

**ID: 57714274**

**Environmental Health - Host Site Description**

**Washington State Department of Health**

**Assignment Location:** Shoreline, US-WA  
Washington State Department of Health  
Office of Communicable Disease Epidemiology

**Primary Mentor:** Kacey Ingalls, PhD, MPH  
Disaster Epidemiologist / Epidemiologist III  
Washington State Department of Health

**Secondary Mentor:** Randy Stalter, PhD, MPH  
Climate Commitment Act Epidemiologist / Epidemiologist II  
Washington State Department of Health

**Work Environment**

100% Virtual

**Assignment Description**

The fellow will report to the primary mentor, Dr. Ingalls, who leads the Disaster Epidemiology Program. The Disaster Epidemiology program is small and recently established. Therefore, in addition to working on the proposed projects, the fellow will have opportunities to gain experience in workplan creation, strategic planning, and writing emergency response plans. Upon starting, the fellow will meet with their mentors to establish a regular check-in cadence and structure that fits best with their working style. A typical day includes leading or participating in internal and external project meetings and conducting independent or collaborative work in virtual spaces. There may be opportunities for participating in in-person meetings and trainings, if desired. Day-to-day activities might also include helping to establish our disaster epidemiology presence within the Office of Communicable Disease Epidemiology. This may look like presenting at section or office meetings on disaster epidemiology work, communicating strategic and response plans with partners, or participating in conversations around disaster epidemiology best practices. The fellow will have the opportunity to work with the primary mentor to identify tasks that best meet their professional and personal goals.

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

The AEF will have access to a range of statistical tools, including R Studio, Python, Power BI, ArcGIS online, and REDCap. Drs. Ingalls and Stalter have extensive experience working with many DOH datasets and data systems and will work with the AEF to complete the administrative requirements to access data they need. Additionally, our agency has an epidemiology coders workgroup, which the fellow can join, to connect with other analysts and share code, tips, and training resources. Available state health datasets include: syndromic surveillance (RHINO), hospitalization records (CHARS), death certificates, birth records, EMS events (WEMISIS), Washington Disease Reporting System (WDRS), WA BRFSS, WA Healthy Youth Survey, Washington State Cancer Registry (WSCR), and others. We can also connect the AEF to other state agencies that have potentially useful exposure data, including air quality data from the Department of Ecology and weather and climate data from the National Weather Service.

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**Projects**

**Surveillance Activity Title: Estimating Adverse Birth Outcomes Associated With Air Pollution in Washington Communities Highly Impacted by Air Pollution**

*Surveillance Activity Description:*

Under the Climate Commitment Act, the WA Department of Ecology, with support from WA DOH, is directed to assess the health impacts of criteria air pollutants in 16 communities highly impacted by air pollution every two years. Exposure to specific air pollutants, particularly fine particulate matter (PM2.5), is associated with various adverse birth outcomes, including preterm birth and low birth weight. However, birth outcomes have not previously been included in the health impacts assessment. The fellow will gain familiarity with state vital records and birth data as well as the Ecology's air quality datasets, state population estimates, and the published literature to estimate the numbers of adverse birth outcomes associated with PM2.5 exposure in the 16 communities highly impacted by air pollution in WA. Findings will be written up for inclusion in a public-facing report and, depending on the fellow's capacity and interest, can be submitted for publication in a peer-reviewed journal.

*Surveillance Activity Objectives:*

- Objective 1: Gain familiarity with relevant state data sources, including the DOH birth dataset and Department of Ecology air monitor data, and develop an analysis plan. This will include identifying the variables that are needed, developing definitions for adverse birth outcomes, determining appropriate population denominators to base calculations on, and developing statistical methods for estimating the number of adverse birth outcomes associated with PM2.5 exposure.
- Objective 2: Estimate counts of adverse birth outcomes associated with PM2.5 exposure in communities highly impacted by air pollution. The fellow will conduct modeling using EPA's Environmental Benefits Mapping and Analysis Program (BenMAP) software, or another statistical package as appropriate. This will involve development of analytic datasets and collaboration with a data scientist at the Department of Ecology to run and refine the models. Deliverables will be output files of estimates and tables and visualizations of the results to be shared with DOH and Ecology colleagues for feedback.
- Objective 3: The fellow will summarize the findings and any implications and recommendations for inclusion in the 2027 Environmental Justice report, a comprehensive evaluation of the health impacts of air pollution in Washington communities highly impacted by air pollution under the Climate Commitment Act, which is published to the public. The fellow may also lead the writing and submission of a peer-reviewed journal article.

*Surveillance Activity Impact:*

The findings from this analysis of surveillance data will help to inform communities about the health impacts of air pollution on pregnant people. Findings may help to guide public health risk communication and development of educational materials for pregnant people who might have higher exposure to sources of PM2.5, including wildfire smoke, wood burning, or industrial facilities.

