

# Establishing the Foundation for a Strategic Plan to Align the College of Health with the United Nations

## Jessica Berman, Lehigh University/United Nations Partnership, May 2025

### Introduction

This summer I had the privilege of interning within the Lehigh University (LU)/United Nations (UN) Partnership. A compelling aspect of this internship was the scope and diversity of people I engaged with. This role involved communication and collaboration with UN Diplomats and employees, College of Health (COH) faculty members, and Dr. Bill Hunter (Director of UN Programs & Representative to the UN).

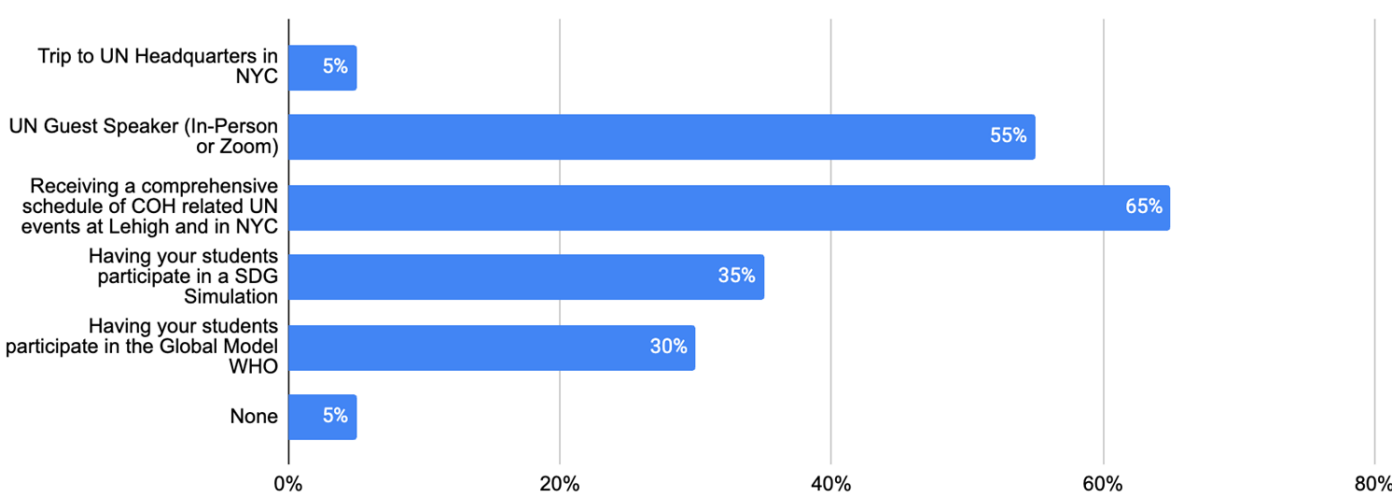
My internship was exciting because I worked in a variety of environments. I completed aspects of the internship at the UN Headquarters (UNHQ) in NYC, on Lehigh's campus, and in the comfort of my home in Connecticut. In July, I attended several events and meetings at the UNHQ including High-Level Political Forum sessions. Some of the sessions I attended were the Sustainable Development Goals (SDG) Global Business Forum, Building Momentum Towards the SDG Summit, and Leveraging Skills and Investment to Achieve the SDGs. In August, I accompanied the first-year students who participated in GlobaLehigh PreLUision at the UNHQ. Together we toured the UNHQ and privately met with the Deputy Consul General, Carsten Rüpke, at the Consulate General of the Federal Republic of Germany.

A major aspect of the internship was mapping out COH faculty with potential non-governmental organization (NGO) partners. Steps included surveying and speaking with COH faculty members regarding their prior experiences and future goals with the UN. I also scrutinized ECOSOC and DGC databases to find overlap between UN NGOs and COH faculty.

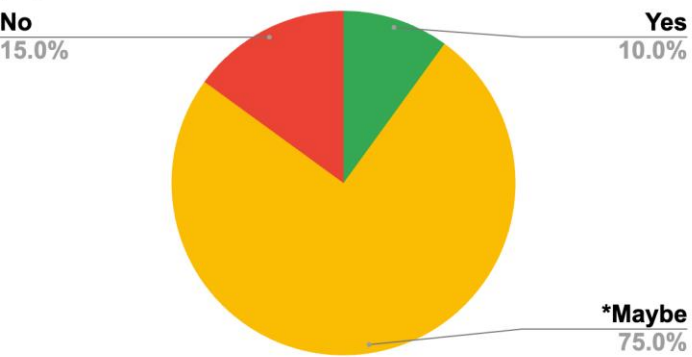
It was and continues to be rewarding to help develop the COH's role within the UN. I feel gratified knowing that through this internship I helped lay the groundwork to assist other COH constituents in fostering a connection with the UN.

### Survey Data Samples

Which of the following methods of engagement with the UN and / or NGOs may benefit your upcoming classes? Please select all that apply and feel free to add additional methods.



Would you be interested in supervising a class-based research project in collaboration with the UN and/or an NGO?



The pie chart data is encouraging as it depicts faculty interest. This emphasizes the need to educate COH faculty regarding the LU/UN Partnership's vast resources and collaboration opportunities (see *Project Outcome* section for details).

\*Depending on the type of research

### Project Outcome

The survey distributed to all COH faculty had an 80% response rate. The survey I designed gathered data pertaining to COH faculty: research and geographical areas of interest, NGOs of interest, prior engagement with the UN, and future goals with the UN. Analysis of the survey data, brainstorming with COH faculty members, and exploring NGO databases culminated into a presentation that highlights specific action steps to increase alignment between the COH and the UN. I also outlined potential UN NGO partners for each COH faculty member that participated in the survey.

One survey finding depicts that 90% of COH faculty members are interested in engaging with the LU/UN Partnership. However, the majority are unsure of how the partnership can support their work and which UN NGOs and entities would be beneficial to collaborate with. Based on this finding, I came up with the concept of developing a "LU/UN Crash Course" to teach COH faculty the purpose of the LU/UN partnership, to highlight resources available to them, and also to walk them through processes on how to engage with the UN. For example, content will include how to book a UN Guest Speaker and how to plan and fund a class trip to the UNHQ. This initiative can expand to similar sessions for students. Ideally, these sessions will feature current Youth Representatives to inspire the next cohort of Youth Representatives.

An additional outcome was designing a 3-year plan for the COH to become a World Health Organization Collaborating Center (WHOCC). The WHO has partnerships with institutions all over the world pertaining to global health research, training, and information. To further align the COH with the UN, I conducted extensive research on the preliminary work and application process to become a WHOCC. Since 2-years of pre-existing collaboration with the WHO is recommended before attempting to apply for WHOCC status, the COH's engagement with the WHO is of utmost importance in the coming semesters.

### Internship Discovery

This internship was designed and overseen by Dr. Bill Hunter. I have been working with Dr. Hunter and the LU/UN Partnership since the beginning of my sophomore year through my roles as a UN Youth Representative Committee Member and now a UN Youth Representative. In 2004, Lehigh became the 6th university to earn NGO status by the UN. In 2008, the Youth Representative program was born where Lehigh students serve as advocates for their matched NGO at the UN. The specific NGO I represent is none other than Lehigh University's College of Health!

My passion in these roles led to meetings with Dr. Hunter where he ultimately hired me as an intern this summer to help establish a strategic plan to increase the partnership between the COH and the UN. Additionally, the onboarding of Dr. Krista Liguori, COH Assistant Professor and Representative to the UN, provided additional momentum to outline the COH's future steps with the UN. I met with Dr. Hunter and Dr. Liguori on campus this summer to present my internship progress as well as to plan UN-related activities for this coming semester.

Another aspect of my internship was investigating if and how the COH can collaborate with the WHO. After conducting preliminary research on this initiative, I engaged with Dr. Eduardo Gómez, a professor in the COH, for his guidance due to his previous work and extensive knowledge concerning the WHO.

### Next Steps

I love that this internship is the catalyst for long-term projects that can be developed for years to come! I am looking forward to continuing to work on these projects through my collaboration with the LU/UN Partnership.

