

Injury

New York State Department of Health, Bureau of Occupation Health and Injury Prevention

Albany, New York

Assignment Description

The Fellow will be assigned to the Bureau of Occupational Health and Injury Prevention (BOHIP) where the primary mentor, Mr. Michael Bauer, MS, is the Bureau Director and previous Section Chief of Epidemiology and Surveillance, and the secondary mentor, Ms. Leah Hines, MPH, is the lead injury epidemiologist. The BOHIP is responsible for conducting ongoing surveillance and epidemiology, and developing, implementing, and evaluating injury prevention programs locally and statewide. The BOHIP actively supports local injury prevention programs through staff training, provision of data for community health assessment and priority injury selection, distribution of material for implementing prevention activities, and implementing and evaluating injury prevention projects on the state and local level. The BOHIP would provide an excellent opportunity for a fellow to learn the practice of injury epidemiology. The Fellow would be involved in data surveillance and analysis, and the programmatic activities involved in the day to day running of a successful injury prevention bureau within a large state health department.

The BOHIP maintains a robust injury surveillance system to describe the causes of injury and at-risk populations in New York State (NYS). The system relies on several data sources to identify injury-related deaths, hospitalizations, and emergency department visits. These data sources include the NYS Vital Statistics Death File (VS) and the NYS Hospital Discharge Data System (Statewide Planning and Research Cooperative System, or SPARCS). Each year, approximately 8,000 deaths, 155,000 hospitalizations, and 1,500,000 emergency department visits due to injury are captured by these surveillance systems. These data systems offer the Fellow excellent opportunities for analysis.

There are several programs within the BOHIP that offer potential areas of exciting research for the Fellow. The BOHIP is funded by the Centers for Disease Control and Prevention (CDC) for the Core State Violence and Injury Prevention Program (Core SVIPP), the New York Violent Deaths Reporting System (NYVDRS), and the State Unintentional Drug Overdose Reporting System (SUDORS), by the Governor's Traffic Safety Committee for the Incorporating Emergency Medical Services Data in the Crash Outcome Data Evaluation System (CODES) and the NYS Traffic Safety and Public Health Program, and by the Administration for Community Living for the NYS Evidence-Based Older Adult Fall Prevention Program. The funding greatly increases the BOHIP ability to understand the burden of unintentional and intentional injuries in NYS. NYVDRS collects facts from death certificates, coroner/medical examiner reports, law enforcement reports, and toxicology reports into one linked database to provide information about the "who, when, where, and how" from data on violent deaths and provides insights about "why" they occurred. SUDORS is a similar surveillance system as NYVDRS, except only collects drug overdose data from death certificates, coroner/medical examiner reports, and toxicology reports. The CODES project matches individual records from the NYS Department of Motor Vehicles Police and Motorist Accident Reports to the NYS Department of Health SPARCS, Trauma Registry Data, and emergency medical services database (Pre-Hospital Care Reports or PCR). These linked databases create

a full picture that describes what occurs before, during, and after a crash and are critical to accurately determining the effectiveness of highway safety and injury control initiatives. There are also many other data sets not housed within the BOHIP but would be available to the Fellow as potential research opportunities. These sources of data include the Behavioral Risk Factor Surveillance System (BRFSS) and data from the NYS Regional Poison Control Centers.

Day-to-Day Activities

The BOHIP works in a collaborative, team environment, which strengthens and supports much of the work the Fellow will do independently. With five epidemiologists and two biostatisticians within the BOHIP, the Fellow will have all the support he/she will need for a truly successful fellowship experience. The Fellow will attend bi-yearly meetings of the Injury Community Implementation Group (ICIG), quarterly BOHIP meetings, monthly meetings of the Epidemiology and Surveillance Section within BOHIP, and weekly meetings with Dr. Joyce Pressley at the Columbia University Mailman School of Public Health. The BOHIP and Dr. Pressley have a long history of collaborative projects and the Fellow will have the opportunity to engage in future epidemiological projects with Dr. Pressley. Additionally, the Fellow will have the opportunity to attend project specific meetings for Core SVIPP, CODES, NYVDRS, and SUDORS. The Fellow will also be encouraged to attend webinars and subcommittee meetings hosted by the Council of State and Territorial Epidemiologists (CSTE) and the Safe States Alliance.

