

Winter 2025 - MPH Epidemiology Practicum Abstracts

S.F

Public Health Agency of Canada

I am a Junior Public Health Officer at the Public Health Agency of Canada (PHAC), working in collaboration with the Saskatchewan Health Authority's (SHA) Tuberculosis (TB) Prevention and Control Program in the Canadian Public Health Service (CPHS). In this role, I develop and analyze key performance indicators (KPIs) to assess the effectiveness of TB prevention and control efforts in Saskatchewan. These KPIs are derived from available variables in Saskatchewan's Tuberculosis Information System (TBIS) and are aligned with KPIs included in the Canadian TB Standards, 8th Edition. To ensure the clinical relevance of these KPIs, I completed CDC courses designed for healthcare practitioners, covering TB transmission, pathogenesis, diagnosis, and treatment. I further analysed KPIs against Canadian TB Standards to evaluate the effectiveness of Saskatchewan's TB prevention and control efforts. My analysis considered the province's large Indigenous populations and the long-term socioeconomic effects of colonialism on health outcomes. I developed R-scripts to automate KPI generation and analysis for updated data and reproducible KPI reports in the future. I generated an interactive dashboard to disseminate complex findings into comprehensible formats, while including key gualifiers such as age, ethnic origin, and location to provide context in observed trends and allow for targeted recommendations. I navigated data completeness, reporting, and privacy challenges while ensuring high quality outputs to inform changes in public health policy, health data reporting, and clinical practices.

C.P Public Health Agency of Canada

During my practicum with the PHAC-HAIPC team, I worked on several projects related to infection prevention and control guidelines. One of my main tasks was helping to update the personal protective equipment (PPE) section of the Routine Practices and Additional Precautions (RPAP) guideline. I began by doing a quick literature search to find systematic reviews on how effective gloves and eye protection are in preventing the spread of pathogens through the air, including both airborne and droplet transmission. After discussing the findings with my team, we decided to conduct a systematic review of reviews on the use of gloves, eve protection, and gowns. We developed a search strategy and met with a librarian to finalize it. I received a list of references and helped screen 152 citations. We then reviewed 84 full-text articles and extracted relevant data. We also contacted the library to get access to three articles that were not available online. I also helped with another review focused on the effectiveness of N95 respirators in airborne infection isolation rooms (AIIR) compared to non-AIIR settings. We screened 27 citations and reviewed two full-text articles. In addition, I did a quick search for existing reviews on hand hygiene and helped summarize the findings. Outside of research work, I designed six banner options for the HAIPC team to use in communications and conferences. This practicum gave me hands-on experience with evidence synthesis and improved my understanding of how public health guidelines are developed. It also strengthened my skills in literature searching, screening, and teamwork.

Dalla Lana

School of Public Health T.T Public Health Agency of Canada/National Microbiology Lab

During my practicum placement, I worked with the wastewater surveillance team at the Public Agency of Canada (National Microbiology Lab), where I contributed to monitoring and reporting COVID-19 trends across Canada. My primary responsibilities included creating weekly and monthly wastewater surveillance reports, a consistent task throughout my placement. These reports involved modeling SARS-CoV-2 levels and highlighting trends across major cities. I used R programming to automate the report generation process and worked on improving the efficiency of the code. Additionally, I gained valuable experience using Linux for data processing and analysis and refined the visualizations to improve clarity and effectively communicate key findings.

In addition to the regular report tasks, I worked on longer-term projects over the course of the practicum, including assessing the feasibility of incorporating additional cities with limited data into the analysis. I also analyzed recent data to establish thresholds for SARS-CoV-2 levels, which would serve as reference points for evaluating current trends. Throughout my placement, I met with my supervisor weekly to discuss my progress on these projects and attended numerous meetings with my team and other internal and external groups. These meetings provided valuable opportunities to learn about the work others were doing and expand my understanding of various fields within public health.

