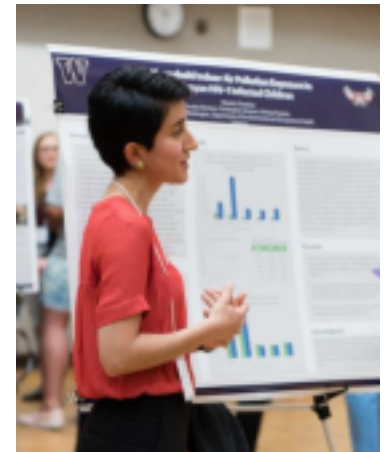


## Welcome to the Tenth Annual UW School of Public Health Undergraduate Symposium Abstracts

The School of Public Health Undergraduate Symposium is a chance for students from across the School's undergraduate majors and minors (Environmental Health Major and Minor, Food Systems, Nutrition & Health Major, Health Informatics & Health Information Management Major, Public Health-Global Health Major, Global Health Minor, and Nutrition Minor) to present their research, internship, and capstone experiences. They will demonstrate how they have applied the knowledge and skills gained in the classroom to address public health problems through their experiences.

**May 25, 2023, 4:00pm – 6:00pm, Hans Rosling Center for Population Health**

Poster are arranged according to the list below, with numbers moving from left to right within the room.



### **1 Jane Hailemariam, Public Health-Global Health Major**

Prevalence of Rheumatic Heart Disease in Nepal (2015/16)

**Abstract:** Rheumatic Heart Disease (RHD) is characterized by impaired cardiac function due to heart valve damage. RHD is a consequence of rheumatic fever, an acute inflammatory condition, a consequence of untreated streptococcal infections (strep throat, scarlet fever, etc.), that damage tissues, notably, heart tissue. Effective treatment of RHD requires surgical intervention which is often inaccessible to populations that are most at risk for RHD. This study inquires on the etiology, prevalence, and public health relevancy of RHD in Nepal. Research regarding Rheumatic Heart Disease in Nepal is limited; unstandardized hospital records are generally the extent of RHD data available. This descriptive study is intended to gather data pertaining to RHD in all 75 districts of Nepal and perform a summative analysis of the state of Rheumatic Heart Diseases in Nepal. Prevalences will be calculated using 2021 Census Nepal data and RHD data collected from the 2015/16 NepalDoHS Annual Report We expect the distribution of RHD to vary from district to district. Ultimately, the findings are valuable in identifying regions where prophylaxis of RHD is relevant and direct screening and care efforts.

### **2 Carmella Crooks, Public Health-Global Health Major**

An Issue Brief to Address Delivery and Analysis of Patient Satisfaction Surveys at Sea Mar Community Health Centers

**Abstract:** Sea Mar Community Health Centers excel at offering their patients multidisciplinary resources beyond what a standard clinic offers. Unfortunately, survey responses from 2018 administered through Washington Health Alliance ranked Sea Mar among the bottom five clinics in the state for timely care and information, provider communication, care coordination, helpful office staff, and overall provider rating. As new research emerges on the correlation between patient's perception of care and its influence on health outcomes,

the importance of patient satisfaction is further explored. Sea Mar's Q4, 2022 Behavioral Health client experience report displayed 14 clinics were omitted from data analysis due to lack of survey responses and missing submissions from clinics. Sea Mar should see this as an active area of improvement because not enough people are filling out the Patient Satisfaction Survey (PSS) during or after their visits making analysis of the data a poor representation of the organization. To address these limitations, an extensive literature review was conducted to research how neighboring clinics and hospitals survey their patients and meeting with the quality improvement (QI) team was done to ensure any recommendations were remaining within the scope of what Sea Mar could implement. The main question this study aimed to answer was in what ways can delivery and analysis of PSS be adjusted to: reduce survey burden, increase response rate, and include qualitative analysis in overall experience scores? In a meeting with executive members at Sea Mar, the research findings and recommendations were presented. These recommendations included assigning a point person in the QI department to complete REDCap agreement and training, and administering a pilot survey to a select group of patients. Additionally, Sea Mar should contact Family Medicine Residency of Idaho to obtain access to a validated patient comment tool.

### **3 Julio Ramos-Vazquez, Public Health-Global Health Major**

Understanding Occupant Activity Impact on Indoor PM2.5 Using PurpleAir Low-Cost Sensors

**Abstract:** Wildfire smoke exposure is measured using the surrogate for all pollution by the concentration of fine particulate matter < 2.5 microns wide (PM2.5). According to the CDC, short-term exposure to wildfire smoke can result in negative health outcomes. It is highly recommended to stay indoors if the surrounding area is experiencing a wildfire smoke event. However, it is inevitable that outdoor air will leak indoors through any holes in the building, open doors, or windows. Occupants can also worsen indoor air quality through the activities they perform in their daily lives. This research is part of an indoor air quality (IAQ) pilot using PurpleAir PA-I sensors. Statistical methods within R were used to identify important building and occupant factors that influence IAQ. Participants tracked their IAQ using color-changing PA-I monitors and a spike event log noting the time of the event, the color change exhibited, the most probable cause, and the action taken to remedy the air quality. Data were analyzed using the tidyverse, caTools, simDesign, and lubridate packages in R. After grouping events across houses by cause, we saw a significant association between cooking-related activities and high levels of PM2.5 compared to other short-lived spike causes. The findings of this study were used to set best occupant practices for indoor air quality within a household both during a wildfire smoke event and under normal atmospheric conditions and inform further studies. While economic barriers may exist when protecting oneself against unhealthy air, it is crucial to be aware of low-cost alternatives to minimize the health threat posed by poor indoor air quality.

### **4 Salina Zhang, Public Health-Global Health Major**

Project PIPAR: A Pharmacy-Based HIV/AIDS Treatment and Prevention Model Demonstration Project

**Abstract:** Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome (HIV/AIDS) prevention and treatment remains a key public health priority as transmission continues to threaten at-risk populations, especially those of racial and sexual minorities. Project PIPAR (Pharmacy Integration in PrEP [Pre-Exposure Prophylaxis] and ART [Anti-Retroviral Therapy] Provision and Retention), run by the Prevention division of Public Health - Seattle and King County (PHSKC), trialed establishing pharmacies as a key entry point for HIV prevention and treatment access. A key underlying rationale is that pharmacies have lower barriers to entry and an already established national footprint, which increases access to traditionally underserved communities. Moreover, their flexible hours and separation from more formalized medical care reduce medical hesitancy and increase overall access to crucial treatments.

