ID: 33776724
Environmental Health - Host Site Description
Public Health - Seattle & King County

Assignment Location: Seattle, US-WA
Public Health - Seattle & King County
Prevention Division

Primary Mentor: Shirlee Tan, PhD
Environmental Scientist IV
Public Health - Seattle & King County

Secondary Mentor: Bradley Kramer, MPA, PhD(c)
Program/Project Manager IV
Public Health - Seattle & King County

Work Environment
Hybrid

Assignment Description

This fellowship will be focused on environmental health and climate change surveillance efforts at Public Health—Seattle & King County. The fellowship will be split so that approximately 50% of the fellow's time is spent in the Environmental Health Division and the other 50% of the time will be in the Assessment, Policy Development, and Evaluation Unit supporting the climate and health equity initiative. The Environmental Health Division works on reducing environmental exposures to toxics, toxins, pests and other hazards that impact public health through prevention and permitting, research, and guidance and education. The Climate and Health Equity initiative uses data to improve the ability to anticipate, respond, and adapt to the effects of climate change and aims to promote community resilience and health equity. There will also be opportunities to collaborate with other divisions of Public Health on emerging public health threats and investigations.

The fellow's day-to-day activities will include:
- Analyzing climate-related and environmental health data
- Responding to climate-related weather events (e.g. analyzing surveillance data, coordinating with Preparedness partners, creating after action summaries)
- Analyzing syndromic surveillance data around climate and exploring its use for environmental health topics
- Analyzing and summarizing data collected by environmental health programs such as private well testing results data, potential sources of lead poisoning identified through case management of kids with elevated blood lead levels, environmental exposure data for pollutants, and others
- Conducting program evaluation on efforts undertaken by the health department to adapt to climate change, for example: developing surveys, collecting data, analyzing data, and disseminating findings
- Building online dashboards and reports to summarize the health impacts of climate change
- Participating in weekly unit-wide epidemiology meetings, Climate and Health Equity Initiative team meetings, Environmental Health division meetings, and other meetings as appropriate
- Writing up findings for presentation at conferences, manuscripts, or white papers
- Supporting environmental health investigations

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

The fellow will have access to R, Tableau, SQL, GIS, and any other software that is needed to complete their work. They will also have access to various surveillance datasets that will be used throughout the fellowship including vital statistics data, syndromic surveillance data, medical examiner's office data, environmental health program data, and other survey data, such as our local Healthy Youth Survey, Behavioral Risk Factor Surveillance system, among others.

Mentors will help support the fellow with statistical and data analysis support, and the Community Health and Assessment Division also has many resources to support the learning of R, Tableau, GitHub, and SQL. There are Microsoft Teams channels to ask questions and engage in discussion, as well as office hours to help troubleshoot problems. Epidemiologists throughout the division will be available to assist with software, and there are also many resources already developed to analyze data from the surveillance systems mentioned above.

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Projects

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Surveillance Activity Title: Identifying gaps and analyzing data for populations sensitive to climate and environmental health hazards

Surveillance Activity Description:
Many climate impacts on health are still being identified or studied for better understanding and those that are well established are starting to be tracked to understand trends. Climate impacts disproportionately affect certain communities and understanding these impacts can be difficult due to lack of access to data or surveillance of health outcomes during and/or following climate events. Furthermore, the environmental health factors that influence climate impacts are important in understanding differences in disparities across populations. For example, people living unhoused or in public shelters in King County, where environmental conditions are very different than the rest of the populations, have a much larger exposure to wildfire smoke and pollution than the general population. Having a better understanding of both the lived environment and the health impacts on this population would help public health departments to design more effective interventions or strategies to reduce the impacts during wildfires for people living unhoused. Similar examples exist for low-income communities living in areas impacted by flooding, pests, and pollution, where access to health care may be more difficult and health impacts during or after climate events may be more difficult to understand.

Surveillance Activity Objectives:
The objectives of this project include:
1) define populations where information about environmental conditions/exposures and health data may be limited, but where public health assistance is greatly needed to develop more effective interventions that protect vulnerable populations from climate events, and
2) identify one priority population and conduct a case study that defines the data that is available and where data gaps exist.