A.A Centre for Global Child Health, The Hospital for Sick Children

During my practicum at The Hospital for Sick Children's Centre for Global Child Health, I contributed to the secondary analysis of a cluster-randomized controlled trial conducted in Gilgit-Baltistan, Pakistan. The trial evaluated an integrated Newborn Care Kit (iNCK) designed to reduce neonatal and maternal health risks through improved infection control, thermal regulation, and postpartum hemorrhage prevention. Building on data collected at multiple time points, I examined predictors of adherence for both newborn and maternal components of the kit, as well as caregivers' willingness-to-pay (WTP). These analyses involved creating an assetbased wealth index through principal component analysis, implementing ordinal logistic regression models, and crafting a comprehensive Statistical Analysis Plan. Despite challenges such as data inconsistencies, time constraints, and communication hurdles, I refined the dataset, clarified methodological approaches, and established clear steps for knowledge translation. Key findings showed exceptionally high adherence to most components-over 99% for the clean birth kit and chlorhexidine. WTP was right-skewed, with a modal bid of 500 PKR (~2.51 CAD) and 12% of participants offering 1,500 PKR (7.53 CAD) or more, reflecting both strong perceived value and income constraints. Knowledge of components was high (>96%) except for sunflower oil, which appeared to suffer from ambiguous survey wording. Acceptance of the iNCK was near-universal: over 99% of caregivers found it safe, helpful, and would recommend it to others. Overall, these findings offer practical guidance on improving the iNCK intervention, including targeted training for Lady Health Workers, equitable cost-recovery models, and scalable policy recommendations to enhance maternal and newborn health outcomes in resource-limited settings.



C.M Public Health Ontario

I completed my second MPH practicum in the Applied Public Health Sciences (APHS) Unit at Public Health Ontario (PHO) under the supervision of Dr. Sarah Richmond. My practicum project was a descriptive analysis of 2024 police-reported motor vehicle collision (MVC) data. The objectives were to determine the frequency and rate of MVCs in Ontario and by public health unit (PHU) and to conduct further stratified analyses by injury severity and road user type (e.g., cyclists, pedestrians). To start, I developed a detailed research proposal to guide my analysis. The data cleaning and descriptive analysis were completed using a combination of RStudio and SAS. One of the new skills I learned was assigning the location of an MVC based on its geographical coordinates (latitude, longitude) to its respective PHU. My practicum deliverables included writing a data summary report with various maps and tables, which will be made available to PHUs to inform the targeted planning and evaluation of road safety interventions within their jurisdiction. Over the long term, such interventions may help reduce the number of MVC injuries and fatalities, making Ontario roads safer. I had the opportunity to present my findings to members of the APHS Unit and will also be giving a presentation to PHUs. A key part of my practicum was creating annotated RMarkdown files that will be used by other team members at PHO to carry out annual analyses of MVC data. The hope is for MVC injuries to be made into a new injury indicator on PHO's Snapshot website, which is an interactive map-based dashboard that allows PHO's clients, including PHUs, to visualize trends in MVCs over time. I thoroughly enjoyed my time at PHO and appreciated the many learning opportunities available for students, including public health rounds, journal clubs, and conferences.

Dalla Lana School of Public Health

C.R Mount Sinai Hospital

I completed my practicum at the Microbiology Department of Lunenfeld-Tanenbaum Research Institute at Mount Sinai Hospital under the supervision of Dr. Allison McGeer. During this time, I created a survey aimed to gather healthcare professional's opinions on adult vaccination in Canada. The survey is currently 22 questions long and ready to be disseminated to over 30 national and provincial/territorial organizations with members that fit into our target population. This includes family physicians, nurse practitioners, nurses, pharmacists, infectious disease researchers, and public health professionals. Through out my practicum I had regular meetings and email communication with stakeholders including my supervisors, coinvestigators, organizations willing to disseminate the survey, and individuals interested in the research. I completed the application for the REB of Mount Sinai Hospital which required me to create a protocol in addition to the application. Before creating the survey, I conducted multiple literature searches aimed to develop my knowledge on all the different topics that is addressed in the survey. Though our initial plan was to also complete preliminary analysis on the primary data collected via the survey, the change in timeline only allowed me to create an analysis plan. Currently, we are about to start a pilot run of the survey in order to complete 1 final review before disseminating to the masses.