With a Collaborative Drug Therapy Agreement (CDTA) authorization from an overseeing provider, pharmacies can initiate and manage PrEP use, HIV testing, and associated routine care. Project PIPAR revealed

several key challenges that need to be addressed before a broader roll-out of the program. In order to address these implementation hurdles and bolster the success of this initiative, it will be imperative to build up formalized programs to establish relationships between laboratories and pharmacies for PrEP monitoring, train pharmacists to provide HIV-associated care, and recruit at-risk patients. Additional regulatory hurdles involving coordination between government agencies, corporate boards, and other stakeholders must also be overcome before this program can flourish. Pharmacy-based care appears to be a promising avenue for future policy direction focused on bridging the gap in coverage for the underserved communities where HIV/AIDS remains a persistent public health threat, especially with the complementary application of a data-to-care (D2C) approach.

## **5 Mathi Ngamsiripol, Moeko Agata, Kristen Hong, and Lyann Gao, *Public Health-Global Health Major*** Holding Landlords Accountable for Mold Growth and Clean-Up in Whatcom County: Policy Brief

**Abstract:** Living among poor housing conditions including mold, faulty electrical wiring, and pests increases the risk of injury, disability, and mold toxicity among residents. In Whatcom County, a relatively wealthy suburb in northern Washington (median income: \$70,011), low-income tenants are suffering health effects including respiratory challenges, headaches, and sporadic hemorrhage, and more. In addition, Black, Indigenous, and People of Color (BIPOC) are disproportionately represented among these low-income tenants. Thus, BIPOC communities are experiencing the brunt of the negative health effects and are forced to choose between safe or affordable housing.

In partnership with Tenants Revolt, an organization in Whatcom County focused on tenants' rights in rental facilities and maintenance, the authors analyzed the public health problem of poor housing conditions in Whatcom County, described the social and economic impacts of residents as a result of poor housing conditions, and provided a policy brief with policy recommendations for immediate remediation.

Final findings show that it is the community's priority to immediately call to action those in power and hold landlords accountable, especially addressing hazardous exposure to mold toxicity among Whatcom tenants. To ensure that tenants do not have to choose between safe housing or affordability, health equity is centered in the priority aims. Priority policy aims include providing tenants with the proper cleaning supplies for mold control, vouchers for emergency housing during remediation, and providing tenants with rent relief — all at the landlords' expense.

## **6 Cara Tobey, *Public Health-Global Health Major***

Identifying maternal immune stimuli across pregnancy to predict timing of microchimeric T cell transfer

**Abstract:** Development of mammalian immune systems begins early in gestation and may be influenced by maternal microchimeric cells (MMc) which are passed from the gestating parent to fetus. The largest number of MMc are antigen-experienced T cells, however, the timing of cell transfer into the fetus is unknown. The Harrington lab hypothesized that maternal infection and vaccination would result in an increase in antigen-specific T cell clones in the gestating parent and that tracking these clones into the fetus would predict the timing of MMc transfer. In order to define the frequency and timing of these maternal immune stimuli, this project compiled first trimester health survey responses from a prospective cohort study of pregnant people to analyze acute maternal infection and vaccination events. In the 34 pregnant people thus far enrolled during fall 2022, four reported respiratory illness and three reported gastrointestinal illness; two people reported influenza and three reported COVID-19 infection during the first trimester. Six people reported influenza vaccine receipt and four reported bivalent COVID-19 vaccine receipt. These data indicated that infection and vaccination occur frequently in first trimester. This high rate of immune stimuli may reflect the fall season of enrollment, when a high number of viruses were circulating in the community and both influenza and bivalent COVID-19 vaccines were recommended for pregnant people. The lab will next sequence the T cell repertoire of study participants around these events to determine whether T cell clones can "time-stamp" the repertoire at different gestational

ages. Understanding the timing of MMc transfer across the placenta will enable future work to manipulate the maternal T cell compartment and maximize the transfer of antigen-specific MMc T cells to the fetus. This has particularly important implications for global communities that face a disproportionately large burden of infectious diseases.

**7 Dani Lockert, Molly Holmes, and Lauren D'Amico, *Public Health-Global Health Major*** Seattle Public Opinion: Climate Change, Displacement, and Maternal Health

**Abstract:** Displacement, or the forced migration of populations and communities, disproportionately affects women and children, making up 80% of the world's displaced population. This makes women and mothers a vulnerable group for climate change-related displacement. To examine this issue, we conducted a literature review using PubMed, and identified 744 sources. We included sources that discussed at least two out of the three components: human maternal and child health, climate change, and displacement. After analyzing the sources and removing duplicates, 16 sources were deemed relevant to this review. We utilized the CDC's "Impact of Climate Change on Human Health" framework to focus our analysis. Environmental degradation, changes in vector etiology, severe weather, food supply, and water quality were identified to be the main impacts of climate change that resulted in displacement and poor maternal and child health outcomes. Environmental Degradation is a main driver of climate related displacement through many methods, such as flooding or rising sea levels. Changing vector ecology and spread of infectious diseases are likely to be propagated from climate-related forced displacement, negative pregnancy outcomes and maternal mortality. Severe weather events have a wide variety of effects on displacement and maternal health, from stillbirth and preterm birth, increased risk for gender-based violence, and mental health impacts. Climate-related food and water supply issues are expected to both prompt forced migration and occur as a result of such migration. Decreased food and water supply is likely to significantly increase malnutrition, mortality and disease acquisition in mothers and children. By isolating climate change's role in maternal mortality, there will hopefully be an increase in urgency for intervention efforts. Further research must be done on the impact of climate change displacement on maternal and infant health outcomes on the global scale to have more definitive answers to these questions.

**8 Greta Gunning, *Environmental Health Major*** Pueblo X Animal Control and Welfare

**Abstract:** A current public health concern in pueblos across New Mexico is animal control and welfare. Without a successful animal control program, community members are placed at risk of being physically attacked by aggressive dogs or cats and potentially exposed to rabies. Rabies is a fatal disease; however, it can be easily prevented through the proper care of animals. To address these issues in Pueblo X, New Mexico, 128 individuals were surveyed and asked about Pueblo X's dog and cat population and perceived community attitudes to animal control within the pueblo. From the data, it was found the majority of individuals believed dogs and cats were a threat in the community and felt unsafe. Additionally, a large portion of individuals indicated they were unaware of an animal control ordinance and services such as spay and neuter were inaccessible. These issues prevent the proper care of animals and increase the number of aggressive, unwanted and stray animals present in the community. It is recommended the Pueblo X tribal government pursue the following actions: enforce and update Title 8- Amended Animal Care and Control Ordinance, require spay and neuter for all dogs and cats, hold free or low cost spay/neuter clinics bi-annually, educate community members on the proper animal bite response, distribute promotional materials to bring awareness to the animal control ordinance, and hire a designated animal control officer to lead the implementation of these goals to begin a successful animal control program.