Analysis of the survey responses provided me with a better understanding of the desires and needs of the COH faculty in regards to their connection with the UN. For example, 65% of the respondents indicated that receiving a comprehensive schedule of COH related UN events at Lehigh and in NYC would benefit their upcoming classes. I will address this demand via revamping *Health Hub*, the health-focused newsletter I edit and distribute to all COH constituents on a bi-weekly basis. I am pleased to lead the Health-Focused UN Youth Representative Committee where I collaborate with two motivated COH students who help me research and track UN events that are shared in *Health Hub* issues. In previous issues, we highlighted 5-6 upcoming UN events per newsletter. This semester, I will implement a new feature where subscribers will have access to a spreadsheet with information and links to a multitude of upcoming UN events with a click of a button. The spreadsheet tabs will be organized by UN Agency so subscribers can easily explore entities of interest. To strengthen the COH's ties with the WHO, I will add a section to *Health Hub* dedicated entirely to methods in which COH faculty and students can engage with the WHO. This section will provide subscribers with details regarding the Global Model WHO, virtual meetings, events and any relevant WHO news and opportunities.

Dr. Hunter, Dr. Liguori and I will continue to collaborate concerning the matches I mapped between COH faculty and UN NGOs. Following this, I hope to disseminate to COH faculty their respective strategic matches and suggestions to engage with the LU/UN Partnership. These next steps will be in conjunction with maintaining the present and networking to establish new connections with the UN and the WHO. The foundational work this internship cultivated will further align the COH with the UN. Long-term action steps include securing new UN Grounds Passes and Youth Representative positions for COH faculty and students.



A strategic goal is to further align the COH with the WHO. During the 2022-2023 school year, COH students had opportunities to attend presentations delivered by Werner Obermeyer, Director of the World Health Organization at the UNHQ in NYC. I had the honor of serving as a Respondent to one of his presentations to the COH.



LEHIGH  
UNIVERSITY

College  
of Health

Please scan the QR code to join the *Health Hub* mailing list



# Needs Assessment of Young Adults with Autism (NAYAA)

Alyssa Blasko M.Ed., BCBA, & Victoria Connors, M.Ed., College of Education

## Introduction

The title of our summer experience was, “*Needs Assessment of Young Adults with Autism*” (NAYAA) developed by members of the College of Health and College of Education within Lehigh University along with members of Lehigh Valley Health Network. The purpose of this assessment is to understand the healthcare needs of individuals with autism transitioning into adulthood from the perspectives of individuals with autism, their caregivers, and physicians and support care providers.

Social Workers Specific Questions

	n	%
On a scale of 1-5, how comfortable are you interacting with young adults with autism spectrum disorder (ASD) in your position as a social worker?		
1: Not comfortable at all	0	0
2: Uncomfortable	2	12.5
3: Neutral	4	25
4: Comfortable	8	50
5: Extremely comfortable	2	12.5
On a scale of 1-5, please indicate your level of agreement with this statement: Access to specialty care (e.g., gastroenterology, endocrinology) is readily available for young adults with autism.		
1: Strongly disagree	1	6
2	8	50
3	3	19
4	2	12.5
5: Strongly Agree	2	12.5
On a scale of 1-5, please indicate your level of agreement with this statement: Access to mental health care is readily available for young adults with autism spectrum disorder.		
1: Strongly disagree	5	31
2	4	25
3	5	31
4	2	13
5: Strongly Agree	0	0
On a scale of 1-5, please indicate your level of agreement with this statement: Access to public transportation is readily available for young adults with autism spectrum disorder.		
1: Strongly disagree	2	12
2	7	44
3	7	44
4	0	0
5: Strongly Agree	0	0
On a scale of 1-5, please indicate your level of agreement with this statement: Access to employment resources (i.e., job coaching) or opportunities are readily available for young adults with autism spectrum disorder.		
1: Strongly disagree	3	19
2	5	31
3	7	44
4	1	6
5: Strongly agree	0	0

Note: A total of 16 social workers responded to this section of the survey.

## Project Outcome

This summer, we focused on recruiting for and conducting a focus group with caregivers of transition-aged individuals with autism and collecting survey data from physicians and support care providers (i.e., physical therapists, occupational therapists, and social workers) who work with those with autism. We began summarizing information gathered from the survey and analyzing themes from our focus group. The data gathered thus far suggest that both caregivers and medical professionals feel that more training is needed to better provide appropriate care and prepare individuals with autism for their transition to adult care.

Social Service Provider Survey Demographic Information

Characteristics	n	%
Gender		
Female	59	86
Male	10	14
Race		
White	61	88
Hispanic, Latino, Spanish Origin	4	6
Black or African American	1	1.5
Asian	1	1.5
Middle Eastern or North African	1	1.5
Prefer not to disclose	1	1.5
Highest Level of Education		
Associate degree	4	6
Bachelor's Degree	1	1.5
Master's Degree	50	72
Applied or Professional Doctorate	6	9
Doctorate	7	10
Other	1	1.5
Work Setting		
Inpatient	6	9
Outpatient	66	96
School	2	3
In-Home	5	7
Other	1	1.5
Occupation		
Social Worker	16	23
Physical Therapist	16	23
Occupational Therapist	16	23
Clinical Psychologist	1	1.5
Speech Language Pathologist	8	12
Physical Therapist Assistant	4	6
Licensed Professional Counselor	4	6
Behavior Health Specialist	3	4
Social Services Coordinator	1	1.5

## Internship Discovery

While both of us have varying interests within our fields of study, we sought out a summer experience that would provide us with the opportunity to work towards a goal of improving the quality of life for individuals with autism. We each have had research and practical experience with children with autism, but had little knowledge surrounding their process of transitioning from pediatric to adult care. We appreciate the collaboration between COH, COE, and LVHN and sought out this experience so that we can utilize these varied perspectives to better provide students with coordinated service needs.

## Next Steps

- Next Steps: Research**
  - Conduct focus groups with individuals with autism
  - Analyze themes from focus groups
  - Write up survey manuscript
  - Write up focus group manuscript
- Next Steps: Personal Goals**
  - Completion of coursework and dissertation
  - Internship in a school setting
  - Further work to improve access to coordinated care services for individuals with autism after learning how difficult these services can be to navigate
  - Promotion of family outreach





# Maternal Health in Sierra Leone

*R. Chaulagain, L. Rwasoka*



LEHIGH  
UNIVERSITY

College  
of Health

## The global maternal health crisis

Urinary tract infections are the second-most common infection in the world. More than 50% of women will contract one in their lifetime. Preeclampsia is a leading cause of maternal mortality and can lead to birth complications. Sierra Leone has the third highest maternal mortality ratio in the world. 1,120 deaths per 100,000 live births. Most maternal deaths are preventable. The Ukweli Test Strip is designed as a specific, accessible, low-cost, and efficient method to screen for UTIs and preeclampsia.



## Implementation and progress

Introduced to over 56 community health units. Over 3,000 tests administered, vast majority positive for UTIs and preeclampsia. Vast network of NGOs, product distributors, and health workers onboarded. Ukweli Test Strip en route to scaling beyond northern Sierra Leone, nationwide and into Liberia. Team currently engaged in cervical cancer implementation methodology research, educative community fieldwork, and scaled business model creation.

