

ID: 45552062

**Maternal and Child Health, Substance Use/Mental Health - Host Site Description
State of Alaska**

Assignment Location: Anchorage, US-AK
State of Alaska
Department of Health/ Division of Public Health

Primary Mentor: Jared Parrish, PhD, MS
Senior MCH Epidemiologist
State of Alaska

Secondary Mentor: Margaret Young, MPH
Unit Manager
State of Alaska

Work Environment

Hybrid

Assignment Description

The fellow will work in the Maternal Child Health (MCH) Epidemiology Unit but will also interact frequently with staff from other Units in the Section of Women's, Children's, and Family Health (WCFH), other Sections in the Division of Public Health, and community-based partners. MCH Epi is a Unit within WCFH, Division of Public Health, Alaska Department of Health. WCFH is Alaska's Title V agency, responsible for improving the health of all mothers, children, and youth in the state, including children with special health care needs, through provision of gap-filling direct services as well as infrastructure-building, population-based, and enabling services. The MCH Epi Unit provides the backbone of data that assists with evaluation, planning, and quality assurance for many programs in WCFH.

The MCH Epidemiology team is a group of about 15 members who collaborate and appreciate one another's diverse expertise yet also enjoy quiet time independently studying data and working on projects. The CSTE fellow will have the opportunity to be involved in important work that can help to reduce health disparities and improve understanding of the health status and experiences of maternal and child populations in Alaska. The Unit welcomes CSTE fellows as full members of the scientific team, including them in decision-making and strategic planning processes, regular unit meetings and bi-weekly informal Epi Bashes. Fellows are encouraged to identify research needs and independently develop strategies for filling these gaps.

The assignment will provide opportunities to interact with senior epidemiologists and other subject matter experts and to learn about social determinants of health in Alaska and opportunities for prevention. The primary staff the fellow will work with on a day-to-day basis will include the MCH Epi Unit Manager (secondary mentor), the Senior Epidemiologist (primary mentor), the Adolescent Health Program Coordinator (tertiary mentor), and Section of Chronic Disease Prevention and Health Promotion staff with the Alaska Youth Risk Behavior Survey program.

The fellow will have the freedom to work on a wide variety of topics of interest and will have access to data from all of Alaska's MCH surveillance programs and Health Analytic and Vital Records. Initial work will likely include analysis of Alaska YRBS survey data and birth and death certificate data. Secondary projects may include collaborations with the WCFH school health nursing consultant.

A fellow's day-to-day activities may include designing studies and programs, writing protocols and data sharing agreements, evaluating databases, writing reports and peer-reviewed manuscripts, attending meetings or teleconferences with partners throughout the state, and contributing to team meetings. The fellow will participate as a research lead and research team member for multiple projects, which will require the fellow to prioritize tasks, schedule

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meetings, and multi-task projects to meet deadlines. The fellow will utilize computers regularly for analysis, communication, and document development.

An example of activities for a single day might include running statistical analyses in SAS or R, creating charts or graphs for a presentation or report, attending a staff or other team meeting, and reviewing literature in PubMed and developing novel methods to address specific data limitations or gaps. There may also be opportunities to interface with our Youth Alliance for a Healthier Alaska using the Participatory Action Research Design methods which includes youth driven collaboration methods, discussions, and collecting youth feedback on approaches and innovation information.

This assignment will also provide the applicant with the opportunity to live in Alaska and explore this magnificent area of the world. The fellow will work in Anchorage, Alaska, central to multiple outdoor and civic/cultural activities. Anchorage is bike friendly with paved and lighted paths, downhill and single-track trails making year-round riding/commuting a pleasure. Every imaginable outdoor activity exists including skiing (downhill and cross-country), climbing, hiking, kayaking/rafting, camping, hunting, fishing, snow machining, and dog sledding, all within a short distance of Anchorage. The fellow will be encouraged to explore this great state and become connected with people who share these interests. Anchorage also has a large variety of cultural activities including a large performing arts center, a local opera company, symphony, and chorus, numerous concert venues, roller derby and plenty of niche restaurants. Residents of Anchorage are from around the country and the world, giving the city a quasi-international feel. In fact, it was recognized as having the most languages spoken in the public school system of any city in the country and its program for school-aged refugees has gained national recognition. Winters are moderate (average temperature in Anchorage is 20oF), although we do experience periods of temperatures in the single digits usually for a few weeks each year (not necessarily consecutive). Many ask about the “long dark winters”, but in Anchorage on the shortest day of the year we still enjoy nearly 6 hours of sunlight and in the summer the longest day of the year has 22 hours of functional daylight. This dichotomy results in an always changing landscape to enjoy a variety of different activities.