Deliverables include a report that provides:
1) a list with priority populations in King County (by census tract or zip code) and their greatest risks for climate and health impacts
2) a detailed case study report on one of the priority populations that defines known environmental conditions/exposures and health impacts, data needed to better understand trends in correlations between environment and health impacts, recommended interventions, and what could be improved, and

    3) a report that discusses recommended approaches to obtaining difficult climate, environmental exposure, and health data for sensitive and vulnerable populations to inform public health agency strategies.

Surveillance Activity Impact:
This work will establish a list of priority areas for the health department to begin addressing, as well as methods to improve data and use of data (health and environmental data) in a way that allows us to better design adaptation strategies for communities most impacted by climate change in King County.

Surveillance System Evaluation Title: Evaluating the use of syndromic surveillance data to assess the health impacts of wildfire smoke

Surveillance System Evaluation Description:
The Rapid Health Information Network (RHINO) is Washington State's syndromic surveillance data, which includes all emergency department (ED) visits in King County. These data are an important source of information for climate-related events as they can be accessed in near-real-time. Although certain conditions have been well monitored, such as heat-related illness, there are challenges in the syndrome definitions that have been developed to monitor the health impacts of wildfire smoke exposure (e.g. asthma, respiratory illness, visits related to smoke). With wildfire smoke increasing in King County, it is important to understand how well RHINO data can be used to monitor various health impacts and inform adaptation and response efforts.

Surveillance System Objectives:
The goals of this evaluation will be to:
1) identify how King County and other jurisdictions use syndromic surveillance data to monitor health impacts of wildfire smoke
2) evaluate the RHINO system and its use for this topic area
3) evaluate the syndrome definition(s) used for monitoring wildfire smoke impacts in ED visit data by comparing them to an identified gold standard
4) make changes to the syndrome definitions(s) based on what was found in the evaluation
5) implement and disseminate changes during wildfire smoke season so see if there are improvements to our surveillance efforts using these data.

Surveillance System Impact:
This project will improve surveillance efforts for monitoring the health impacts of wildfire smoke in King County in order to inform preparedness and response efforts. These efforts can also be disseminated to improve surveillance efforts in other parts of Washington and nationally.

Major Project Title: Analyzing and developing data dashboards for key indicators on climate and health

Major Project Description:
In 2022, the Climate and Health Equity Initiative formed a Climate Data Advisory group to help identify a set of key indicators to monitor around climate and health in King County. Indicators are derived from a variety of data sources including emergency department visits, Emergency Medical Services incidents, lab data, hospitalization data, and survey data. Indicators fall into one of six domains (i.e. extreme weather, air quality, vector borne disease, mental health, food security, food/water borne illness). We are currently finalizing these indicators and will begin analyzing and disseminating these indicators for decision makers and the public.

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Major Project Objectives:
The objectives of this project include:
1) use R to analyze environmental exposure and health data related to one or more domains
2) develop a data dashboard that will be shared publicly for each indicator, including disaggregating data by demographics, geographic location, and other available information, and
3) identify relevant sensitivity and adaptive capacity measures that are relevant to the indicator and conduct more in-depth analyses, and 4) write up findings to include in a dissemination report of all indicators.

Major Project Impact:
This project will contribute to building and expanding our climate and health surveillance system, by making climate and health data available to inform programs, policy makers, and the public. This will help us gain a more in depth understanding of who is most impacted by certain climate effects, how we can improve adaptive capacity, and inform programs across the county.

Additional Project #1 Title: Understanding community experiences around climate change and mental health
Project #1 Type: Surveillance Activity

Project #1 Description:
Climate change has a variety of impacts on mental health from both the impending impacts of climate change as well as from acute climate events. Understanding the mental health effects of communities impacted by climate change is essential to help provide necessary information and resources around this issue. Furthermore, mental health impacts of climate on youth are a growing concern. There are limited data around this in our local community and there is an opportunity to collect quantitative and/or qualitative data to inform our program and adaption efforts.

Project #1 Objectives and Expected Deliverables:
The objectives and deliverables of this project would be:
1) identify current gaps in data available on this topic including school health data that may indicate climate impacts of youth while at school
2) identifying data sources or methods that can be used to expand knowledge in this area
3) collect qualitative data to support our knowledge gaps, and
4) analyze data and disseminate results to inform other programs and actions.