## Ukweli Test Strip technological success

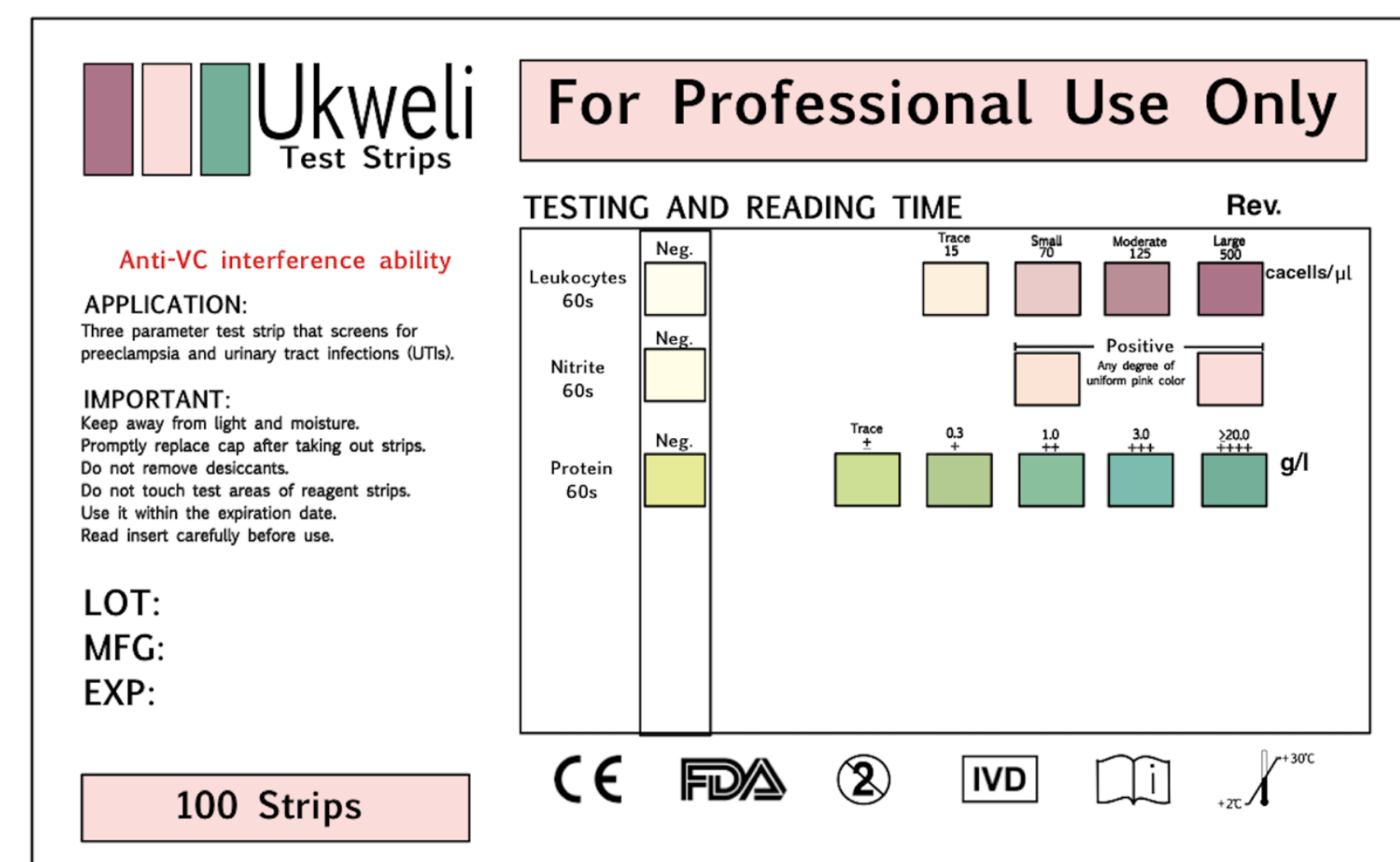


Ukweli  
Test Strips

**Affordable** Ukweli Test Strips are produced in novel methods that reduce cost to \$0.02.

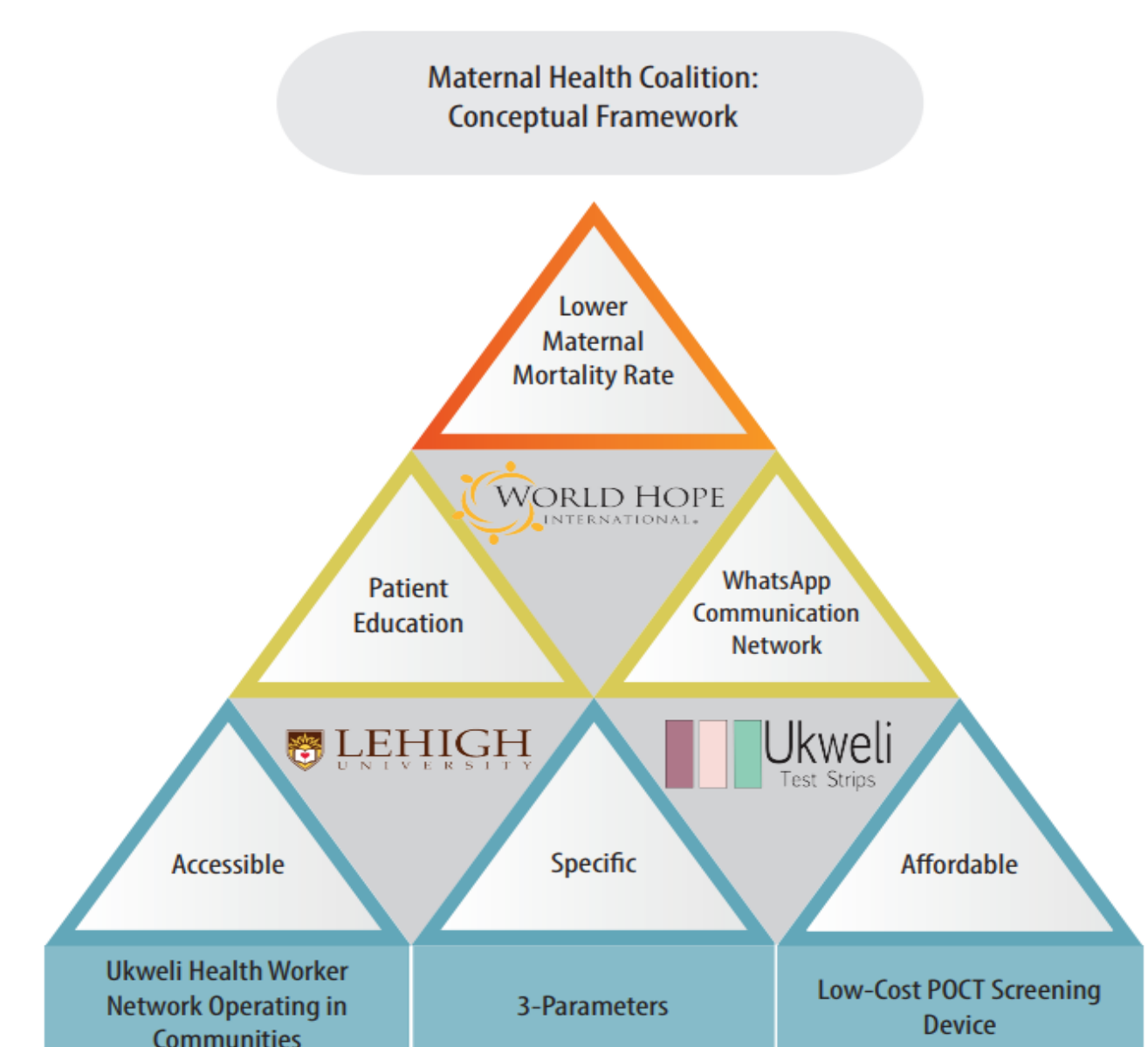
**Specific** Ukweli Test Strips test for 3 parameters instead of 10, allowing for an easy interpretation of results. Our strips test for leukocytes, protein, and nitrites.

**Accessible** We currently have a partnership with the NGO World Hope International and a distribution network of over 1,000 trusted community health workers through UNICEF across 56 health units in northern Sierra Leone.



## Transition to scale

The Ukweli Test Strip team received a \$100,000 grant in 2019 that allowed the project to come to life. The team has been invited back by its primary funder, Grand Challenges Canada, to apply for several million dollars in order to scale the venture across Sierra Leone, and into Liberia. This will bring the health technology into exponentially more hands, allowing tens of thousands of women to test themselves for infections. Scaling entails meticulous grant proposal writing, comprehensive research on effective screening implementation methods across low- and middle-income nations, and a dedication to constantly pushing boundaries.



