	Donahue Population files estimates	Total population by city/town 2011 to 2019	PHDCENS.POP_TOWNTOTAL
29	POP_town_11ages	Donahue Population files estimates	Total Population by 11 age groups by city/town 2011-2019	PHDCENS.POP_TOWN_11AGE
30	POP_town_19ages	Donahue Population files estimates	Total Population by 19 age groups by city/town 2011-2019	PHDCENS.POP_TOWN_19AGE
31	POP_STATETOTAL	Donahue Population files estimates	Statewide Total Population by gender and race/ethnicity 2011-2019	PHDCENS.POP_STATETOTAL

Number	Abbreviation	Name	Description	libname.datasetname
32	POP_STATE_11AGE	Donahue Population files estimates	Statewide: 2011-2019 Population by 11 age groups, gender, and race/ethnicity	PHDCENS.POP_STATE_11AGE
33	POP_STATE_19AGE	Donahue Population files estimates	Statewide: 2011-2019 Population by 19 age groups, gender, and race/ethnicity	PHDCENS.POP_STATE_19AGE
34	POP_ACS_ZCTA	Data from The Public Health Disparities Geocoding Project	MA American Community Survey Population 2014-2018	PHDCENS.POP_ACS_ZCTA
35	POP_ACS_COUNTY	Data from The Public Health Disparities Geocoding Project	MA American Community Survey Population at County Level 2014-2018	PHDCENS.POP_ACS_COUNTY
36	POP_ACS _town_city	Donahue Population files estimates and MA ACS	Combination of data from Donahue population file estimates and MA American Community Survey Population at town/city Level	PHDCENS.POP_ACS_town_city
37	OEND	The Overdose Education and Naloxone Distribution (OEND) program.	When a bystander is trained and provided a naloxone kit, the individual is enrolled in the program and an enrollment questionnaire is completed by OEND staff. When that person returns to the OEND program to receive a refill and/or report a rescue, a refill questionnaire is completed. This dataset	**PHDZIP.OEND**

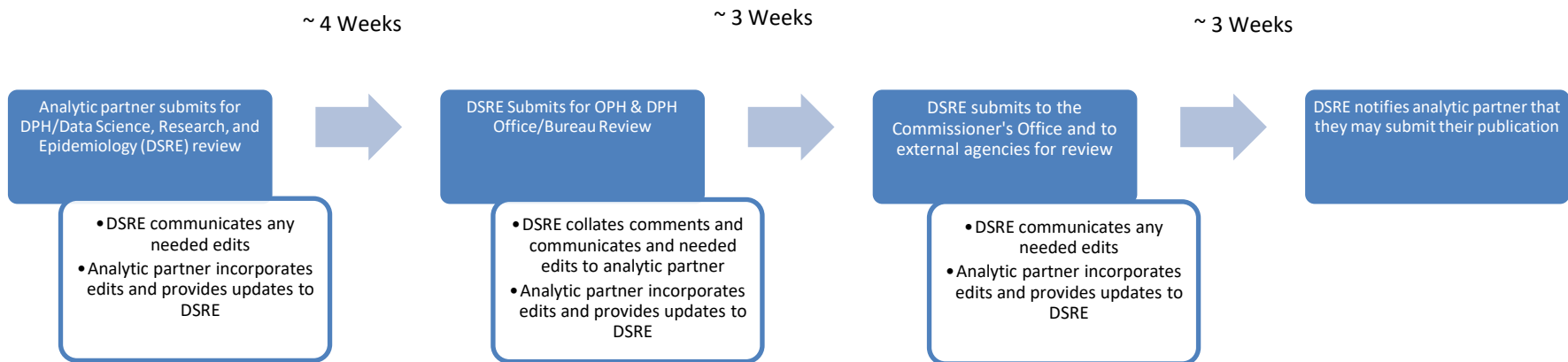| Number	Abbreviation	Name	Description	libname.datasetname
			includes narcan encounter level data. The variable encounter_type_OEND can be used to select either enrollment, non-rescue refill, or rescue report. Note that the ID on this dataset is not linkable to other PHD datasets.	
38	CRI	Carceral Resource Index	Massachusetts city budget data for 2021 to calculate a Carceral Resource Index (CRI) score which measures city government spending on carceral resources relative to spending on health and supportive services	PHDCENS.CRI
39	Female_towncity_18age_race	Donahue Population files estimates	2019 Total Female Population by 18 age groups and race/ethnicity by city/town	PHDCENS. Female_towncity_18age_race
40	Working_pop	ACS PUMS	Estimated Massachusetts average annual counts of workers ages 18-64 years, Age Distribution within Sex Race/Ethnicity, Nativity, Education, Occupation, and Industry:	PHDCENS.Working_POP

