

ID: 73031200

Injury, Substance Use/Mental Health - Host Site Description

Denver Department of Public Health & Environment

Assignment Location: Denver, US-CO
Denver Department of Public Health & Environment
Shared Services & Business Operations

Primary Mentor: Paige Andrews, PhD in Epidemiology (expected summer 2025), M.S. Epidemiology, BA Mathematics, BA Economics with honors
Senior Population Health Epidemiologist
Denver Department of Public Health & Environment

Secondary Mentor: Jessy Jiao, MPH (Environmental Health Sciences), MS (Prevention Science), PhD (pending summer 2025, Applied Developmental Science)
Senior Behavioral Health Analyst
Denver Department of Public Health & Environment

Work Environment

Hybrid

Assignment Description

DDPHE aims to work collaboratively across all divisions of the department as each brings unique strengths, community partnerships and services, and data availability. However, given the busy nature of daily work, although encouraged, cross-team collaboration can be more difficult to achieve consistently. To provide the fellow with as much exposure and support as possible, a strength of this proposed fellowship placement is in its inherent collaboration. Each of the fellow's mentors are leaders in collaboration in the department but sit within unique teams.

The primary mentor works within the Division of Shared Services and Business Operations' Epidemiology and Data Science team. This team provides database management and analytic support to the entire department and, as such, has the greatest access to data and the highest level of analytic and systems-thinking technical skills. The primary mentor also is the inaugural member of the population health epidemiology program, which aims to grow in the coming years. The population health epidemiology program aims to expand department wide dataset access as well as increase the surveillance and data-driven decisions across community health indicators.

The secondary mentor works within the Division of Community and Behavioral Health's Evaluation team. The majority of programs that serve Denver residents reside in the Community and Behavioral Health division, ranging from suicide prevention to maternal health to food access to overdose prevention. Accordingly, the secondary mentor who is a lead on the evaluation team is well-connected to programmatic-level data and supports the development of primary data collection surveys, such as the recent substance use stigma survey for law enforcement personnel.

The third mentor works within the Workforce Development team, has over thirty years of public health experience, and is dedicated to mentorship. The workforce development team leads DDPHE's academic health department collaboration with the Colorado School of Public Health and is dedicated to supporting training and professional development of staff.

In addition to the three mentors and their respective teams, the fellow would have the opportunity to work with the Office of the Medical Examiner (OME), which is uniquely positioned within the public health department. OME has a forensic epidemiologist who is an expert in Colorado's vital statistics datasets, including the Violent Death Reporting System. The OME also offers follow-up services to loved ones of decedents in a nation-leading program called the Family Advocate Support Team (FAST). Both of these OME efforts would be relevant to the fellow's work. Finally, the fellow

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would have the opportunity to work with our outbreak response team, emergency management team, and pursue partnerships with other programs of personal interest to the fellow.

In terms of day-to-day activities, the fellow would primarily be working on DDPHE's firearm harm prevention initiative and related analyses. DDPHE had just begun independently exploring how to support firearm harm prevention when the US Surgeon General declared gun violence a public health crisis in June of 2024. Since then, DDPHE has been advocating for an increased public health approach to gun violence reduction in Denver, which was recognized by Mayor Mike Johnston and announced as part of his Safe City goal for 2025. This is an exciting time to join DDPHE's firearm-related harm reduction efforts as we are in the process of defining burden, working with community partners, developing, and evaluating the most effective public health strategies to reduce firearm-related harm of all kinds, including community violence, suicide, domestic violence, and accidents, for Denver. Depending on the day and the fellow's interests, related activities would likely include:

- Analyzing and summarizing firearm-related harm surveillance data, including overlaps with substance-use related data, from multiple sources (listed below)
- Contributing to the design, implementation, and analysis of firearm-related harm primary survey and/or environmental assessment efforts. This could include developing databases and related reporting capabilities.
- Collaborating with analysts within DDPHE, across other City and County of Denver agencies (such as the Denver Police Department and the Office of Social Equity and Inclusion), and academic partners (such as the Colorado University Anschutz Firearm Injury Prevention Institute)
- Responding to timely requests for understanding firearm-related burden and impact of related efforts, including developing succinct and persuasive analysis summaries, for the DDPHE executive office, mayoral office, and/or partner organizations
- Attending relevant trainings and/or webinars
- Preparing reports, presentations, and/or manuscripts to disseminate learnings and recommendations to program staff, leadership, and external partners
- Participating in and/or leading meetings with internal and external staff and partners
- Serving on the Incident Management Team

Describe Statistical and Data Analysis Support, Such as Databases, Software, and Surveillance Systems Available to the Fellow

There are several sources of data that would be available and relevant to the fellow's work. Death certificate information is available from the state's vital statistics program, which describes underlying and contributing causes of death. The Colorado Violent Death Reporting System (CVDRS) combines information from the death certificate, medical examiner report, and law enforcement investigations to provide a comprehensive understanding of the circumstances leading up to violent deaths in Colorado, including all deaths involving a firearm. The Colorado Hospital Association data provides emergency visit and hospital discharge data for Denver residents. ESSENCE data is a syndromic surveillance dataset that captures emergency department visit data in near-real-time. The Health Kids Colorado Survey and Behavioral Risk Factor Surveillance System are available to provide surveyed health behavior, context, and outcome data for Denver's youth and adults, respectively. There are several overdose grant-related datasets, such as wastewater surveillance and drug-product testing data that would also be available, as relevant. DDPHE also has an interest in expanding access to additional datasets, such as EMS service data and the Colorado Trauma Registry. The fellow would also be encouraged to identify additional possibly relevant datasets and would be supported in acquiring additional data as needed. Examples of software available to the fellow include Qualtrics, Atlas, RedCap, Survey123, Microsoft Office products including MS Excel, Forms, and PowerBI, ArcGIS, R, Python, and SAS.