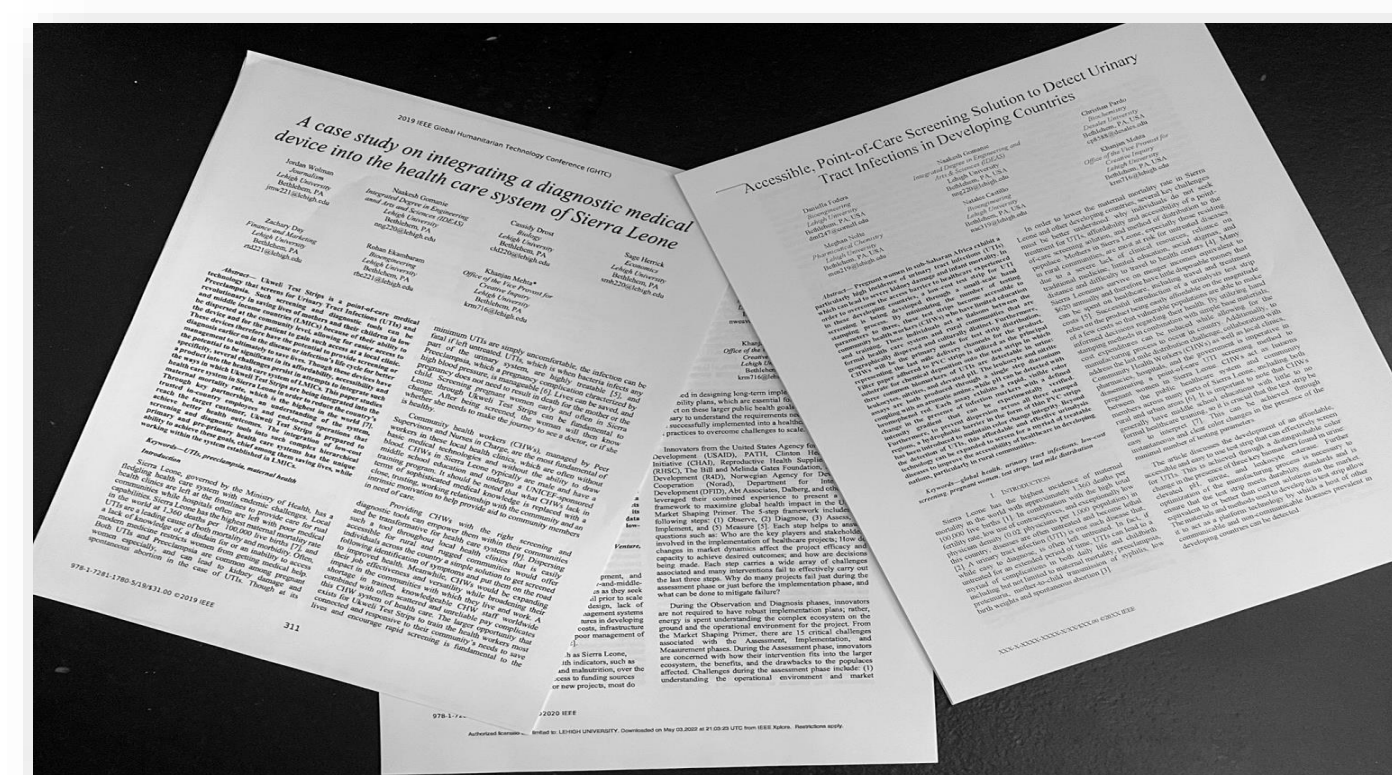
## Our mission is strong

Saving mothers' lives, one step at a time.



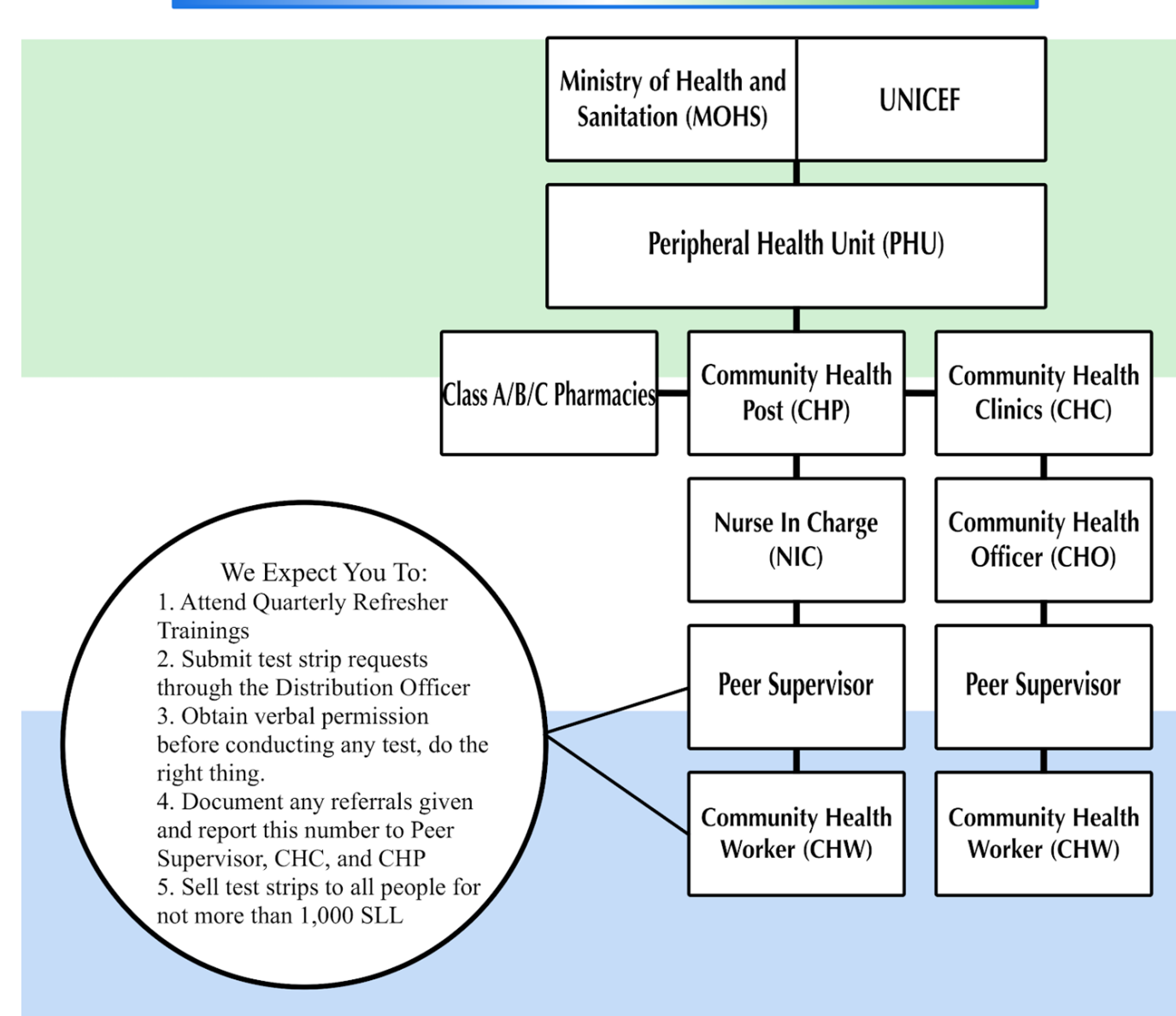
## Effective methods of cervical cancer screening implementation

Cervical cancer remains a significant global public health challenge, disproportionately burdening women in LMICs. Although numerous programs and projects have been implemented to address this challenge, their effectiveness and sustainability vary widely. Our team is thoroughly analyzing existing literature on cervical cancer programs and projects in low-resource settings and developing a comprehensive analysis of what supports their efficacy best. Analyzing successful programs and projects will identify the most effective and sustainable strategies that can be replicated in similar settings. Our study serves as a research reference for individuals and organizations interested in starting a cervical cancer program in LMICs.



## Working through international healthcare systems

### SIERRA LEONE HEALTHCARE SYSTEM



Zach Day, Ukweli Team 2019

Sierra Leone has a complex healthcare system. There is a free healthcare mandate for pregnant and postpartum mothers that is not effectively implemented due to lack of government funding. This means healthcare devices cannot be sold to our highest impact consumer base. This makes creating a self-sustaining business model for the Ukweli Test Strip venture very difficult! However, our team has dedicated a large amount of research to comprehensively analyzing effective methods of implementing screening programs in other similar nations. Liberia is a similar nation, but with no free healthcare mandate, making it a great candidate for expansion. Our research, healthcare device, technological innovation, and community fieldwork provides a strong baseline for future projects too.