**9 Alyssa Randall, *Nutrition Minor***

## The “Right” Approach to Rural Health Disparities: A Case Study on Reproductive Health in Kodiak, Alaska

**Abstract:** Healthcare providers in rural areas face clinical challenges vastly different from their colleagues in urban areas. Researchers and providers have suggested different approaches, but it remains unclear how to best provide care in rural areas. This research contributes to rural medicine by examining how healthcare providers in Kodiak, Alaska, provide reproductive health in an under-resourced clinic, island, and state. It sought to answer three questions: First, what health disparities do providers and patients experience? Then, how do care providers and receivers navigate these barriers and work under these conditions? Lastly, what are the best practices, and how can they be supported in the future? To investigate these questions, clinical observation with healthcare providers in two care facilities in Kodiak, Alaska was utilized. The data revealed three main barriers including: geographical challenges, lack of general and specialty providers, and lack of resources and necessary facilities. Providers commonly navigate these barriers by sending patients to Anchorage, which has more resources and specialty physicians. Although this is the most common practice that provides solutions to many patients in need, many providers recognize that it also raises fundamental questions, perpetuates systemic inequalities, and inevitably leads to inaccessibility to care for many patients. Overall, this research exposes the barriers to providing care in a specific rural and underserved community, discusses the common strategies providers use to overcome these challenges, and highlights the toll those strategies have on providers and their communities. Additionally, it provides evidence that to support rural communities and their providers, each community's unique experiences and circumstances must be understood first before creating interventions tailored to that specific community. Therefore, this research can be used to inform health interventions and thus improve the quality and delivery of care in rural and underserved communities in and beyond Alaska. ella

## 10 Angella Kim, *Public Health-Global Health Major*

### Delivery of COVID-19 Testing and Vaccination Supports in King County: A Descriptive Analysis

**Abstract:** In July 2021, Public Health-Seattle & King County (PHSKC) applied for and received funding under the CDC grant RFA OT21-2103: National Initiative to Address COVID-19 Health Disparities Among High-Risk and Underserved Populations. The goal of this grant is to advance equity in COVID-19 response by reducing health disparities, improving contact tracing/testing, and improving capacity to prevent/control COVID-19 in higher-risk populations and rural communities. In October of 2022, the CDC requested data on testing and vaccination services offered to underserved and disproportionately affected populations. This data is being collected through Measures 1.4 (testing) and 1.5 (vaccinations), focusing on the delivery and access of settings, resources, and partners (SRPs). This analysis will describe the results of Measures 1.4 and 1.5, from data that has been collected from November 2022 through April 2023.

Grant teams who reported on Measures 1.4 and 1.5 submitted the appropriate REDCap surveys for data collection. Completed survey data have been downloaded as CSV files and uploaded into RStudio for data cleaning and preprocessing. Processed data has been aggregated to create descriptive lists, statistics, and graphical analyses that relay the summary and comparative statistics of grant teams and populations of interest. Lists and statistical analyses were conducted using R Statistical Programming Language and R Studio. Graphical analyses were conducted using Tableau. Through this analysis, it was found that the delivery and access of COVID-19 vaccination was reported on more compared to COVID-19 testing. Populations of interest and types of SRPs reported on varied by measure. With these results, grant management can better understand which SRPs are utilized in the grant and see which populations of interest are engaged with these measures. Programs that are funded under the grant can analyze if this information is helpful for serving their populations of focus and use this information as necessary.

## 11 Olivia Meader Yetter, *Food Systems, Nutrition, and Health Major*

### Facilitatory Future Directions: Coordinating and Envisioning UW Farm Partnerships



**Abstract:** The UW Farm serves as an educational resource at the center of urban agriculture and sustainability for those wanting to learn about productive and sustainable landscapes. However, across the UW Seattle campus, the only two programs invested financially in the UW Farm include the College of the Environment and the Nutritional Sciences Program in the School of Public Health. For that reason, Team 12's FSNH Winter 2023 Capstone Project goals addressing UW Farm Strategic Goal #4 were two-fold. One sought leverage of established administrative relationships for improved funding of UW Farm initiatives including implementing an Urban Agriculture Minor, funding a UW Farm Academic Coordinator, imbedding funding for a high tunnel in the UW Sustainability action plan long-term. The other sought administrative buy-in from - including but not limited to - College of Engineering, College of Education, the Information school, College of Arts and Sciences, Landscape Architecture within the College of Built Environments, and additional departments within the School of Public Health. The Capstone project contextualized these goals in critical community engaged scholarship coordinated with our assigned community partners and other UW Farm stakeholders. Community partners included UW Farm Manager Perry Acworth, co-founding founder of the UW Farm Alan Trimble, and Alex Silver, the UW Food Pantry Student Director. Leveraging their respective strengths in partnership entailed embracing an iterative learning process, conducted semi-structured interviews, and utilizing visualization tools. Non-linear progress arose from the following project development stages: ground-truthing, pivoting, solution envisioning, collaborative invitations, and finalizing future directions. Each stage illustrated that the UW teeters between greenwashing and meaningful, longstanding investment in a sustainable, self-sustaining future. Four deliverables resulted from said stages, each presented at the Capstone's culmination to be implemented and useful in the coming year: a Farm U.P. Table and petition to accompany said table, an institutional network map employing the lens of social network analysis, and a drafted Memorandum of Understanding between Athletics and the UW Farm. These capitalized on opportunities identified related to elevating student awareness and involvement, increasing cross-campus investment via activity-based budgeting, and ensuring accountability to broader initiatives including Targets II and VI in the UW Sustainability Action Plan. Through incremental changes prioritized by the deliverables, this project serves as a tool for securing long-term administrative financial commitment departments across campus that amply supports the UW Farm's capacity for facilitating UW sustainability, food security, and food sovereignty.

## **12 Megan Lewin & Tharu Lansakaranayake, *Public Health-Global Health Major***

SB 8: The Texas Heartbeat Act

**Abstract:** SB 8 is a law that went into effect on September 1, 2021, that prohibits pregnant individuals in Texas from receiving an abortion once a fetal heartbeat is detected, with the exception of medical emergencies. There are no exceptions for rape or incest. SB 8 also allows any individual to sue a physician or anyone who aids pregnant individuals in obtaining an abortion.