Projects

Surveillance Activity Title: Develop an Internal, Near-Real-Time Surveillance Dashboard of Firearm-Related Harm

Surveillance Activity Description:

Most confirmed sources of firearm-related harm data come with significant delays. For example, CVDRS data can lag up to 18 months. There is often a need to understand more recent trends to inform programmatic decision making and consider programmatic impact. Accordingly, the fellow would create an internal-to-DDPHE facing dashboard in PowerBI that summarizes preliminary (such as medical examiner investigations), syndromic surveillance (such as ESSENCE and EMS service data), and related programmatic (such as FAST program follow-ups and secure storage process measures) data.

Surveillance Activity Objectives:

The fellow would produce a dashboard in PowerBI that would be updated monthly to share with internal teammates, DDPHE leadership, and other partners internal to the City and County of Denver as needed. The dashboard would include meaningful data visualizations for all relevant datasets, including trends over time, across type of firearm-related harm, across population sub-groups such as age group, race/ethnicity, and sex/gender, and Denver census tracts where possible. The fellow would also be able to clearly communicate limitations of the preliminary and/or syndromic surveillance interpretations.

Surveillance Activity Impact:

This dashboard will be directly referenced when making resource allocation decisions and during regular communication with other city/county agencies also supporting gun violence reduction. The dashboard will also serve as internal accountability to increase focus and impact of firearm-related harm prevention programmatic efforts. The fellow will help determine what form of this information is appropriate for wider sharing with community-based partners and the general public for potentially further impact.

Surveillance System Evaluation Title: Comparing Near-Real-Time Surveillance Trends to Colorado Hospital Association Records and CVDRS

Surveillance System Evaluation Description:

An understanding of how near-real-time preliminary and syndromic surveillance-based datasets compare to more confirmed datasets is critical when interpreting near-real-time trends for programmatic decisions. Accordingly, the fellow will assess agreement across near-real-time data sources, such as preliminary medical examiner cases, ESSENCE, and EMS services, with death certificate, VDRS, and Colorado Hospital Association data. This agreement will consider several covariates, including fatality status, seasonality, year and type of firearm-related harm. As the data allows, additional consideration across demographic variables such as age group, race/ethnicity, sex/gender, and census tract would be encouraged. The fellow will work closely with all three mentors, the forensic epidemiologist, and other teammates as needed to support this effort. This surveillance system evaluation will be instrumental in articulating appropriate limitations of the internal dashboard described above.

Surveillance System Objectives:

Following the surveillance system evaluation, the fellow will be able to quantify and describe differences between the near-real-time sources of firearm-related harm and the more confirmed datasets. The fellow will share these findings in a report and/or presentation form and share their subsequent recommendations for which near-real-time datasets, and in what capacity (i.e. only for fatal firearm-related incidents or across other variables mentioned) would be meaningful to reference on a monthly basis. The deliverable of this surveillance system evaluation and the internal dashboard are closely related and the exploration can be an iterative process.

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Surveillance System Impact:

Data-informed decisions can only be as good as the data used to inform them. This project is critical to ensure that the datasets being referenced for programmatic and resource allocation decisions more frequently than more confirmed datasets allow are thoroughly understood.

Major Project Title: Informing and Evaluating DDPHE's Secure Storage Strategies

Major Project Description:

DDPHE began an environmental scan of existing secure storage efforts in Denver in January 2025. This environmental scan seeks to understand strengths and gaps in secure storage device distribution and education/outreach efforts. Following this scan, DDPHE-supported secure storage strategies will be recommended. Possible example strategies include acting as a centralized, coordinating body for secure storage distribution efforts, increasing secure storage education and outreach efforts for under-reached populations and/or areas of Denver, and pursuing strategic secure storage device distribution efforts. Regardless of the exact strategy(ies) chosen, there will be a need to increase secure storage surveillance, further understand identified gaps, and evaluate impact of measures. This project will work to address these needs and collaborate with data-sharing partners, such as the Denver Police Department and hospital/medical partners.

Major Project Objectives:

The fellow will work to propose and/or enhance baseline secure-storage related surveillance and programmatic data. The fellow, supported by the DDPHE secure storage team, will determine the best form and frequency to communicate this information both internally and with partners.