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

Because the MCH Epi Unit focuses on a specific population group, as opposed to a given exposure or outcome topic, we have access to a wide variety of data. The CSTE fellow will have access to all databases and surveillance systems necessary to accomplish the proposed or self-identified topics, including annually updated vital statistics datasets that include all births and deaths in the state, Alaska PRAMS and CUBS (3-year follow-up to PRAMS), the Maternal Child Death Review, the Alaska Birth Defects Registry, Hospital discharge, School Climate and Connectedness data, victimization data, and the Alaska Child Abuse and Neglect Linkage project. Although the MCH Epi Unit has not recently had access to a YRBS research dataset, we do not anticipate that it would be difficult to establish a new data sharing agreement with this program. Analysts in the Unit also have regular and ongoing access to Medicaid billing data (which requires additional nominal training) and can request Behavioral Risk Factor Surveillance System data for specific analyses. MCH Epidemiology staff are skilled with and use the following statistical software for analysis: R, SAS, SUDAAN, and SPSS. Unit staff also have expertise in applying data science techniques (e.g., Machine Learning) and LLMs. We can support the coding needs of a fellow from basic frequency analysis to more complex simulation or statistical modeling. Further we can help support proper data management and assist in avoiding common data management pitfalls. We also routinely use Excel and MS Access for data management, analysis and presentations. Multiple MCH Epidemiology staff are available to support a fellow in their use of these software and surveillance systems.

The MCH Epidemiology Unit has many skilled methodologists with strong study design and biostatistics backgrounds that can support this fellow. The primary mentor regularly provides methods mentoring to epidemiologists and public health colleagues across the state. The fellow will be encouraged to participate in the monthly Epidemiology Methods and Analytics group which is lead by Dr. Parrish. The fellow will be encouraged to prepare for and lead discussions in this

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group. The fellow will also be encouraged to take statistical and coding courses on Data Camp as well as obtain training on data visualization using tools such as Tableau, Power-BI, and R shiny.

Projects

Surveillance Activity Title: Adolescent Health Monitoring in Alaska

Surveillance Activity Description:

Using data from Youth Risk Behavior Survey, vital records, the School Climate and Connectedness Survey and the School Health Profiles Survey, this project will develop and publish a comprehensive Adolescent Health publication or series of publications. Key data points will likely include percent of adolescents with four or more supportive adults (self-reported), unintended pregnancy, self-protective behaviors, and key risk factors for adolescent morbidity and mortality. These indicators will be stratified by relevant demographic categories, which may include region of residence, age, and race.

Surveillance Activity Objectives:

The objective of this activity is to identify and gather appropriate data from different existing surveillance systems, create data visualizations including tables and figures, identify and discuss emerging trends or disparities, and include data in an informative and concise report or series of reports. This may also involve conducting literature reviews to develop a brief background narrative about the importance of each indicator or measure, and equity considerations related to the indicator. Some basic interpretations of the data will be provided, as well as recommendations for addressing any identified issues. In addition, the fellow will need to ensure accessibility checks are completed on the full report for posting as an ADA-accessible document on the Adolescent Health website.

Surveillance Activity Impact:

Increase health care provider and public awareness and understanding of key risk factors affecting adolescent health in Alaska, and current practice recommendations for improving Alaska adolescent health. The publication will also serve as a baseline and establish the data pipeline for future ongoing reports to facilitate monitoring adolescents' health over time.

Surveillance System Evaluation Title: Evaluation of the Youth Risk Behavior Survey (Alaska YRBS)

Surveillance System Evaluation Description:

Multiple components of Alaska YRBS have need of evaluation, with upcoming opportunities related to the transition to the challenges with school district participation and an online component for completing the survey. A fellow might analyze the impact of these changes on the overall response rate as well as sub-population response rates. The YRBS response rate has been declining for many years. The fellow could examine past trends in response rates by a variety of demographic groups (including mapping respondents using geocoded data) and look at how these might differ by mode of response or other operational factors. This would be used to inform and implement a stratification change to the sampling of populations. Finally, accuracy of survey responses could be evaluated by linking YRBS responses to other databases available to the MCH Epi Unit, including Medicaid, and vital records. As the only source for comprehensive adolescent health data in Alaska it is critical that this source be evaluated to identify critical needs to support it or identify alternative methods to obtain this information going forward.

Surveillance System Objectives:

The objective of this project is to evaluate the impact of multiple upcoming operational changes to the YRBS program and increase our understanding of how these changes may affect the accuracy and generalizability of the survey data.

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Deliverables could include a written report or presentation to be shared both with Alaska YRBS staff as well as CDC, and recommendations for future operational and analytical adjustments.

Surveillance System Impact:

The YRBS survey has been ongoing in Alaska for over 30 years. The goal of YRBS is to improve the health of adolescents by reducing adverse outcomes such as high rates of suicidality, experienced violence, lacking supportive adults, morbidity, and mortality. This project will improve the understanding of Alaska YRBS staff of how recent trends in response rates and upcoming operational changes may impact the quality of YRBS data, and where adjustments may need to be made to enable the program to continue to serve as the premier source of data on perinatal issues in the state and nationwide.