Through this research, a policy brief was created to educate and provide insight into the detrimental effects of SB 8. A comprehensive literature review was conducted, which included analyzing the SB 8 bill itself as well as related articles and grey literature about the bill. From these sources, statistics and information were gathered to provide a policy overview, policy analysis, policy recommendations, potential obstacles, and a mitigation plan.

This research found that SB 8 has adverse health, economic, and social impacts among pregnant individuals, especially among those who are BIPOC, low-income, have existing children, minors, and immigrants. Additionally, SB 8 has negative social and ethical implications as it violates the principles of beneficence, autonomy, and justice. Overall, SB 8 poses a serious threat to the health of all individuals able to get pregnant across Texas.

SB 8 is a violation of autonomy, thus it is imperative that SB 8 is eliminated. An alternative policy must be implemented that would ensure that 1) abortions must be affordable through the availability of adequate

insurance plans, 2) each county has at least one abortion provider that does not require insurance, and 3) unnecessary restrictions such as mandatory ultrasounds and wait periods would be prohibited. Through this policy, access to abortion can be secured as a fundamental right that is protected under state law.

### **13 Tharu Lansakaranayake, *Public Health-Global Health Major***

The Association Between Employment Status and Self-Perceived Academic Performance Among Undergraduate Students at the University of Washington Seattle

**Abstract:** The cost of attending college has gradually increased over the past 40 years. This has led to an upward trend in employment in undergraduate students during college to alleviate their financial burdens. Being employed can lead to a decrease in the time a student has to study, resulting in poorer academic performance. However, this may vary with the number of the student's working hours and the job's relevance to academic studies. Thus, our research question was, "What is the association between employment status and self-perceived academic performance among undergraduate students at the University of Washington (UW) Seattle campus?".

Our descriptive hypothesis was that employed UW Seattle undergraduate students spend on average 15 hours a week working. Our analytical hypothesis was that UW Seattle undergraduate students who are employed (i.e., work jobs/internships) will have lower self-perceived academic performance than those who are unemployed.

We conducted a cross-sectional study using passive recruitment and active recruitment to get our target population to fill out a Google survey anonymously to assess their employment status (exposure) and self-perceived academic performance (outcome). We analyzed the data from the survey using both quantitative and qualitative methods.

Our results show that employed UW Seattle undergraduate students were less likely to have high self-perceived academic performance as compared to unemployed UW Seattle undergraduate students and that this association did not differ by upper versus lower class standing. Of those employed, we found that they worked an average of 15 hours per week.

Our findings imply that employed undergraduate students are more likely to be unsatisfied with their academic performance. Thus, further studies should be conducted to understand how different types of employment may affect academic performance as well as research on possible methods for improving academic performance for employed undergraduates with larger and more representative sample sizes.

### **14 Raahul Narayanan, *Public Health-Global Health Major***

Empowering Sustainable Agriculture and Tribal Sovereignty in Sambalpur, India: Insights Gained through a Collaborative Internship with Manava Adhikar Seva Samiti (MASS) and Community Perspectives.

**Abstract:** In Sambalpur, India, various communities encounter unique geography-related healthcare challenges such as poverty, malnutrition, lack of development, and illiteracy. These challenges, coupled with the marginalization of tribal groups, have resulted in increased morbidity and mortality rates, making access to basic healthcare services difficult. Manava Adhikar Seva Samiti (MASS), a non-profit organization in Odisha, is working to address this issue by promoting sustainable agriculture, COVID response and health promotion, cultural revitalization, and tribal sovereignty.

During an internship with MASS and GlobeMed at the University of Washington between May and September 2022, the team collaborated with community members to create a project. The project involved collecting community member testimonials, developing materials and infographics promoting sustainable agriculture, and writing grants and materials to increase awareness and funding for the organization. The primary goal was to develop a sustainable village concept, known as "Dream Village," that aligned with MASS's vision for sustainable living in Sambalpuri communities. The team also conducted interviews with community members, created promotional materials, and identified potential partners in the US for fundraising, donations,

and advertising for MASS.

The internship helped to increase awareness and support for MASS's work, strengthen partnerships with US-based public health and global health-oriented communities and organizations, and pave the way for future collaborations with MASS to further develop and implement sustainable living initiatives while securing funding and resources to support their work. Promoting equitable partnerships in global health and empowering communities in Odisha is critical. By supporting sustainable agricultural practices and empowering tribal groups, a more equitable and just future can be ensured for all. Local governments and organizations must work collaboratively with these communities to develop and implement policies that support their livelihoods and protect their cultural heritage. Building strong partnerships and amplifying the voices of these communities is essential to create lasting change.

**15 Siyu Chen, Nede Ovbiebo, Astha Mishra, Gabe Eligado, and Uma Maveli, *Public Health-Global Health Major and Food Systems, Nutrition, and Health Major***

Exploring the Influence of Culture on Birth Control Attitudes: A Qualitative Study with Intersectionality Marginalized Individuals

**Abstract:** Birth control is a necessary tool for preventing unwanted pregnancies and reducing the incidence of sexually transmitted diseases. However, many people choose not to use birth control, contributing to a range of negative outcomes. Previous research indicates that race and ethnicity contribute to birth control decisions (Dehlendorf et al., 2014). In an analysis of the National Survey of Family Growth, Black and Latiné respondents were less likely to use effective birth control methods compared to White respondents<sup>1</sup>. Despite the obvious disparities in birth control use, little work has explored the impact of cultural experiences broadly, and race specifically, on birth control perceptions. Additionally, the meager research that does address this topic typically homogenizes lived experiences across broad racial categories, by largely focusing exclusively on Black, Latiné, and White women, while lacking intersectional analysis (Grady et al., 2015).

The goal of this project is to gain insight into the health care decision-making processes of intersectionally marginalized individuals. This group's qualitative study currently involves interviewing participants aged 18-29 from diverse cultural backgrounds living in the Puget Sound area. Selected individuals answer questions about how their cultural background (including race, ethnicity, religion, and family) influences their birth control attitudes. This group will use thematic analysis to identify concepts that impact attitudes towards contraceptives, taking an inductive approach to allow participant perceptions to drive subsequent findings. Taking this approach with a highly diverse sample will illuminate the lived experiences of individuals who are typically excluded from research and scholarship. The results from this study will inform the development of more representative and sensitive patient-informed contraceptive counseling. Clinical contraceptive counseling that acknowledges the unique cultural experiences of each individual will lead to more favorable perceptions of contraceptives, with downstream impacts on contraceptive use and sexual health in intersectionally marginalized communities.