Major Project Impact:

Secure storage can be an effective method to limit access to lethal means. This can have direct impact of reducing firearm-related suicides and accidents. It may even be able to reduce community violence by reducing firearms that can be more easily stolen and later used during a crime. It is important to understand the current availability and utilization of secure storage devices, and assess any change in these metrics, to directly impact firearm-related harm and assess impact of DDPHE programs.

Additional Project #1 Title: Informing and Evaluating DDPHE's Firearm-Related Suicide Prevention Strategies

Project #1 Type: Surveillance Activity

Project #1 Description:

DDPHE began analyzing firearm-related suicide data in Denver in January 2025. Only a preliminary analysis has been completed, but initial findings suggest there could be an emerging focus on male construction workers in Denver age 24-35yrs given the increased risk of suicide among this population. As this strategy evolves, there is a need to better understand potential risk and protective factors associated with the increased prevalence of suicide. There is an additional need to identify and attempt to address additional data needs to become most effective in this space. The fellow would join the DDPHE suicide prevention team and serve as a primary source of analytic support.

Project #1 Objectives and Expected Deliverables:

This project would yield specific indicators related to the chosen suicide prevention strategy(ies) that are then reported out in a form and at intervals determined to be most meaningful by the fellow and the DDPHE suicide prevention team.

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Project #1 Impact:

DDPHE believes that all suicide deaths are preventable. By better understanding unique populations in Denver at risk of suicide, potential risk and protective factors associated with these trends, and the potential impact of current efforts, we can work to reduce suicide deaths by firearms.

Additional Project #2 Title: Quantifying the Overlap between Substance Use and Firearm-Related Harm

Project #2 Type: Major Project

Project #2 Description:

Substance use has been proven in literature to be a risk factor for firearm-related harm across harm types, including community violence and suicide. Preliminary data in Denver also show this to be true, with over 37% of suicides in Denver involving alcohol, the leading substance, about 23% of suicides involving marijuana, and nearly 19% involving methamphetamine. However, there has yet to be an exhaustive exploration into the overlap between firearm-related harm and substance use. The fellow would use the CVDRS data, which includes toxicology results, for fatal incidents as well as the Colorado Hospital Association and other identified datasets as applicable to quantify the overlap overall, across time, by violence type, population subgroups, and areas within Denver.

Project #2 Objectives and Expected Deliverables:

The fellow will present findings from their analysis in a report and/or presentation form to share with our team, DDPHE leadership, DDPHE firearm harm workgroups, DDPHE substance use workgroups, and other city and external partners as needed.

Project #2 Impact:

Understanding the extent and nature of firearm harm and substance use in Denver will help inform synergistic interventions. For example, it may be deemed appropriate based on the fellow's findings that we start providing secure storage and/or suicide prevention efforts during certain substance-use prevention-related events. DDPHE is eager and well-poised to take findings from this initiative and inform programmatic decisions.

Please Describe the Fellow's Anticipated Role in Preparedness and Response Efforts – Include Activities and Time Allocation (Required Competency of Fellowship)

As part of their fellowship, this person would participate in DDPHE preparedness and response efforts in two ways: First, they would fill a specific role on the DDPHE incident management team (IMT), which is managed by the Emergency Preparedness and Response team. The IMT includes representatives from every division and requires members to participate in quarterly meetings and trainings related to emergency response and their specific roles on the IMT. Involvement on the IMT would also require participating in "EPR 101" type trainings to ensure they're up to speed on emergency preparedness principles.

In addition, if and when there is a response related to an emergency during their fellowship, the fellow will have a chance to participate in the response. Their role would likely include leveraging EMS and hospital data to conduct surveillance and analysis, as well as taking on other data-related projects as needed. They would also have many opportunities to work alongside the public health nursing team during responses, especially those requiring urgent vaccine clinics, health education, or guidance.

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Please Describe the Fellow's Anticipated Role in Cluster and Outbreak Investigations – Include Activities and Time Allocation (Required Competency of Fellowship)

The DDPHE Communicable Disease Epidemiology program consistently investigates and responds to >150 outbreaks per year, varying in etiology, population, and outbreak setting. The Epidemiology program consists of 2 generalist communicable disease epidemiologists, 1 epidemiologist specializing in persons experience houselessness, and 1 supervisor. Epidemiologists are trained to investigate and lead outbreaks of all etiologies, populations, and settings to fit the diverse needs of Denver County.

The CSTE fellow would work with the Communicable Disease Epidemiology program in becoming trained in outbreak management, in order to independently investigate clusters, lead outbreak management, and participate in largescale program/agency responses to complex pathogens. Typical outbreak related activities include but are not limited to: case/complainant interviewing, site visits and field work, environmental and clinical sampling, data collection, performing descriptive epidemiology and exposure analysis, implementing disease control measures, coordinating public health communications and messaging, and report writing.

Support for largescale responses for complex pathogens can include: coordinating and hosting mass prophylaxis events, conducting contact tracing and symptom monitoring, coordination of vaccination clinics, supporting education and outreach campaigns, database management and building surveillance systems for real-time data collection. Specific examples of recent responses include: community-wide outbreak of meningococcal disease affecting persons experiencing houselessness, hepatitis A in food workers, measles contact tracing, response to rabies positive puppies, bacterial toxin outbreak associated with large catered event, and more.