Major Project Title: Understanding Youth Mental Health and the impacts of Social Media Use and Screen Time

Major Project Description:

Like nationwide trends, youth suicide rates in Alaska have been increasing for the past decade, with particularly sharp increases among residents of some regions of the state. This project would take a holistic and multi-methods approach to understanding youth mental health in Alaska and the contributing factors and disparities in suicide attempt and completion rates.

Major Project Objectives:

- Identify any clusters or communities with particularly high rates, and qualitatively examine potential factors in those places, such as losing access to subsistence food sources, climate change, no running water, school closures or declining funding, and intergenerational trauma.
- Identify Youth Risk Behavior Survey Districts with high rates of social media and screen time use and higher rates of poor mental health and suicidality.
- Stratify rates by race for the Anchorage region and consider how geographic representation and indigenous youth in urban settings may differ (or not) from those in rural communities.
- Examine how suicidality may be differently experienced in more historically oppressed populations.
- Examine how the resiliency of youth in Alaska that were school age or in high school during the COVID pandemic may have been impacted. This could include linking birth certificates with COVID testing or vaccination data, Medicaid, or exploring other opportunities.

Major Project Impact:

Understanding the impacts of social media on youth mental health is critical for identifying potential mutable factors to address the extremely high suicide rates in Alaska. These data can then be used by adolescent advocates and partners to develop prevention messages and targeted prevention efforts.

Additional Project #1 Title: Implementing AI models in child death review

Project #1 Type: Major Project

Project #1 Description:

Using a LLM model to assist with developing narratives for the Maternal Child Death Review (MCDR) program. Abstractors spend extensive amounts of time review, synthesizing, and summarizing information from the Medical Examiner, Law Enforcement, Child Welfare, Medical Records, and other records. The Alaska Violent Death Reporting System has worked to develop a LLM to create abstractor narratives using these sources of information. The fellow will work with the current Injury Epidemiologist (a former CSTE fellow of ours) to expand this LLM into MCDR. This will require understanding LLMs, their limitations, and how to monitor them. It will also expose the fellow into the workings

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of state government and navigating technical challenges with applying innovative solutions within a secure IT environment.

Project #1 Objectives and Expected Deliverables:

This project will incorporate LLMs into the MCDR program to increase narrative writing efficiencies. Model training will need to be completed, followed by validation to ensure that the narratives produced are consistent, accurate, and informative.

Project #1 Impact:

Synthesizing information across multiple records (e.g., medical, law enforcement, child welfare, medical examiners office) is time consuming, mentally taxing on staff, and subject to a high degree of variability between abstractors. By leveraging AI into developing narrative summaries, delays in reviews resulting from this task can be reduced, staff wellbeing improved, and reliability measured. This will ultimately help improve the death reviews, leading to improve population based public health recommendations.

Additional Project #2 Title: Describe factors associated with engaging with the juvenile Justice System

Project #2 Type: Major Project

Project #2 Description:

Understanding the early childhood, familial, and community factors that are associated with adolescents engagement with the juvenile justice system is critical for prevention. The Alaska Longitudinal Child Abuse and Neglect Linkage project (ALCANLink) links PRAMS respondent children with administrative data each year. Child born between 2009 and 2021 are prospectively followed. This project will link early cohort years (those that are now old enough to engage with this system) to Juvenile records and develop a research dataset that includes data from child welfare, education and early education, community factors, and selected PRAMS and CUBS survey questions. Using survival analysis, and mixed models, this project will seek to identify factors that impact trajectories.

Project #2 Objectives and Expected Deliverables:

This project will develop a linked research dataset, calculate incidence proportions, measure risk, and identify associated factors that predict Juvenile Justice system involvement. Key deliverables will include presentations to local and national audiences, short reports/factsheets, and a peer-reviewed publication.

Project #2 Impact:

Understanding life course trajectories of vulnerable Alaska children can help identify upstream prevention opportunities. Due to the large number of adolescents that are place in out of home care it is critical that we understand and identify intervention/prevention opportunities. These factors will help develop targeted prevention strategies.

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

The fellow will be invited to participate in any MCH/Emergency Response training or learning collaborative that may arise during the time of their fellowship. These types of opportunities have been more frequent lately, and our Section is committed to engaging more with the Preparedness and Emergency Response groups in our Division. If a new public health emergency arises, the fellow will be invited to assist with response as needed. If possible, they will participate in any role playing preparedness activities that may be conducted during their fellowship period.

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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)

As an MCH-based fellowship, cluster and outbreak investigations will not be a primary focus or activity for the fellow. However, due to our close relationship and physical location in the same building as the Section of Epidemiology, the two mentors will reach out to coordinate having the fellow participate in a cluster or outbreak investigation with staff from the section of Epidemiology as appropriate. It is anticipated this might be an activity that would take place over a few weeks to a couple of months' period during the fellowship, with up to 50% of the fellow's time during the course of the investigation.