**16 Divya Rao, *Public Health-Global Health Major***

Addressing the Effects of Harsh Winters on IDPs/Refugees in Camp Settings in Syria and Lebanon with MedGlobal from April to June 2022

**Abstract:** Immigration crises and global violence are among the many issues that are worsened as a result of climate change, and the structures of the global refugee aid system need to adapt to the context of this larger problem. In collaboration with MedGlobal staff members, a team of students from the University of Washington, Seattle Department of Global Health delivered a literature review and an advocacy report on this issue during April to June 2022. The main goals of this project were to investigate the ways in which climate-change induced extreme cold events affect refugee health and internally displaced people in Syria and Lebanon, and explore the strategies that exist to minimize those health outcomes. 23 sources of combined peer-reviewed scientific journal publication, scientific articles and humanitarian organization written media released between 2004 and 2022



found in several databases and the UW Health Sciences library were included in a literature review. Three interviews with stakeholders from MedGlobal contextualized the findings from the medical and NGO (non-governmental organization) perspective. In the advocacy report, proposed strategies reflecting information collected in the literature review and interviews were compiled and submitted for editing and image enhancement by MedGlobal's media team. This report includes strategies in scaling up winterization efforts, prioritizing protections of vulnerable populations, and increasing provision of heating materials, intending to create change in the priorities of NGOs. Changes directed towards politicians and the international community include sustainable housing options and finding a path towards ending global violence and emphasizing human dignity and justice through long term solutions. The advocacy report was presented during a UW Global Health graduate class to students and MedGlobal staff members on June 2, 2022 and published in ReliefWeb on September 20, 2022.

### **17 Kitt McVey and Maggie Woodwell, *Public Health-Global Health Major***

Addressing Transportation Resources in Washington State

**Abstract:** This fall, as a part of a larger Ad Hoc project through the UW Public Health-Global Health Honors department and SPH 481 course, this project investigated the significance of Washington State Senate Bill 5974 in terms of public health impacts and implications. In an effort to minimize key climate change contributions and reduce the associated negative effects on public health, SB 5974 addresses the need for expanded and improved public transportation resources in Washington State, as a means to reduce harmful greenhouse gas emissions.

This project summarized the public health connections in the form of a policy brief infographic, which is targeted at informing Washington State Legislators and other stakeholders about the various aspects and significant points of SB5974. Information is also included regarding connections to larger level social justice, economic, and political impacts, as well as ethical and social justice implications. The brief also provided recommendations for steps that would further support the success of SB 5974.

Through the research process to compile the policy brief, researchers examined domestic data regarding greenhouse gas emissions, public transportation, and Washington State's previous transportation and climate legislation. This bill would reallocate funding to improve access and usage for electric vehicles and public transportation infrastructure, help the state complete larger greenhouse gas emissions goals, and grant free ridership to any child 18 years old or younger on all public transit systems in the state. Senate Bill 5974 gives accessible options to more eco-friendly transportation methods. Not only does this policy address climate change, but it does so while promoting social and mobility justice. It is imperative that Washington State Senate Bill 5974 be appropriately implemented as quickly as possible.

### **18 Hailey Hummel and Maddie Collom, *Public Health-Global Health Major***

La Dolce Vita Study Abroad Program: A Critical Evaluation of Food Systems and Nutrition Approaches in Italy vs. the United States

**Abstract:** In the Summer of 2022, the study abroad program La Dolce Vita: Comparative Food Systems in Italy offered the opportunity to travel across several regions of the country to critically evaluate and contrast specific key features of the Italian food system and diet with similar matters in the United States (US). Throughout this comparison of Italian versus American norms and behaviors concerning nutrition and diet, three key differences were observed: (1) a greater adherence to local and organic foods was common practice in Italy, whereas significant inequities exist in accessing nutritious foods in the US<sup>1</sup>; (2) a greater emphasis was placed on a Mediterranean-style diet, contrasted with a lesser availability of sugary and over-processed foods such as in the US<sup>2</sup>; and (3) there was a greater existence of community engagement during food consumption, including both purchasing from local sources and valuing family-style meals, while largely excluding opportunities for American-style fast food<sup>2</sup>.

Like the aforementioned observations underline, Italy's social, economic, and cultural approach to food production and diet is unlike the US', which points to the country's overall better health outcomes for adults<sup>3,4</sup>. Consequently, this invokes ways in which the American food system can benefit from replicating Italian practices in order to foster a more mindful and healthy population. Novels such as *Delizia!: The Epic History of the Italians and Their Food* and *Salt Sugar Fat: How the Food Giants Hooked Us* spoke to the juxtaposing Italian versus American lifestyles, while sources from peer reviewed journals, news articles, and lectures from food system and health experts shaped the educational experience. Overall, studying abroad not only provided the opportunity to explore nutrition and agriculture in a more food-centered culture, but also provided the skills to develop key recommendations on what US officials should consider when approaching both local and national food systems.

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### **19 Ruohan Hu, *Global Health Minor***

Addressing Regulatory Gaps and Engaging Key Stakeholders on Private Well Water Safety in Minnesota

**Abstract:** Water in about one in five U.S. domestic wells contains at least one contaminant at a concentration greater than a human-health benchmark for drinking water. Federal and state laws ensure that water from public water systems meets all Safe Drinking Water Act standards, but there are no federal laws and few state laws to ensure that private well users have water that meets those same standards. This difference in regulation puts households with private wells at increased risk of exposure to drinking water contaminants. Through an internship with the Minnesota Department of Health (MDH) in summer 2022, I conducted individual research on private well regulation, drafted outreach and engagement plans, and redesigned the MDH climate and wells website. The final research document gives an overview of the current regulations and ordinance language on private well testing in rental properties and at property transfer at the level of state, county, and city, with the result showing that only four states have relevant laws and no Minnesota counties have testing requirements. The research fills our knowledge gaps in Minnesota requirements on private well water safety, provides information on other states' private well regulation systems and methods, and could serve as an ordinance reference for local partners. To address these gaps, I created a database of, and drafted an outreach and engagement plan for key stakeholders around private well users. Additionally, I redesigned the MDH private well and climate change website to provide accessible information on private well water safety in the face of extreme weather. Through engaging key stakeholders and strengthening public health education, MDH aims to achieve safe drinking water and reduce disparities of private well users in Minnesota.