## Sierra Leone Fieldwork 2023

During our fieldwork, we conducted semi-structured interviews with around 200 women (ages 18 to 64) in Makeni, Sierra Leone. World Hope International facilitated our connection, enabling trust-building within the community. Split into groups, we used four translators and gained verbal consent and recording permission. Our research focused on We employed door-to-door interviews to understand women's perceptions of cervical cancer and HPV vaccine with a focus on sexual and reproductive health.

## Acknowledgements

Creative Inquiry at Lehigh University. Khanjan Mehta. Grand Challenges Canada. VentureWell. World Hope International.

LEHIGH  
UNIVERSITY

Grand Challenges Canada  
BOLD IDEAS WITH BIG IMPACT™

WORLD HOPE  
INTERNATIONAL

VENTUREWELL

MINISTRY OF HEALTH  
AND SANITATION  
THE REPUBLIC OF SIERRA LEONE



# Exploring Maternal Resilience in the Southside of Bethlehem

Yalitza Corcino-Davis, College of Education, Summer 2023

Maternal Stressors & Traumas

Domain	Subcategory	Participants Responses		Participant Quotes
		N	%	
Stressors	Employment insecurity	7	37	"I have lost my job and things are getting worse."
	Food insecurity	2	11	"I haven't eaten in days. And when I came here (food pantry), she was like 'oh, you can come on Thursdays.' I'm going to die."
	Housing insecurity	7	37	"Today I went to donate blood to get the...\$100 to pay the rent."
	Transportation insecurity	2	11	"So, if I get my permit, that's the one thing I need."
	Migration	9	47	"Last year, in December, when my husband and son decided to come, it was just too much, too much stress."
	Financial burdens	7	37	"They say that money doesn't bring happiness. For me it does, because money gives you health insurance, schools, studies, a house, a car. If there is a lack of money, if there is a shortage of money, it will be a conflict."
	Spouse/partner	3	16	"Just trying to figure each other out and figure out how to live together because sometimes that can cause stress as well and figuring out how to communicate."
	Children	8	42	"And sometimes they are stressful, too, because you think, a lot of people think when kids become grown, it's more easier, but it's not."
	Family conflicts	13	68	I stopped trying to affiliate with my family for a while because all they did was crucify me, tell me I wasn't going to be this, point fingers at me."
	Caring for loved ones	14	74	"My oldest daughter...has an autoimmune disease, so that's stressful, just navigating all of that stuff with the doctors."
Traumas	Death	11	58	"I'm still grieving from my first kid's father. That was very traumatic for me and just losing my mom. And I had to take care of when she was sick. I take care of my dad when he was sick. I was just like, little old me."
	Child Abuse	6	32	"A stressful, horrible thing, I lived with that for about five, ten years with that, that I couldn't have sex with anyone afterwards, because I felt like L...it covered me up. It was a traumatic, stressful thing."
	Abandonment	9	47	"When I seen the back of my father's head leave me. I will tell anybody this till the day that I die. What traumatized me the most as a child."
	Domestic Violence	7	37	"Very stressful. I even lost a pair of twins because of it."
	Substance Abuse	6	32	"I have an alcohol problem." "I was a drug addict." "I use to take a lot of medications."

Note. N=19

## Internship Discovery

Handshake, <https://lehigh.joinhandshake.com>, a job and career website tailored to the needs of college students and alumni.



LEHIGH  
UNIVERSITY

College  
of Health

## Introduction

For the past two summers, I was the research coordinator for a study by Dr. Fathima Wakeel in the College of Health exploring how childbearing-age women cope with stress. As part of the study, I conducted 19 semi-structured interviews in either Spanish or English with women living in Bethlehem's southside. Then, Samara Everman, an undergraduate senior in the College of Health, and I coded the interviews and uncovered themes. Dr. Wakeel audited the coding process and reviewed the results. Utilizing the results from this first phase, we developed a survey instrument to measure the types and levels of stressors and supports women experience.

## Project Outcome

One of the discoveries in Phase I of the study was that family was the most significant support and stressor for most women. Over half of the women reported family conflict and caring for loved ones as the most significant stressors. At the same time, all 19 women said the family was a primary source of support. Beyond family, women reported that their faith, interactions with others, friendships, and positive mindsets helped them manage stress during difficult times.

Maternal Coping Mechanisms and Supports

Domain	Subcategory	Participants Responses		Participant Quotes
		N	%	
Coping mechanisms	Activities	11	58	"I like to listen to Audibles, reading, self-pampering, hot bath, whatever the case may be, and just maybe some good music that'll put me in a good mood."
	Self-love / self-care	8	42	"So that's a real strength, I think, was for me finding my voice and being able to say, 'This is my opinion,' or, 'This is,' whatever, without being afraid."
	Interacting with others	13	68	"And when you feel like that, talk. You sit outside and look for conversation, because that frees you...Because if you keep everything inside, it makes you sick."
	Healthy eating	10	53	"Eating well, healthy, what I eat. I eat fruits, I eat salads, I make my own meats,"
	Movement	11	58	"Dancing, taking walks, or taking to myself at least 15, 20 minutes to a half an hour."
	Nature	5	26	"I go to the park, I walk, I sit by the river, and that has helped me a lot."
	Self-restraint	9	47	"So, I said, 'No, I have already been there, I don't want to go there.'"
	Faith	13	68	"Pray. Got me a long way... It does not seem like much. But when you tap into it and accept it, it helps a lot."
	Positive mindset	15	79	"To focus on, to focus on that everything is going to be okay. And even if I don't have a plate of food, I say, 'I'm going to have it.' To always be positive."
Supports	Familial	19	100	"I can tell you that my family was number one, the strongest, deepest support was family."
	Spousal/ Partner	10	53	He's always there for me when he knows that I'm stressed out." "My husband is one of those people that whatever I do, everything is fine, he supports me emotionally."
	Friendships	14	74	"But my friends, I also reach out to. I text, or I try to see them as often as possible. So, they give a lot of support whenever I have something that's overwhelming."
	Community members	12	63	"It has been a great blessing, because I have lived there for 12 years, and...they are very close, and they are always greeting you, how are you, if they have things, they call you."
	Religious institutions	8	42	"If you are having a difficult time with your partner. Your pastor is the person who helps you."
	Other institutions	5	26	"And then I found the organization...that helped me with finances, food, shelter, everything of what I needed."

Note. N=19

## Next Steps

In phase II of the study, we plan to test the survey instrument by administering it to 30 women. We will also follow up with semi-structured interviews to better understand their survey results. The results from this phase will be used to refine the instrument before implementing it on a larger scale in phase III.



## Introduction

Allentown, within Lehigh University Valley, Pennsylvania, faces air quality challenges with ozone and particulate pollution ( $PM_{2.5}$ ). Despite health concerns and warnings, public awareness about air pollution is low. Historical industrial pollution perception complicates matters. **Ethylene oxide emissions pose cancer risks in certain neighborhoods, particularly due to a medical sterilization facility.** Efforts to reduce emissions have occurred, but the impact on ambient air quality is uncertain. **Low socioeconomic status (50–76% low income) and minority dominance (40–60% people of color) have a disproportionately negative impact on East Side communities in Allentown, but monitoring is lacking.** The Pennsylvania Department of Environmental Protection (DEP) and partners at Lehigh University plan to measure volatile air toxics to understand the extent of exposure in affected communities. Existing monitoring networks have limited data on ethylene oxide, which exceeds acceptable levels. Sources, concentrations, and health risks are unclear, highlighting the need for further investigation.

The objectives of the project are to

- 1) Characterize ambient concentrations of volatile air toxics in Allentown communities and near sources;
- 2) Identify likely sources and their contributions; and
- 3) Increase community awareness of and promoting activities that can minimize exposure to air pollution.

We will conduct both short- and long-term air monitoring in Allentown. In the **short-term sample**, we will follow a 1-day-in-every-6-day schedule for a 4-month period. Such source-oriented sampling will characterize upwind air and the transport of pollutants downwind of the facility. For **long-term monitoring**, a 1-day-in-every-12-day schedule for 1-year sampling will be collected. The samples from the long-term monitors will be analyzed for ethylene oxide and other volatile air toxics.