Project #1 Impact:
This will help expand our knowledge on the mental health impacts and perceptions of climate change in King County, particularly in youth populations. These data will help us gain more in-depth knowledge on perceptions and feelings around climate change that can be used for program and/or policy efforts.

Additional Project #2 Title: Analyzing environmental exposure and health outcome data around extreme weather events
Project #2 Type: Major Project

Project #2 Description:
Many of the health impacts of extreme weather events, like wildfire smoke or heat, are not yet well identified or understood with respect to susceptible and vulnerable groups. As more health impacts are identified and tracked, it would be useful to add health outcome data to existing environmental health maps, such as the Washington Tracking Network's Environmental Health Disparities Map. For example, a map could demonstrate where air pollution data, wildfire smoke data, and health impacts align and could help us address extreme weather impacts in areas where impacts are greatest and where cumulative impacts are most likely. Furthermore, many mapping tools include cardiac

outcomes and low birth weight, but additional health impacts have been identified in the literature and should be explored for addition.

Project #2 Objectives and Expected Deliverables:
The objectives and deliverables of this project include:
1) identifying relevant environmental (e.g., wildfire smoke AQI, PM2.5 data, weather data, pest related data) and health (e.g., allergies, pregnancy and birth outcomes, pesticide poisonings) data
2) identify and access relevant data, collaborating with partner agencies (e.g., WA State Department of Health, Puget Sound Clean Air Agency, UW staff, and Hazardous Waste Management Division Staff)
3) work with Environmental Health GIS specialist to begin developing data to map and design map, and
4) develop guidance on how best to identify and analyze data for mapping climate and health impacts for King County.

Project #2 Impact:
This project will help King County staff prioritize actions and resources in areas where the impacts are greatest, especially during extreme weather events or emergencies. The map could also eventually become a public tool to help communities understand their climate risks and strategies to build resiliency.

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

As a part of the environmental health and climate teams there will be many opportunities to play a role in preparedness and response efforts. The Preparedness unit of Public Health activates their Health and Medical Area Command (HMAC) when there are emergency response efforts needed, such as during periods of extreme heat, extreme cold, or other public health emergencies (e.g. COVID-19). The fellow will have the opportunity to closely collaborate with the Preparedness team by providing relevant data, participating in coordination calls, joining staff in site visits, developing needed education and outreach materials, and helping to conduct after-action evaluations of the response.

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

There will be opportunities for the fellow to work with other sections of the health department, such as our Communicable Disease Epidemiology team to conduct cluster or outbreak investigations. The fellow would work with their team on a short-term basis on a cluster or outbreak investigation. One example of possible work could be on outbreak investigations related to COVID-19 at certain facilities (e.g. long term care facilities, schools) or another communicable disease investigation.

Please Describe the Fellow's Anticipated Role in the COVID-19 Response – Include Activities and Time Allocation

The fellow will have the opportunity to assist the Communicable Disease Epidemiology, Environmental Health, and Wastewater Treatment plant team in analyzing and synthesizing our King County wastewater testing data that has been generated through the CDC's National Wastewater Surveillance System program. These data, which include data from the three major plants in King County (sampling 3 times per week), will be assessed for the sampling periods King County participated in. The fellow will engage with CDC to better understand how the data were analyzed by CDC staff, and conduct an overall synthesis of the data through time, comparing results to the clinical testing data that are available as well as environmental factors that may have influenced sample counts. This synthesis will help PHSKC staff to: 1) better understand where there are concerns or assumptions in the data process that are important to be aware of, 2)

understand how the data are tracked through time versus the clinical data, and 3) understand how weather events in King County impact the sample data at each of the large wastewater treatment plants.

Please Describe Opportunities for Fellows to Work in Health Equity as well as Incorporating Diversity, Equity, and Inclusion into their Work

Public Health—Seattle & King County has a strong commitment to health equity and social justice, and all projects that the fellow works on will be approached using a health equity lens. The fellow will have opportunities to work on equity focused projects around disproportionate environmental and climate impacts, as we know environmental and climate change do not impact communities equally. Public Health also has a strong focus on involving and engaging community throughout our work, and the fellow will have the opportunity to engage with community partners through various projects. The fellow will also have an opportunity to participate in equity and social justice workgroups that are held throughout the health department to advance our work in this area.