**Surveillance System Evaluation Title: Enhanced Public Health Surveillance for FIFA World Cup**

*Surveillance System Evaluation Description:*

The 2026 FIFA World Cup will be hosted across three countries, the United States, Mexico, and Canada, in the summer of 2026. Washington State will be hosting multiple matches, as well as fan zones, and base camps. It is anticipated that there will be approximately 750,000 people visiting Washington State during this time. This is the largest sporting event in Washington State history. In preparation, the WA DOH Disaster Epidemiology program has been leading an internal and external focused enhanced surveillance workgroup. This project would be focused on completing and closing out surveillance activities spearheaded by our current Applied Epidemiology Fellow.

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*Surveillance System Objectives:*

There are a number of project objectives associated with this activity.

- Objective 1: Analyze WA DOH public health surveillance activities during the World Cup timeframe through a systematic process, such as a facilitated lookback, to promote continued improvement in public health emergency preparedness and response
  - Expected deliverable A written report outlining the findings from the facilitated lookback, which includes detailed areas for improvement and lessons learned.
- Objective 2: Develop an epidemiological focused ‘areas for improvement’ task library, to track findings from after action reports, facilitated lookbacks, and other systematic review processes that impact epidemiological preparedness and response.
  - Expected deliverable - A library of improvements that includes a method for tracking progress.
- Objective 3: An evaluation of our disease and condition prioritization matrix that was developed to support public health surveillance preparedness for the World Cup.
  - Expected deliverable - A written evaluation of the matrix, including defined evaluation criteria and areas for improvement or considerations. Incorporate results from this evaluation into agency response plans where applicable.

The fellow will be expected to work collaboratively with others across the agency in achieving these objectives. After the completion of each objective the fellow will be asked to present findings to agency leadership. Throughout these processes there may be opportunities to explore submitting findings to journals or submitting abstracts to preparedness conferences.

*Surveillance System Impact:*

The lessons learned from the FIFA World Cup events taking place in Washington State will be instrumental in planning for and responding to public health threats for future mass gatherings. This event is very unique because it incorporates widespread public health planning efforts across the United States. The work that the fellow completes on this project will be some of the first analysis done on an event of this scale in our State.

**Major Project Title: Development of Heat Thresholds and Recommendations for WA Heat Response Plan**

*Major Project Description:*

Washington’s Climate Resilience Strategy (CRS) was launched in 2024 to help communities, infrastructure, and natural and working lands prepare for and adapt to impacts of climate change. As one of 10 contributing state agencies, WA DOH is leading implementation of some CRS actions under an initiative called “Washington Interagency Smoke & Extreme Heat Planning” or WISEHP. This effort includes development of an interagency plan to coordinate extreme heat and smoke resilience and response across state agencies. The fellow will work with the DOH CRS Implementation team to contribute to the development of the WISEHP interagency plan. The fellow’s project will also contribute to DOH’s internal knowledge systems and plans for anticipating extreme heat and preventing heat related illnesses.

*Major Project Objectives:*

- Objective 1: Design and conduct analyses using DOH datasets (e.g., syndromic and EMS surveillance data) and National Weather Service HeatRisk categories and NWS Warning Watch Advisory (WWA) protocols to identify heat thresholds for public health action during extreme heat events. The fellow will get acquainted with surveillance systems that collect health indicators related to heat exposure. Using quantitative methods, the fellow will identify thresholds (e.g., how many days a community is at a specific HeatRisk category) that are associated with increases in heat-related illnesses, chronic conditions exacerbated by heat, hospital capacity indicators, or other relevant health indicators as deemed appropriate. Expected deliverables: A data analysis

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plan to be shared with state extreme heat collaborators for review; summary write-up of methods findings, including tables and figures.

- Objective 2: Develop recommended actions based on the heat risk threshold(s) identified in Objective 1. As part of this process, the fellow will develop an understanding of WA state agency roles and responsibilities, programs, funding, and resources, as well as heat resilience and response efforts by state and local jurisdictions outside of WA. This will entail reviewing results of an upcoming landscape analysis and needs assessment of heat response work across agencies and developing connections with heat subject matter experts at WA DOH and other WA state agencies. Expected deliverable: Write-up of recommended action steps for the WISEHP interagency plan. Depending on the fellow's interests and capacity, the fellow may also contribute to writing other sections of the plan.
- Objective 3: Contribute to communication and implementation of the WISEHP interagency plan, including active participation in meetings with state and non-state partners across WA. Expected deliverables: may include one-pagers, presentations, or other materials used to communicate proposed heat risk thresholds and other information in the heat response plan to state, local, and community partners.