The monitoring results will be used to

- 1) Characterize the outdoor seasonal and geographic variability of volatile air toxics;
- 2) Quantify relative source contributions; and
- 3) Increase community awareness, oversight, and engagement with air monitoring and activities that can reduce exposure to air toxics.

EPA/ATSDR. 2020. Toxicological Profile for Ethylene Oxide. [Online] Available at: <https://www.atsdr.cdc.gov/toxprofiles/t137.pdf>  
Jiang, Xu-Gui et al. "Air pollution and... 2016-2014 National Air Toxics Assessment." [Online] Available at: [https://pubs.nia.gov/NATA/chronic/airway\\_diseases:\\_what\\_should\\_people\\_know\\_and\\_do?](https://pubs.nia.gov/NATA/chronic/airway_diseases:_what_should_people_know_and_do?) "Journal of thoracic disease vol. 8,1 (2016): E31-40. doi:10.3978/j.issn.2072-1439.2016.11.50

## Sampling Design

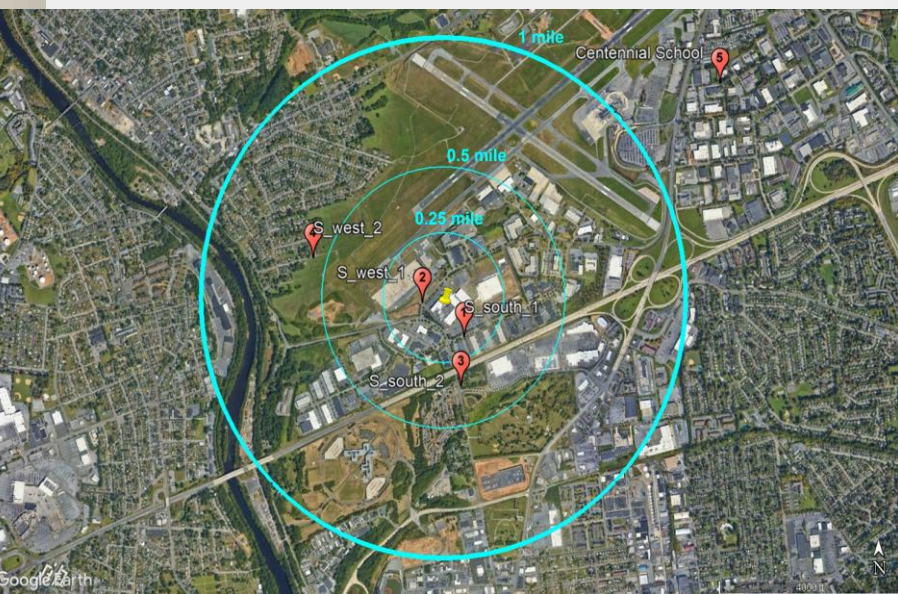


Figure 1: Short-term sampling locations with distances from the facility

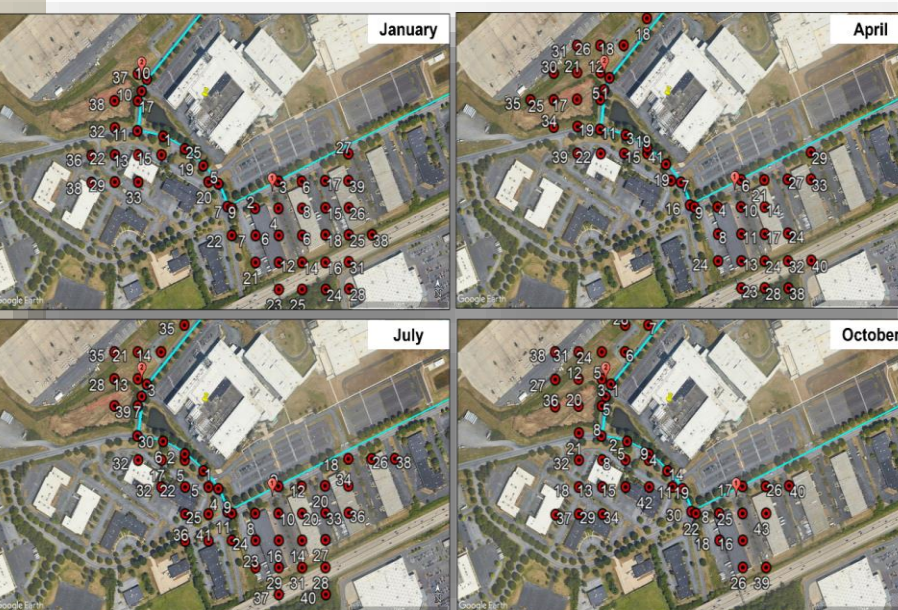


Figure 2: The top 45 receptors of each month for short-term sampling.

- ❑ Sampling locations will be chosen based on dispersion modeling analysis, EJScreen, population density, and community inputs to cover gradients of concentration, access for sampling, environmental justice rankings, and community concerns

- ❑ Short-term sampling, site selection is primarily based on modeled ethylene oxide concentration and nearest residential receptors.

- ❑ The five locations include **two sites** at the maximum ethylene oxide receptors in close proximity to the facility, two sites at the nearest residential receptors, and the Centennial School site with sensitive children.

- ❑ Air samples will be collected over a **24-h period**

- ❑ Short-term sampling will take place in the middle month of **each season** (January, April, July, and October), two modeling outputs were generated for each of these months: maximum **24-h concentration** by receptor and monthly average by receptor.

- ❑ Receptor rankings were then created with a **rank of 1** if a receptor had the highest concentration for the average time. This resulted in two rankings for each receptor (**maximum 24-hour, monthly average**)

## Sampling Design

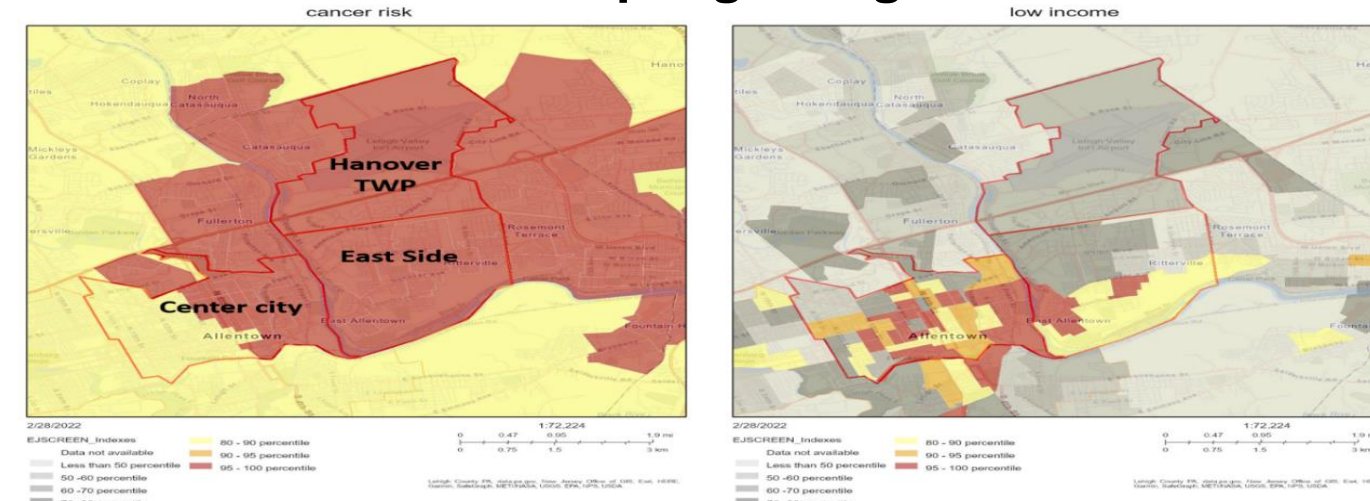


Figure 3: Air toxics cancer risk percentile (left) and low-income percentile (right) at national level near the Allentown's East Side, graphs created using EJScreen.