The Fellow will have his/her own analytic projects to work on daily (described in another section). At the same time, the Fellow will be an essential team member of our epidemiology and surveillance teams, gaining experience in crucial injury and violence data systems, in-house data quality assurance and quality control, data linkage, and surveillance and analysis procedures. The BOHIP regularly receives data requests from internal and external partners. The Fellow will assist in responding to these data requests. The Fellow will build statistical analysis skills in SAS and mapping skills in ArcGIS. The Fellow will also gain experience in data dissemination and public health communications.

The Fellow will also be encouraged to attend external meetings of injury and violence prevention partners. These meetings would include, but are not limited to, the NYS Traffic Records Coordinating Committee, the NYS Highway Safety Symposium, the Columbia University Annual Science in Service to Safety Injury Prevention Symposium, and the Northeast and Caribbean Injury Prevention Network.

Finally, the NYS Department of Health has an employee driven Epidemiology and Biostatistics Community of Practice (EBCoP). EBCoP provides several opportunities for the Fellow to engage epidemiologists and biostatistics across the Department of Health. These opportunities include SAS, R, Python, SQL and ArcGIS training's, annual meetings, a book club, and a social club. The Fellow will be encouraged to participant in these activities.

Potential Projects

Surveillance Activity Polysubstance Impaired Driving and the Crash Outcomes Data Evaluation System

The injury burden attributable to impaired driving, rapidly shifting drug laws, and growth in the use of combinations of drugs and alcohol, support the need to expand our scientific approach into polysubstance impaired driving. We will expand our ongoing research on the etiologic risks and protective factors associated with single and polysubstance impaired driving. Our aims are to improve understanding of the factors and areas where the quality and completeness of alcohol and drug testing data could be enhanced and to use this enhanced data to identify, characterize and quantify risks and protective factors related to polysubstance driving, crash risk and injury compared to unimpaired and single substance impairment. New York State (NYS) currently has an excellent data source in the Crash Outcomes Data Evaluation System (CODES) database. The environmental and individual variables contained in CODES provides the foundation to begin this work and to explore impaired driving issues in urban, suburban, and rural areas where the full mix of transportation alternatives including 'transportation deserts' are represented. The Fellow will

- 1) conduct an environmental scan of all data contributing agencies and organizations to assess the feasibility of improving/augmenting our data collection processes;
- 2) assess each data source and compare alcohol and drug testing at the individual driver level across law enforcement, drug recognition experts (DREs), emergency medical services (EMS) pre-hospital care reports (PCR), emergency departments (ED), trauma centers, hospitalizations, toxicology reports, and coroner/medical examiners (C/ME);
- 3) assess and characterize the potential for and impact of missing information bias on impaired driving, impaired crash risk and crash outcomes/injury severity and the direction of that bias.

Surveillance Evaluation Evaluating Data Completeness in the New York Violent Death Reporting System

Classification and description of violent deaths is demographically and geographically inconsistent. New York State has participated in the National Violent Death Reporting System (in the state, the New York Violent Death Reporting System or NYVDRS) since 2015. This surveillance system combines death certificate data with coroner/medical examiner (CME) and law enforcement (LE) information to form a robust data set with over 600 unique elements. Completeness of this data is an important factor to consider as missingness can lead to biased estimates in analysis and an inaccurate understanding of groups affected by violent deaths. The Fellow will

- 1) estimate the percentage of violent death with missing circumstance information
- 2) assess differences by key demographic variables (e.g. race/ethnicity, educational attainment)
- 3) assess data completeness by coroner versus medical examiner

4) build a mixed model to assess and characterize data completeness by geographic location and census tract poverty level to determine if individuals living in lower resource settings are more likely to have missing information, while controlling for other relevant variables.