C.W

Healthcare Associated Infection Prevention and Control, Public Health Agency of Canada

My summer practicum was with the Public Health Agency of Canada, specifically within the Infectious Disease and Vaccination Programs branch. I was apart of the Healthcare Associated Infection Prevention and Control team tasked with conducting reviews on the best PPE practices to prevent the transmission of pathogens such as Carbapenemase-Producing Enterobacteriaceae (CPE). As a Student Research Analyst, I was tasked with conducting reviews on best PPE practices and information on certain of pathogens. My main project was conducting a systematic review on gloves, gowns, and eye protection. The goal of this review was to understand the best types of gloves/gowns/eye protection in order to prevent droplet based infections (so this included COVID-19, influenza, parainfluenza etc.) I used DistillerSR, a software designed for systematic reviews, to do the review. Aside from my primary duties with the systematic review, I was involved with other tasks in the team. These included conducting reviews on other topics such as CPE management/disinfection, PPE effectiveness, creating a banner for our team, and presenting the results of my findings from reviews to senior management.



M.M Data Analytics Unit, Toronto Public Health Epidemiology

My practicum was with Toronto Public Health's Epidemiology and Data Analytics Unit. My work was specifically with their Communicable Disease Surveillance Unit. During my time with this team, I was able to assist with developing a novel surveillance system intended to track the human health impacts of climate change within the city of Toronto. I used data from IntelliHealth (National Ambulatory Care Reporting System, Discharge Abstract Database, Vital Statistics) to evaluate a series of health indicators drafted by the team. I was also able to provide feedback regarding these indicators.

Another piece of work involved creating a relational database in Microsoft Access with a form based off these data in order to facilitate the collection of data for cases of enteric disease. This form was also adopted into an Excel format so as to have a more accessible version.

I also assisted during the response to an outbreak of Shigella by meeting with the outbreak team and producing figures (outbreak curve, table of descriptive statistics) which were ultimately included in outbreak reports for this response.

The TPH leadership also took a vested interest in my professional success. Throughout my practicum I was asked to lead a team meeting and was also encouraged by my supervisor to participate in a summit of the American Public health Association. Overall, I would encourage any student interested in completing a practicum with Toronto Public Health, and particularly with the Epidemiology and Data Analytics Unit.



M.R Public Health Agency of Canada

During my winter practicum at the Public Health Agency of Canada (PHAC), I worked with the Risk Analysis and Foresight division within the Centre for Surveillance, Integrated Insights and Risk Assessment (SIIRA). As a graduate student, I had a unique experience developing competencies in Multi-Criteria Decision Analysis (MCDA), risk assessment and prioritization, scientific writing, critical thinking, data collection, and analysis. This opportunity enabled me to contribute to critical public health initiatives while advancing my professional skills. It allowed me to bring the theoretical knowledge I have gained in class and my practical experience into action in real-life situations while learning more about public health systems at the federal level.

My project involved testing the feasibility and accuracy of using Copilot, Microsoft's generative artificial intelligence system, in reproducing scoring data for select infectious disease and non-communicable disease criteria to assess disease severity. I identified a range of infectious and non-communicable diseases and developed prompts to ask Copilot about disease incidence, prevalence, and case fatality rate.

For the analysis component, I examined the proportion and degree of accuracy between data collected manually by the MCDA scorers and Copilot using correlation analyses. I also assessed the data accuracy of different types of prompts and the efficiency of using Copilot, considering the overall time taken to score diseases and user experience.

Throughout my practicum, I developed critical skills in data cleaning, statistical analysis, and data visualization using tools like R and Excel. I also gained practical experience in Multi-Criteria Decision Analysis (MCDA) and risk assessment, enhancing my understanding of how theoretical knowledge is applied in real-world public health settings. This experience has solidified my interest in epidemiology and equipped me with the technical and analytical skills necessary for a future career in public health.