### **20 Zoe Fanning, *Public Health-Global Health Major***

Narcotics Testing Comparisons: An examination of the King County Medical Examiners' in-house drug testing accuracy and methods

**Abstract:** Fatal drug overdoses have been increasing in King County for the last decade, rising from 274 in 2012 to over 1,000 in 2022. The King County Medical Examiner's Office (KCMEO) created the Real-Time Overdose Surveillance Project in 2019 to rapidly certify deaths pertaining to overdoses, and to collect and disseminate

real-time data on the number, location, and substances responsible for the deaths.

Through an internship with KCMEO, this project was created to investigate the test performance of its in-house drugs assay. The project uses test results from the Drug Enforcement Administration (DEA) as a gold standard to compare the results for the four leading drugs (heroin, cocaine, methamphetamine, and fentanyl) from KCMEO's in-house assays, including a TruNarc Handheld Narcotics Analyzer, a Rigaku Raman Spectrometer, and fentanyl test strips. Specifically, the project aims to address: (1) sensitivity and specificity of in-house assays, and investigate if repeat testing altered these metrics; (2) false negative rates for the four drugs where they constitute >5% of the total substance detected by the DEA; and (3) average percentage (and standard deviation) of fentanyl found in drugs detected by DEA vs. the in-house assays.

Preliminary data shows that, out of the total 24 samples that KCMEO was able to send to the DEA in the last two years, the office is able to correctly identify the presence of the four leading drugs 71% of the time. Additionally, KCMEO never falsely identified the presence of a drug in any of these samples. Data also revealed that the average percentage of fentanyl in these substances identified by the DEA was 15.21%, with a standard deviation of ~0.05, while KCMEO's in-house assay resulted in an average of 45% fentanyl, with a standard deviation of ~0.2. Final analyses are expected to be completed by May 1st.

## **21 Rhea Sanghavi, *Public Health-Global Health Major***

Adolescent-Friendly Health Interventions in Low- and Middle-Income Countries: A Scoping Review

**Abstract:** The scoping review conducted by the authors shed light on the fact that despite comprising one-sixth of the world's population, there is no clear understanding of the features that promote adolescent-friendly healthcare. The lack of clarity and consistency around a definition presents a vital gap in healthcare, particularly in LMICs where 97% of all adolescent mortality occurs. The review aimed to address this gap by identifying the key features of successful adolescent-friendly interventions in LMICs.

The findings of the study revealed that a non-judgmental environment, culturally appropriate and responsive interventions, and support for marginalized communities were the central features of adolescent-friendly healthcare services. These features are consistent with the guidelines outlined by WHO and UNICEF and the current body of literature.

The authors highlight the need for improved reporting of the interventions implemented to highlight service delivery considerations for young people. They suggest that core components must remain consistent, even though the operational definition may vary depending on the context of the region. This could aid in developing more robust definitions supporting locally relevant services and shaping global health guidelines to improve adolescent outcomes.

The authors emphasize the heterogeneity of LMICs and the need for tailored interventions that take into account the unique cultural, social, and economic contexts of each region. They suggest that focused research on this theme could contribute to the development of more effective policies and interventions that could positively impact the health and well-being of adolescents in LMICs.

In conclusion, the review highlights the urgent need to better understand the features that promote adolescent-friendly healthcare in LMICs. The authors suggest that the findings of this study can be used to inform the development of more effective policies and interventions that prioritize the health and well-being of adolescents, particularly those from marginalized communities living in high-poverty settings.

## **22 Maggie Lei, *Public Health-Global Health Major***

A Mental Health Overview of the University of Washington

**Abstract:** Mental health has been a frequent topic of discussion at the University of Washington. For a

year-long project, a group of students in the Dean's Advisory Council in SPH decided to conduct a domestic survey that analyzed the culture and awareness of mental health resources at UW Seattle.

The survey was sent out through the School of Public Health canvas page and shared through other social circles from the researchers. Participants were incentivized to fill out the survey with a gift card raffle. The survey was broken down into several parts: mental health culture, resources, and two open-ended questions. Participants were asked about how they felt about how the Seattle campus handles mental health, their awareness and usage of the resources available at the university, and opinions about improvements that could be made.

A total of 187 students filled out the survey. Most participants who responded identified themselves as an Asian or White female between the ages of 20-25. 157 (90%) participants were part of the School of Public Health. Around 60% of students agreed with the statements presented regarding the mental health culture around UW, saying that they believed that the university was doing enough to address mental health needs. Most were aware of general health resources like Hall Health (75%), but were unaware of niche resources available at the School of Public Health. It is evident that while there are a multitude of resources available, many students continue to face challenges that prevent them from either wanting to access them or knowing about them in the first place. More outreach methods as well as more accessibility for appointments for students are needed to improve mental wellness. For example, having a central website that can be referenced by anyone in any department would greatly benefit the student population.

### **23 Maggie Lei, Zoe Fanning, Maya Oleynikova, and Rhea Sanghavi, *Public Health-Global Health Major***

HB 1006: Analyzing the expansion of access to drug testing equipment and paraphernalia

**Abstract:** In 2021 the Center for Disease Control reported more 70,000 deaths related to synthetic opioid overdoses. Accessible drug testing equipment is vital to decreasing drug overdose deaths, and HB 1006 seeks to expand access to drug testing equipment in Washington State. HB 1006 advocates for the exclusion of drug testing equipment from "drug paraphernalia" category in order to allow individuals who use drugs to legally access testing equipment. Maya, Zoe, Maggie, and Rhea will be creating a two page policy brief to communicate background information on the HB 1006, to analyze its impact on current state law/policy, its social justice and ethical implications, as well as the bill's strengths and weaknesses. The sections of the brief are as follows: policy background, effects of the policy on a chosen outcome, analysis of policy, policy recommendations, and social justice and ethical considerations.

The group used a combination of primary and secondary literature, gathered using scholarly databases such as PubMed and Google Scholar, to obtain more information about the effects and impacts of drug use, harm reduction, and other relevant topics in order to inform the policy brief and the recommendations within.

After the completion of our background research, they will decide whether to craft an advocacy or objective policy brief based on the available research and recommendations found. They will use this framework to create a visual poster design/infographic that conveys the relevant section laid out above. They will carefully select and craft the policy brief and visual to appeal to their chosen stakeholders, namely legislative officials in Washington, people who use/carry drug paraphernalia, and experts on the impacts and alternatives of drug law.