Major Project Bureau of Occupational Health and Injury Prevention Epidemiological Manuscript

The Fellow will co-author a peer-reviewed epidemiology-focused manuscript using data from CODES, NYVDRS, and/or the SPARCS (hospitalizations and emergency department visits) on one of the Bureau's focus areas. The Fellow will have the opportunities to pick from polysubstance driving, firearm deaths and injuries, suicides/self-harm, and homicides/assaults. The Fellow will be required to conduct a literature review and summarize the results, provide preliminary analysis, suggest appropriate statistical analysis methods, and drafting an Internal Review Board (IRB) application. The Fellow will present the results to epidemiological and biostatistical staff in the Bureau and determine, as a team, the appropriate methodology to complete the epidemiological study. The Fellow will be tasked with completing the study and writing the first draft of the manuscript. The Fellow will be tasked with incorporating all edits and developing the final manuscript to submit to a peer-reviewed journal.

Additional Project Behavioral Risk Factor Surveillance System: Adverse Childhood Experiences

Traumatic events that occur during childhood, in addition to causing immediate emotional and/or physical harm, can have lifelong impacts on individuals. One set of such studied traumatic events, known as Adverse Childhood Experiences (ACEs), have been well researched and shown to be associated with chronic health conditions, poor psychological health, and other negative outcomes later in life. ACEs include psychological, physical, or sexual abuse, as well as events of household dysfunction which include parental separation or divorce, domestic violence, or incarceration, mental illness, or incarceration of a household member. In 2016, NYS added ACEs questions to the Behavioral Risk Factor Surveillance System (BRFSS). The BOHIP took the lead in the Department of Health in analyzing the data to better understand the burden of ACEs in New York State. Findings were included in a report and presented at numerous conferences. In 2019, the BRFSS added ACEs questions to the survey again. The Fellow will have the opportunity to analyze the 2019 BRFSS for the ACEs relationships found in 2019 and compare to the results found in 2016.

Preparedness Role

Expertise and resources are in place in the Center for Environmental Health, where the BOHIP is housed, to provide a comprehensive response for emergency and disaster preparedness events at the state level as well to regional and local county health departments and NYS communities. A core team of emergency response specialists leads multidisciplinary and volunteer groups in the Center to prepare for, respond to and recover from anticipated and unexpected events and collaborate externally with other agencies and the NYS Homeland Security and Emergency Services. The Fellow would have the opportunity to participate in the preparedness and response activities to environmental health threats

through the collaborative approach of our center - taking part in public health responses, emergency management training exercises and functions, opportunities for disaster epidemiology, and site visits. Activities may include coordinated response planning for outbreaks and clusters, acts of terrorism, floods and severe weather emergencies, mass gatherings, disease surveillance, and drinking water contamination responses. Past events have included 9/11 World Trade Center; H1N1, Zika, legionnaire's disease, pathogens and aspergillosis; Superstorm Sandy and Southern Tier flooding; measles outbreaks in children's camps; exposure to waste anesthetic gases; Perfluorooctanoic acid (PFOA) in local town water supplies; toxic chemical spills; harmful algal blooms (HABs), radioactive emergencies and emerging contaminants (occupational exposure to diacetyl in butter substitutes, formaldehyde in keratin hair straighteners, nail salon worker health and safety, and occupational exposure to legionella in standing water) and Woodstock 50 planning.

Additional Activities

The BOHIP has a vibrant office environment. Current priorities in the BOHIP include motor vehicle injuries, suicide/self-harm, homicide/assault, older adult falls, child abuse and neglect, sexual and intimate partner violence, and traumatic brain injuries. In addition, the Fellow will have opportunities to work on emerging injury issues.

Mentors

Primary	Michael Bauer MS, BS Bureau Director
Secondary	Leah Hines MPH, BS, AS Epidemiologist