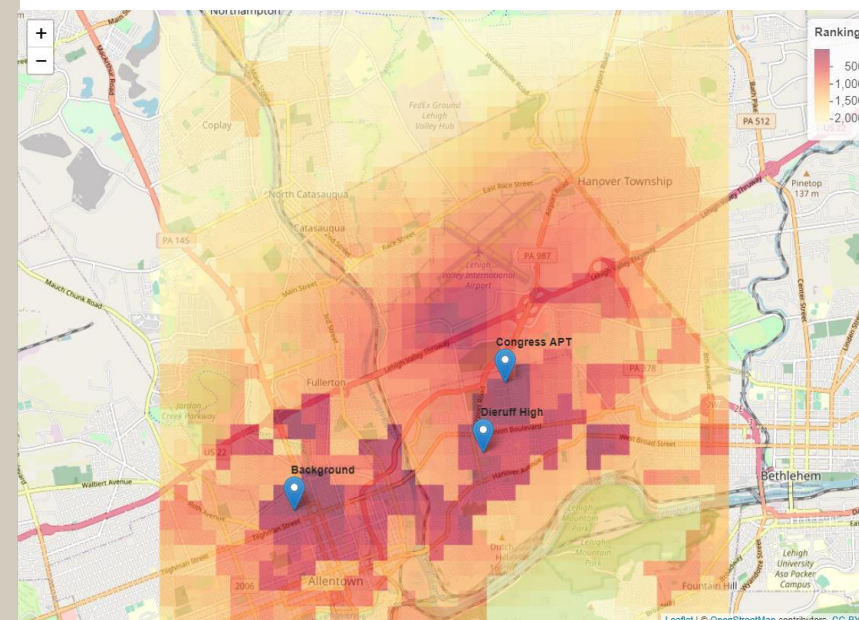


Figure 4: Long-term monitor locations and ranking results

- ❑ Long-term sampling was developed using multiple metrics. The background site will be placed in the **center city of Allentown** where the impact of the facility emissions is **expected to be low**, while the **EJ index is high** due to the **high demographic index**.

- ❑ The long-term receptor ranking system is **three metrics**: modeled ethylene oxide, demographic index, and population density. Long-term sampling will be **one year, maximum 24-hour** concentration, **5-year seasonal** averages (winter, spring, summer, and fall), and 5-year annual average.

## Methodology



- ✓ The 6-liter stainless steel **SUMMA-treated canister** and critical orifice passive sampling kits will be used for sample collections.
- ✓ Concentrations of ethylene oxide and volatile organic compounds (VOCs) in ambient air, based on the collection of whole air samples in SUMMA-treated canisters.
- ✓ EPA **Compendium Method TO-15** Determination of Volatile Organic Compounds (VOCs) in Air Collected in Specially Prepared Canisters and Analyzed by Gas Chromatography/Mass Spectrometry (GC/MS) for both sampling and analysis methodology.
- ✓ Standard Operation Procedure (SOPs) will be followed
- ✓ EPA National Monitoring Programs (UATMP, NATTS, CSATAM, PAMS, and NMOC Support) and Technical Assistance Document for The National Air Toxics Trends Stations Program guideline will be followed

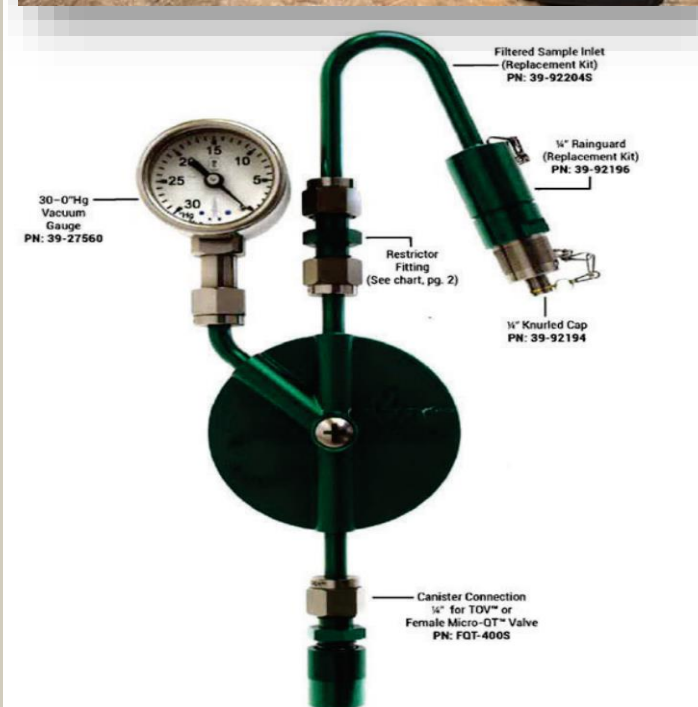


Figure 5: Figure 3: 6-L Stainless steel canisters

Data analysis will be in four phases:

- 1) basic exploratory statistics;
- 2) time series trend analysis;
- 3) spatial mapping to understand differences between sampling locations; and
- 4) source apportionment modeling - Positive Matrix Factorization.

The first three analysis approaches will be used to investigate **temporal and spatial variability of volatile air toxics**. The fourth analysis will provide information to identify source types and to estimate the contributions of most significant sources to individual air toxics in each site. The EPA Positive Matrix Factorization model version 5.0 (EPA, 2014) will be used for this analysis.

One option is to present results from the data analysis using an interactive map tool on a project webpage. This interactive web map can be open-sourced and shared with communities, shareholders, and broader audience.

## Project Outcome

### Output

- Ethylene oxide and volatile air toxics data from the Allentown study area impacted by sterilization facilities, highways, and airports;
- Community-specific ethylene oxide exposure assessments; community engagement through collaboration, information dissemination, risk reduction strategies, and awareness;
- Open-source data visualization product for sharing data Partnership promotion via community collaboration, outreach, and outcome communication.

### Short-term outcomes

- Advance understanding of ambient levels of ethylene oxide and other volatile air toxics in the Allentown study area
- Identify potential impacts and contributions of source emissions
- Improve air dispersion model performance for predicting ethylene oxide concentrations
- Increased community awareness and collaboration related to project and result

### Mid-term outcomes

- Capacity building for communities to participate in air toxic sampling and decision-making processes related to this project and beyond
- Capacity building for local university to conduct ambient air toxic sampling and analysis
- Use results to support risk and emission reduction strategies if needed

### Long-term outcomes

- Reduction of emissions and ambient levels of ethylene oxide
- Reduction in exposure to ethylene oxide and other air toxics
- Enhance technical capabilities and community involvement and capacity to perform similar work in the future

## Internship Discovery

- ❑ As the site operator, my responsibilities include operating air monitoring equipment according to guidelines, maintaining a sample collection schedule, ensuring quality control measures are met, conducting meteorological measurements, documenting issues and corrective actions, coordinating with ERG Lab for sample handling, and reviewing statistical methods in research studies.

- ❑ My journey into the realm of environmental health and air pollution monitoring was sparked by a profound series of encounters and a supportive network. Initially drawn by my passion for environmental science and air quality, I channeled my curiosity into seeking practical experiences. Discovering Professor Hyunok Choi's project aligned perfectly with my academic interests, motivating me to reach out and express my eagerness to contribute. This connection led to transformative insights as I engaged with professionals, including Dr. Zhong Min, and collaborated with industry experts and mentors. Through hands-on learning, interactions with specialists, and exposure to real-world air quality monitoring intricacies, I gained a holistic perspective that significantly enriched my academic journey.

## Next Steps

My internship experience in the "Allentown Communities to Characterize Ethylene Oxide" project has been transformative, shaping my career aspirations and highlighting the real-world impact of environmental health research. This experience has ignited a passion for air quality monitoring, motivating me to seek further hands-on opportunities to contribute to addressing environmental challenges. I now understand the vital collaboration between academia, government bodies, and institutions, which is essential for effective solutions. Additionally, I've gained insight into the pivotal role research plays in driving informed policies, and I plan to integrate this understanding into my future endeavors. Looking ahead, I'm enthusiastic about using my knowledge to advance environmental science and public health, aligning with my newfound career trajectory.



# IHPP: Research and Administrative Assistant

## Max DeCaro, Institute of Health Policy & Politics, May '25

### Introduction

My work at Lehigh University's Institute of Health Policy & Politics started in the Spring of 2022, when I was hired as the research and administrative assistant. During my tenure in this position, I have worked alongside Institute Director Dr. Eduardo Gómez to run and grow the Institute. This has included acting as co-editor in chief of our peer-reviewed journal, setting up and running Institute events, heading Institute communication with affiliates, collaborating with both Lehigh and guest faculty, amongst other tasks. I have also worked on events and projects hosted by both the Institute and Lehigh's College of Health.