*Major Project Impact:*

This work will support the development of a statewide interagency plan for heat and smoke with clearly defined roles, responsibilities, and action steps for state agencies during extreme heat events. The expected outcome is improved coordination of heat resilience and response work among state agencies, better communication and coordination with partners outside of the state government and prevention of adverse health outcomes during heat events.

**Additional Project #1 Title: Validation and Expansion of Climate Health and Risk Tool (CHaRT), an Online Climate Hazards Resource Developed by Researchers at UW**

**Project #1 Type: Other**

*Project #1 Description:*

The Climate and Health section within the Office of Environmental Public Health Sciences at DOH is collaborating with investigators at the Center for Health and the Global Environment (CHaNGE) University of Washington to optimize models that they previously created for the Climate Health and Risk Tool (CHaRT). CHaRT is an online, interactive tool that allows users to explore how a variety of climatic, environmental, social, and economic factors contribute to climate-related health risks faced by communities. This information aims to help decision-makers and community members develop plans to protect communities and public health under changing climate-related environmental conditions. The tool currently focuses on extreme heat risk in Washington, but the team has interest in applying the tool to other climate hazards as well.

We have completed the first stage of analysis to validate the tool using syndromic and EMS data reported to DOH. Additional work will be needed to: (1) collaborate with UW to further tune the extreme heat CHaRT model using DOH data, including exploring how additional data sources (e.g. all-payer claims data [APCD]) can be used to improve the tool, (2) communicate the tool to local health and community partners, and (3) exploring how we can expand the tool to include other climate hazards.

*Project #1 Objectives and Expected Deliverables:*

- Objective 1: Validate CHaRT using WA DOH data sources. Once UW completes tuning the model, there will be a need to further validate the updated models using DOH data sources. The fellow will contribute to the validation of future iterations of the tool using EMS and syndromic data, and potentially integrating new datasets (e.g., APCD) into the validation process.
- Objective 2: Communicate the tool to local health and community partners. Once the model tuning and validation work is completed, there is a need to communicate the tool to public health partners who focus on

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climate preparedness and response work, especially extreme heat. The fellow will work with UW and DOH members of the CHaRT team to develop an engagement plan and materials for communicating the tool to partners. Engagement with partners will include determining how the tool can support public health decisions and practice in WA.

- Objective 3: Exploring expansion of the tool to include other climate hazards (e.g., wildfire smoke, drought, flooding). After the extreme heat models are finalized, the fellow will evaluate and prioritize which additional climate hazards will be included in CHaRT based on the impact of the hazard in WA and availability of necessary data sources. This will include identifying appropriate exposure, sociodemographic, and health datasets to use in the model, creating analysis datasets, and potentially contributing to the validation and tuning of the models for any new climate hazards.

*Project #1 Impact:*

This work will help with the development and introduction of a novel climate hazards tool for public health preparedness and response staff across the state. Local health jurisdictions may use the tool to understand which census tracts have the most vulnerable populations during extreme heat events and allocate resources and communicate risks appropriately.

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

The Disaster Epidemiology Program sits within the Office of Communicable Disease Epidemiology’s Readiness and Response Section. This will also provide the fellow with first-hand experience in strategic planning, emergency response plan writing, work plan creation, and participating in training activities. Part of the training for the disaster epidemiology team is to complete FEMA ICS trainings. The fellow’s primary mentor leads the Disaster Epidemiology Program and day-to-day activities would support the program as a whole. Much of the fellow's time will focus on emergency preparedness, response, or recovery in some capacity given the nature of the projects outlined in this application and the roles and responsibilities of both the primary mentor and the secondary mentor.

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

In the event of a cluster or an outbreak the fellow may potentially be assigned to the Surveillance and Informatics IMT group and have the opportunity to be involved in or play a lead role in outbreak investigations. In addition to investigations, they can help create outbreak reports for leadership if applicable. Depending on the needs of the response, the fellow’s activation time will vary. The mentors will work with IMT Leadership to ensure that the fellow is able to continue with the major projects of this program. The fellow would gain IMT experience and learn how disaster epidemiology influences response operations. Outside of an IMT activation, there may be additional opportunities to support our local health partners in their outbreak response and investigation either through partnering with our CDC EIS officers or through joining the Epidemiological Response Team (ERT). The ERT is a FEMA credentialed Type II response team that provides emergency epidemiological support to our local and Tribal health partners and is led by the Disaster Epidemiology team. Our previous fellow had the opportunity to support the Highly Pathogenic Avian Influenza response as an ERT member as well as a local outbreak investigation with our EIS officer. The fellow will also be invited to join a daily meeting within the Office of Communicable Disease Epidemiology to discuss new cases of communicable diseases and potential outbreaks.