### **24 Maya Oleynikova, Alice Sohn, Bel Said, Eileen Zhu, Summer Singley, and Raymond Tommasini, *Public Health-Global Health Major***

The association of social connectedness on perceived stress among University of Washington Seattle full-time undergraduate students in Winter 2023 term

**Abstract:** Attending college entails more than taking classes, studying for exams, and graduating. Despite college being remembered as a time of socialization, many students experience stress from having to adjust to a

fast-paced schedule (Procentese et al., 2020), with 82% of college students reporting moderate or high levels of stress (Ling & Zahry, 2021). The exposure used in this study was perceived stress, as unmanageable stress can lead to anxiety and depression if left unaddressed (Should You Be Screened for Anxiety? > News > Yale Medicine, n.d.). While low social connectedness (SC) has been associated with higher rates of social anxiety and depression among college students (Lee et al., 2002), high social support is associated with lower risks of these outcomes (Hefner & Eisenberg, 2009).

The objective of this study was to identify if there was an association between SC and perceived stress (PS) among full-time University of Washington-Seattle (UWS) undergraduate students in the Winter '23 term.

The sample population used was full-time undergraduates attending UWS during the Winter '23 term. Non-probabilistic convenience sampling was used.

The survey was administered and completed electronically over Google forms with 41 questions. Participants were classified based on their scores on the Perceived Stress Scale (Cohen et al., 1983) and the Social Connectedness Scale (Lee et al., 2001). Out of 74 total respondents, 69 students met eligibility criteria and 66 students were included in the analysis. The remaining 3 respondents were not included in the analysis as a few of their responses were not within limits given the confounding variables. 71.3% of the sample experienced high PS. Among students with lower SC, the prevalence of perceived stress was 40% higher than that of students with high SC (PR=1.4, 95% CI 1.09-1.79). This means that full-time UWS undergraduates who were less socially connected were 1.40 times more likely to have high PS than those who were more socially connected. The findings of this study suggest that interventions to increase SC may reduce student's PS. Individuals who feel more connected to their campus community are associated with greater well-being and higher academic success (Kennedy & Tuckman, 2013). More research is needed to determine a temporal association and identify the best measures for interventions.

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## 25 Emily Long, *Public Health-Global Health Major*

Creating Partnerships at Compass Housing Alliance Renton Veteran Center

**Abstract:** Those who have experienced homelessness are exposed to worse health outcomes compared to the general population. The average lifespan of a homeless person decreases by approximately 17.5 years and physical and mental health complications are more likely to arise (Romaszko, 2017). This highlights a public health concern. Compass Housing Alliance Renton Veteran Center is a nonprofit organization that provides supportive, affordable housing to previously homeless veterans and their families. Means to improve the residents' independence and living experiences have been a focus during an internship with Compass Housing Alliance. Contents include creating new interventions and partnerships that use frameworks taught in the School of Public Health to measure effectiveness with the purpose of closing health gaps and disparities. Specifically, the social-ecological model and the health impact pyramid will be addressed. Interventions were applied at the Compass location in Renton, Washington. Additionally, this will detail the process of connecting with other nonprofit organizations in order to create partnerships and memorandums of understanding. Emphasis is placed on including insight from residents and incorporating both upstream and downstream solutions. Insight was collected through surveys, focus groups, and direct engagement. Upstream interventions include teaching nutrition classes, youth guitar lessons, and robotics classes. These partnerships help to increase knowledge and accessibility. A downstream solution includes equestrian therapy targeted to alleviate post-traumatic stress disorder. Contents also include introducing new incentive-based youth programming techniques. Results show that this is more sustainable and efficient for facilitation. Overall, skills from the University of Washington public health courses are reflected in a nonprofit internship setting.

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## 27 Adolescent and Young Mothers: Social Supports and Impacts on Early Parenting Attitudes

## 28 Hermona Girmay, *Public Health-Global Health Major*

Surveillance, Policing & Criminalization in Post-Roe America: A Policy Brief in Support of HB 1469

**Abstract:** On June 24, 2022, The Supreme Court of the United States dismantled the federal constitutional right to abortion with their vote to overturn *Roe v. Wade* and *Planned Parenthood v. Casey*. Abortion remains legal in Washington, as state law protects personal reproductive decisions and Washington has enacted policies to expand access. However, as other states have criminalized abortion, systems of surveillance and vigilantism have been created impacting abortion providers and individuals traveling to Washington to seek abortion services. As one of Pro-Choice Washington's two Organizing and Campaigns Fellows in 2022, research was conducted on the implications of data privacy and interference on surveillance, policing, and criminalization of medical providers in Post-Roe America. This research consisted of reviewing the laws that both sanctuary and hostile states for abortion have enacted, understanding the legal landscape following the federal overturning, and determining what protections should be added if Washington were to model another sanctuary state's laws protecting abortion. With Pro-Choice Washington's Organizing Director and legal partners, it was agreed that shield laws would be of importance, so a policy brief was created to be used by lawmakers and community partners during the 2023 legislative session. This research and shield law have since been used in lobbying and legislative efforts in supporting HB 1469, which was the first abortion rights bill to pass the House this session. The shield law bill includes protections for health care providers and those who assist individuals from states that restrict abortion, as well as protect those seeking gender-affirming care. As of April 27, 2023, HB 1469 has been signed into law by Governor Inslee.

## 29 Nae Nhae Pasahannunwut and Eyael Getachew, *Public Health-Global Health Major*

Shedding Light on Maternal Mental Health: Lessons from Rwanda

**Abstract:** Postpartum depression (PPD), with prevalence rates in East Africa ranging from 17% to 24%, is associated with adverse health outcomes among offspring of affected mothers including emotional and developmental delays and poor growth. The 2022 World Health Organization (WHO) maternal and newborn care recommendations call for routine PPD screening using a validated screening tool. In Rwanda, a low-income country severely impacted by the 1994 genocide, routine PPD screening has not been implemented. This study was conducted to describe the prevalence of PPD among new mothers and determine sociodemographic characteristics and health factors associated with PPD and recent suicidal ideation.

Postpartum mothers delivering a live birth at the Kabutare District Hospital (KDH) in Huye, Rwanda between August and September 2022 were recruited for this study. This study was a cross-sectional survey administered via face-to-face interviews conducted in Kinyarwanda. Following written consent, the mothers responded to sociodemographic, and maternal/ infant health questions, and completed the Edinburgh Postnatal Depression Scale (EPDS). Postpartum depression was defined as an EPDS score of > 10. Data collection was approved by the KDH Ethics Committee.