Dalla Lana

School of Public Health H.P Centre for Vaccine Preventable Disease

During my second epidemiology practicum based at the Centre for Vaccine Preventable Diseases (CVPD), my main project was to develop surveys targeted to understand the knowledge, attitudes, and beliefs (KAB) of Highly Pathogenic Avian Influenza (HPAI) in highrisk groups. Groups that are often in contact with HPAI-susceptible animals are considered high-risk for contracting HPAI. The groups we focused on were dairy farmers, poultry farmers, and bovine veterinarians, and our objective was to understand where they get their information about HPAI from, the information sources they trust, acceptability of precautions and monitoring, etc., ultimately improving public trust and communication. This will improve surveillance and response efforts for groups that are both high-risk yet have potential gaps in effective communication, barriers for participation, and decreased trust with officials. I developed the surveys, connected with target organizations building valuable networks, and disseminated the survey. Furthermore, I screened 400 papers for a systematic review assessing measles vaccination failure and aided with data extraction and quality analysis. I also worked on tracking measles cases in Ontario and updating a database for measles elimination status on a global scale according to WHO regions. My practicum at the CVPD was highly educational, eye opening, and fulfilling. I learned that I am very interested in pursuing a career in vaccine preventable diseases and learned so much from the interdisciplinary and highly intelligent team!

M.S Epidemic Intelligence Division, Blue Dot Inc.

I completed my second practicum at Blue Dot Inc in the Epidemics Intelligence division specifically the Influenza Like Illness (ILI) reports team. The Epidemics intelligence division conducts surveillance as well as epidemiological reports for various infectious diseases that occur globally. The ILI reports team focuses on creating epidemiological products/reports for Blue Dot clients that have a focus on COVID, RSV and influenza on a global and national level. My main practicum project was to produce global ILI reports as well as US specific influenza reports that would be provided to Blue Dot specific clients. I was able to accomplish this by conducting indicator based and event based surveillance for the global ILI reports through the use of WHO and Blue Dot specific API's. With the available data I was able to utilize R to conduct an analysis of the current ILI and influenza trends that were occurring and write an epidemiological report. Through indicator-based surveillance I was able to look at whether certain countries had peaked in their influenza season and create meaningful comparisons between the current and previous season. The event-based surveillance portion of the report was conducted using Blue Dot specific AI tools that helped with analyzing news articles that described COVID, RSV or influenza topics such as disease activity, vaccination, public health measures, healthcare burden and research. On the other hand, through the US specific influenza report I was able to analyze CDC and Blue Dot specific data to analyze percent positivity, hospitalizations, cases rates as well as wastewater levels. Lastly, I was also able to help with smaller projects such as data scoping for different influenza data sources as well as vaccine preventable diseases. Overall, I believe that this practicum provided a great learning experience and allowed me to develop more epidemiological skills.



F.A Occupational Cancer Research Centre, Ontario Health

During my practicum at the Occupational Cancer Research Centre (OCRC), I investigated the independent and joint effects of exposure to five occupational carcinogens- asbestos, chromium-VI, nickel, polyaromatic hydrocarbons (PAHs), and silica- on lung cancer risk by sex and histologic subtype. The study population of this project consisted of a prospective open cohort of 2.2 million Ontario workers created by linking workers' compensation claims data (1983-2019) to health administrative data. Baseline occupational exposures were assessed using the Canadian job-exposure matrix (CANJEM), including measures for exposure status (exposed, non-exposed), intensity (low, medium, high) and frequency (<8h/week, 8-40h/week, 40+h/week) for each carcinogen. Cases diagnosed with primary lung cancer were identified through record linkage with the Ontario Cancer Registry. After reviewing past literature to prepare for the project, I used R to clean, merge, and prepare this data for analysis. Then, I conducted Cox proportional hazards regression analysis to estimate independent associations of carcinogen exposure on lung cancer risk overall, by sex, and by histologic subtype, controlling for age, sex, and birth-year. I developed R scripts that leveraged functional programming to run a large set of analyses, extract their results, and generate publication-ready tables and figures. After completing the independent analysis phase of this project, I am currently conducting joint effects analysis using pairwise interaction models assessed on multiplicative and additive scales. Moreover, I have submitted an abstract to a national conference, and I am drafting a scientific manuscript for journal publication. Other tasks included regular participation in OCRC team meetings and collaborating with fellow practicum students to facilitate an OCRC journal club session. Overall, my experience at OCRC has provided valuable exposure to occupational epidemiology, disease surveillance, and exposure assessment, while improving my research and academic writing skills.