Number	Abbreviation	Name	Description	libname.datasetname
			ACS PUMS 5- Year file 2016-2020, Weighted counts	
41	Census Pop – 5 Year Age Groups	donahue_pop_5yeargroup_2020	Massachusetts's population estimates by town, age group (5 year increments from 0 and older), sex, and Race/Ethnicity	PHDCENS.DONAHUE_POP_5YEARGROUP_2020
42	Census Pop – Single Years	donahue_pop_singleyears_2020	Massachusetts's population estimates by town, age group (Single Year increments from 0 – 20 years old), sex, and Race/Ethnicity	PHDCENS.DONAHUE_POP_SINGLEYEARS_2020

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Appendix D: Examples* of Publications/Dissemination Material Types

- Peer-reviewed article, letter, commentary

- Abstract for a conference

- Slide presentation for a conference

- Poster presentation for a conference

- Press release related to PHD work

- Presentation to an organization (or anyone not onboarded to the PHD analytic team)

- Visualization of PHD project work

- White paper

- Infographic

*Note: These examples are not a comprehensive list of all of publications/dissemination materials covered by the terms described herein.

Appendix E: Process and Timeline for Review of All Dissemination Materials

~ 4 Weeks   ~ 3 Weeks   ~ 3 Weeks

| Analytic partner submits for DPH/Data Science, Research, and Epidemiology (DSRE) review | → | DSRE Submits for OPH & DPH Office/Bureau Review | → | DSRE submits to the Commissioner's Office and to external agencies for review | → | DSRE notifies analytic partner that they may submit their publication |

Box 1:
- DSRE communicates any needed edits
- Analytic partner incorporates edits and provides updates to DSRE

Box 2:
- DSRE collates comments and communicates and needed edits to analytic partner
- Analytic partner incorporates edits and provides updates to DSRE

Box 3:
- DSRE communicates any needed edits
- Analytic partner incorporates edits and provides updates to DSRE

Appendix F: Authorship Guidelines

All authors must meet the following criteria in accordance with the International Committee of Medical Journal Editors (ICJME) authorship criteria:

1. Substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work; AND
2. Drafting the work or revising it critically for important intellectual content; AND
3. Final approval of the version to be published; AND
4. Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

In addition to meeting the above criteria, project teams wishing to pursue peer-review publication of their results should keep the following guidelines in mind:

1. At least one DPH co-author must be invited to participate on all publication teams. You may include your epidemiologist liaison, a member of the Office of Population Health, the Commissioner of Public Health, a SME on a dataset that you are using, or another DPH staff member.
2. Depending on the data sources you are using, you may be asked to include a staff member from another state agency (i.e., including someone from DOC if using DOC data) who can contribute agency- and data-specific expertise.

Appendix G: Training Requirements

All Team Members

1. Complete 5 CITI Modules
    a. Required of all listed analytic team members

    b. Submit proof of completion from home institution OR complete DPH's modules and submit proof of completion

    Required CITI Modules
    1. Privacy and Confidentiality (ID: 505)
    2. Defining Research with Human Subjects (ID: 491)
    3. Records-Based Research (ID: 5)
    4. Introduction to Community-Engaged Research (ID: 16994)
    5. Cultural Competence in Research (ID: 15166)

2. View PHD Training Webinar
    a. Required of all analytic team members
    b. View webinar OR request copy of slides and attest to reading it via the user agreement.

3. Sign Data Protection Policy and Procedures (data users only)
    a. Required of only members of the analytic team that are directly accessing the data in SAS Studio
    b. How to: Read policy and sign attestation