Our study population consisted of 66 Kinyarwanda-speaking mothers. Over half (52%) had PPD, and 26% had suicidal thoughts in the past 7 days. Many reported a history of depression (39%), PPD (18%), or anxiety (29%). Mothers with a history of depression, anxiety, or PPD were more likely to have PPD and recent suicidal ideation. There was a greater prevalence of PPD among mothers reporting pregnancy-related complications or a history of mental illness compared to their counterparts (70% vs. 44%,  $p < 0.05$ ; 67% vs. 36%,  $p < 0.05$ ). Mothers at particularly high risk for PPD are those with pregnancy-related complications and a history of mental illness. These findings demonstrate a need for routine PPD screening among new mothers, as recommended by WHO.

## 30 Shiyi He and Fiona Dunbar, *Environmental Health Major*

Determining Cepheid Xpert Carba-R cartridge effectiveness in detecting antibiotic resistance genes in wastewater

**Abstract:** Wastewater-based surveillance is a useful tool to track and evaluate microbial pathogens and resistance genes within a population and can supplement information from clinical surveillance. Traditional methods use a combination of wastewater concentration, extraction, and molecular detection, which can be time-consuming, expensive, and require specialized equipment. Cepheid Xpert Carba-R cartridges are qualitative real-time polymerase chain reaction (PCR) tests for antibiotic resistance genes. They require no prior processing of samples and produce results in 48 minutes. These cartridges are currently used in clinical settings to test patient specimens for resistance to the antibiotic carbapenem.

Other Cepheid tests originally designed for the clinical detection of SARS-CoV-2 have recently been successfully used to detect the pathogen causing COVID-19 in wastewater, suggesting that the Carba-R cartridge may also work well on wastewater samples. This would allow for surveillance of antibiotic resistance within a population in a fraction of the time it takes standard qPCR methods. Because no prior processing of the samples is required, it would allow those who have limited laboratory experience and equipment to perform the testing.

This pilot investigation will evaluate the ability of Carba-R cartridges to detect antibiotic-resistance genes in wastewater. Samples will include single time-point grab samples and 24hr composite wastewater samples from two King County treatment plants taken in April-June 2023. Each sample will be analyzed in duplicate using the both the Carba-R cartridges with Cepheid's GeneExpert and the standard method of concentration, extraction, and quantification by qPCR. The results from both methods will be compared to assess the utility of this fast, simple method for collecting antibiotic resistance data at the population level.

### **31 JP Lopez, *Public Health-Global Health Major***

Enhancing Inclusivity in Digital Health: Developing a Culturally Sensitive, Multilingual Chatbot for Caregivers

**Abstract:** The burden of caregiving in the United States disproportionately affects marginalized communities, impacting the physical and mental well-being of caregivers and, consequently, the health outcomes of care receivers. To address this issue, the Caregiving for Caregivers Online (COCO) research project, led by Dr. Weichao Yuwen, developed a digital health technology that delivers dialog-based therapy to caregivers through a hybrid of two components: (1) AI conversational technology (a "chatbot") and (2) text-based communication with healthcare providers (such as nurses or mental health counselors). The intervention aims to support caregivers and promote their self-care while managing their care receiver's health.

The research conducted by the team focuses on developing a multilingual chatbot and enhancing the inclusivity of the digital technology by engaging Spanish-speaking caregivers of children with chronic illnesses. The team strives to improve the Cocobot's cultural sensitivity by involving diverse caregivers in the research process and understanding population-specific needs. The study employs Rasa Open Source and Python for the development, programming, and engineering of the multilingual chatbot.

In this project, the team collaboratively explores the challenges and potential solutions related to natural language processing, chatbot development, and culturally sensitive design, aiming to create a multilingual chatbot that effectively addresses the needs of ethnically and culturally diverse caregivers. They utilize an interdisciplinary approach, integrating insights from the fields of biomedical informatics, public health, and computer science to ensure that their chatbot can provide adequate support and resources for caregivers from various backgrounds.

The work on the Cocobot highlights the potential of AI and technological innovation in public health, offering immediate caregiving support and promoting health equity for marginalized populations. The outcomes of this research contribute to the ongoing conversation around inclusive digital health solutions and have significant implications for the design and implementation of future healthcare interventions that prioritize diversity and cultural sensitivity.

### **32 Ashlyn Gonzalez-Soriano, *Public Health-Global Health Major and Environmental Health Minor***

Oral History Interview with Rosalia Morales: The Experience of a Latinx Community Member During the COVID-19 Pandemic

**Abstract:** In Washington State, approximately 1.06 million people identify as LatinX, making up approximately 13% of the state's population. Washington ranks 13th among US states for the highest Latinx population, with the top counties being Adams, Franklin, and Yakima. In these counties, LatinX communities face higher poverty rates, are more likely to be uninsured, rely on Supplemental Nutrition Assistance Program (SNAP), and have higher unemployment rates than the rest of the county. Latinx communities already face numerous disparities but faced higher risks during the COVID-19 pandemic as most LatinX individuals are employed by industries considered "essential," like agriculture, food services, waste management, and construction. In partnership with the Latinx Health Board (LxHB) and Washington State Historical Society (WSHS), the author connected with a member of Washington's Latinx community to record their COVID-19 pandemic experience for WSHS's archives through qualitative research methods. During the oral history interview with Rosalia Morales, the author learned of her experience as a stay-at-home mom of three, the mental toll of quarantine, and the importance of community. In this project, the author utilized her Spanish proficiency to provide a community member with the opportunity to add their experience to a permanent collection and ensure a broader range of authentic experiences in historical records. From these archives, future public health practitioners and the public can learn about the COVID-19 impact on LatinX communities and their resilience during trying times. Experiences like Rosalia's hold the key to future innovative public health approaches that go beyond statistical data and

current practices.

### **33 Maria-Crina Curca, Environmental Health Major**

Mosquito Identification and West Nile Virus Surveillance in Washington State

**Abstract:** West Nile Virus (WNV) is a mosquito-borne pathogen that can cause varying symptoms in humans, ranging from mild fever to severe encephalitis or even death. In the state of Washington, the virus is transmitted by two species of mosquitoes: *Culex Pipiens* and *Culex Tarsalis*. Since 2002, the Washington State Department of Health (DOH) has regularly tested mosquito hotspots through environmental surveillance. Environmental surveillance involves collecting and testing samples from various locations to determine the prevalence of disease-causing agents in the environment or in local animal and vector species. After the sample is collected, it is sent to Public Health Laboratories for further analysis using various techniques to detect the presence of pathogens or other substances of interest. The main objective of environmental surveillance is to minimize the risk of harm to human health by detecting pathogens early and implementing preventive measures that safeguard public health.

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