Dalla Lana

School of Public Health

T.T Occupational Cancer Research Centre, Ontario Health

The Occupational Cancer Research Centre (OCRC) at Ontario Health is composed of three teams dedicated to identifying workers at an elevated risk of occupational disease, as well as expanding our understanding of workplace exposures and the causes of occupational diseases. As a practicum student at OCRC, I had the opportunity to join the Surveillance team. My project involved collaborating with OCRC team members and external stakeholders to identify high-risk occupational diseases among workers in the forestry, mining, and pulp and paper industries. Through this project, I had the chance to work with the Occupational Disease Surveillance System, which captures the occupational and health outcome data of over 2.4 million Ontario workers. I was responsible for conducting literature reviews, writing R scripts, cleaning and preparing data, and running survival analyses for several disease and industry combinations. I also explored whether the risk of occupational diseases differed by Ontario Health Region overall, and for each industry of interest. This project resulted in the ongoing preparation of a first-author manuscript for publication in a peer-reviewed academic journal. The findings of this study will contribute to improving worker health and safety by informing future workplace safety policies and preventive efforts that specifically target workers in the forestry, mining, and pulp and paper industries. Through this project, I expanded my ability to interpret the results of complex analyses and communicate these findings through a preventionfocused lens. Altogether, my practicum experience at OCRC has equipped me with key analytic, collaboration, and epidemiological skills that will greatly benefit my post-graduate career in the occupational and public health fields.

A.I

Peel Public Health

I completed my practicum with Peel Public Health. My project was focused on modeling and producing estimates for health behaviours of interest for each of the 40 Peel Health Data Zones (PHDZs) which make up Peel. Up until my work, Peel did not have any estimates of the health behaviours of their residents such as smoking status, alcohol consumption, perceived mental health, etc, at this granular data zone level. Existing datasets such as the Canadian Community Health Survey (CCHS) could not simply be directly filtered and used to produce estimates within each of these data zones since this survey data was not originally sampled to be representative at such small scales. As such, my project sought to more effectively carry out this small area estimation by modeling the health behaviours of interest using CCHS data at the overall Peel level instead and then applying the results to known PHDZ level census counts, in order to produce estimates for these health behaviors at the PHDZ level. Over the course of the project, my responsibilities included using statistical software such as R to clean the CCHS data, recode variables of interest, produce the survey weighted logistic regression models, and ultimately to apply results to Census data to produce our final estimates. Through this process, I built upon my previous experiences working with large datasets and improved my overall data cleaning and analysis skills. I also gained experience in writing technical reports for internal use by a public health unit and had many opportunities to communicate findings to team members in presentations. Ultimately, my practicum enabled me to learn more about the inner day to day workings of a local public health unit while also helping to inform and refine my data cleaning, data analysis, and knowledge translation skills.



A.O

Access Alliance Multicultural Health and Community Services

During my winter 2025 practicum placement at Access Alliance Multicultural Health and Community Services, I contributed to the development of a community profile for the Rockcliffe-Smythe and Mount Dennis neighborhoods in Toronto. This work was foundational to the planning of a Community Health Needs Assessment (CHNA), aimed at identifying key health and social indicators to inform equity-focused public health action.

Using Census data from 2011, 2016, and 2021, I conducted an environmental scan and analyzed indicators related to housing, income, education, immigration status, and food insecurity. Findings revealed notable disparities: over one-third of residents in both neighborhoods were living below the low-income cut-off, and renter households faced disproportionately high housing costs. Food insecurity emerged as a pressing concern, with data from the Daily Bread Food Bank highlighting rising demand for food bank services in the area. Health equity rankings from the Wellesley Institute were used to contextualize these indicators and identify populations facing overlapping vulnerabilities.

I translated these findings into a visually accessible community profile using Canva, designed to support stakeholder engagement and local planning. This practicum allowed me to apply core epidemiological competencies-data analysis, visualization, and knowledge translationwhile deepening my understanding of how social determinants shape health at the community level.