**Left Photo:** Myself; Contact: [amd225@lehigh.edu](mailto:amd225@lehigh.edu)  
**Right Photo:** *Health Policy & Politics* Journal logo, created by myself in conjunction with the editorial team

### Project Outcome

Over the course of working for the Institute, I have had the opportunity to work on a large variety of events. The events proved generally successful and were able to bring together professionals and students from around the Lehigh Valley to have important discussions on public health. I also headed IHPP correspondence, which included communicating with Institute guests and writing our bi-monthly newsletter. One of the most rewarding aspects of this position has been working as journal co-editor in chief. The first issue of the journal *Health Policy & Politics* is set to be published early this September 2023.



Attending the visit of US Assistant Secretary of Health Rachel Levine on April 28, 2022. Her visit commemorated the opening of the HST building. I was one of many Lehigh collaborators and University partners who worked on this event.

### Job Discovery and Evolution

I first became interested in this position during the Fall 2021 semester: my freshman year. I had been in discussions with Dr. Gómez, who at that time was one of my professors and my summer academic advisor, about the founding of the Institute and the opportunities that came along with it. Joining the Institute would allow me to help with research and discussion on a relatively new interdisciplinary field of health study: the intersection of health, policy, and politics. I applied for the position when the Institute opened that Fall 2022. The start of my work was primarily focused on event planning and Institute communications. As time went on, I became co-editor in chief of the Institute's journal *Health Policy & Politics*, as well as helped with more aspects of running events, providing opportunities to Institute affiliates, and brainstorming grants.

### Next Steps

With the start of this Fall 2023 semester, I will be continuing in my position as a research and administrative assistant. A primary short-term goal for both me and the Institute at large is to finalize the publication of the first issue of *Health Policy & Politics*, followed by the second issue's call for papers. Long-term, we will continue to work to increase journal accessibility and to publish authors in the field from around the world. I will be continuing as co-editor-in-chief and writer of our calls for papers. I will also continue to work on the general duties related to the job, as well as helping organize events that may reach faculty and professionals from all University colleges and around the Lehigh Valley. The Institute is also working on an important grant, which we hope will allow for more academics from around the country to participate in Institute activities, discussions, and papers.



**LEHIGH**  
UNIVERSITY

**College  
of Health**



# Student Research Intern at the Equity Research and Innovation Center (ERIC)

Aliya Dworkin, Yale School of Medicine, May 2025

## Introduction

This summer I worked as a Student Research Intern (SRI) at the Equity Research and Innovation Center (ERIC) at the Yale School of Medicine. Based in downtown New Haven, CT, I got to work with Dr. Jeremy Schwartz, who is an Associate Professor of Medicine (General Medicine) at Yale School of Medicine and of Epidemiology (Chronic Diseases) at Yale School of Public Health. Dr. Schwartz works to develop and implement public health interventions that help alleviate the global burden of non-communicable disease (NCD) in places such as Uganda and the Caribbean.

The main project that I worked on this summer was Medly Uganda, a mobile-health intervention to help heart failure patients in Uganda better manage their self-care. Medly Uganda has recently been awarded an NIH R01 grant, and IRB approval from the three involved institutions is expected any day. I also worked on the qualitative side of another study that aimed to understand the implementation of a real-time prescription benefit tool (RTPB) in the Epic electronic healthcare system at Yale, Johns Hopkins, and the University of Wisconsin.



**Equity Research and  
Innovation Center**  
Yale School of Medicine

## Project Outcome

For Medly Uganda, I assisted with REDCap survey design, research on administrative supplements, designed organizational charts for the larger team, attended weekly and monthly meetings with team members from across the world, and assisted with the literature review of the pilot R21 study findings. For the RTPB project, I took field notes for focus groups, handled the transcription process for the focus groups, conducted accuracy checks, and participated in the qualitative coding of such transcripts. In addition, I attended weekly and monthly meetings with the larger team across the three sites. Aside from these projects, I developed a REDCap survey for another project about the mental health of caregivers of young children with sickle cell anemia in rural Uganda, which was composed of six different instruments.

I learned a great deal from my internship this summer. I had the opportunity to work in a professional setting with a variety of experts in public health, qualitative methods, and project management. My goal for this summer was to be exposed to different career paths within the public health field, which I definitely accomplished. I was also able to get a better sense of what type of career I would be interested in and succeed in.



## Internship Discovery

I found this internship through my father's colleague, Tara Rizzo, who is the deputy director of ERIC. After speaking with Tara about my personal interest in public health, she put me in touch with Dr. Schwartz, as his work with NCDs closely aligned with my interests. From there, I worked with a variety of professionals on Dr. Schwartz's team, including project managers, qualitative methods experts, other clinicians, and research associates. When I was physically in the office, I got to meet a number of other researchers in different fields and thoroughly enjoyed hearing about their projects.

## Next Steps

Going into this summer, I knew that I loved public health as a field but did not have any concrete aspirations for career paths. Through this internship, I discovered project management, which has completely changed how I think about my future career. I think that project management would be an amazing fit for my skills and interests. I was able to speak to my supervisors about the project management career path and take their advice. This internship not only helped me discover this new possibility but also allowed me to understand the steps to get there. After finishing my undergraduate education, I plan to pursue an MPH and start project management for public health research in academia. As for my involvement in the Medly Uganda project, I will be staying a member of the team and assisting in various project management-related tasks for the foreseeable future. I had an amazing time this summer and am incredibly grateful to have explored career opportunities and built on my research skills.



**LEHIGH**  
UNIVERSITY

**College  
of Health**



# Mothers of Sierra Leone Documentary Film Project

## Global Social Impact Fellowship

### Hannah Falatko, 2025 and Tiffany Valencia, 2025

## Introduction

**Summer Experience Title:** Mothers of Sierra Leone Documentary Film Project

**Organization:** Lehigh Global Social Impact Fellowship (GSIF)

**Locations:** Makeni, Sierra Leone, West Africa

**Introduction:** Mothers of Sierra Leone is a documentary film team dedicated to producing short films about maternal health resources and sharing the voices of women and healthcare providers in Sierra Leone. These films are shown around the region in order to promote trust in the healthcare system and increase use of maternal health resources, all in an effort to combat the high maternal mortality rate in the country. This summer, the MOSL team travelled back to the Makeni region to get more interview footage with a focus on perinatal healthcare services.

Over the course of our 3 week fieldwork, our team was able to gather over 50 interviews with mothers, fathers, and healthcare workers at clinics, hospitals, and community meeting places across the region. In addition, we gathered countless clips of B-roll footage to supplement the interviews in our film production and enhance the visuals. Through our interviews and clinic visits, we learned professional advice on maternal health topics that we will make films about in the fall. Some of these topics include: nutrition, emergency services and pregnancy complications, labor and delivery, lactation, and family involvement.

In addition to filming, we also conducted 6 focus groups with mothers, fathers, and healthcare students to better understand the efficacy of our films. These focus groups mark the start of our 12 month research study, which will include both qualitative and quantitative data collection through focus groups and surveys. While in country, some of our team members made arrangements for the logistics of this study, working closely with our partners Solomon Samura of CHAMPS and our research assistant, Musa Santigie Kamara.



## Internship Discovery

I discovered this project through a presentation from the faculty mentor, Dr. Michael Kramp, in a population health class. Since then, I learned more about the GSIF program as a whole and got to learn about other students experiences at the information session held by the Office of Creative Inquiry in the fall. Although I was impressed with all the programs that GSIF had to offer, I was most impressed by the interdisciplinary nature of the Mothers of Sierra Leone project.

## Project Outcome

During our fieldwork in Sierra Leone, we conducted a comprehensive series of interviews with mothers, fathers, and healthcare workers, resulting in a wealth of insightful information that will be seamlessly integrated into our forthcoming films. These interviews covered a wide spectrum of perinatal care topics, including breastfeeding, nutrition, personal and dental hygiene, and the critical bonding between mother and child. In addition to our interview footage, we gave priority to capturing compelling B-roll and drone footage. These visuals will serve as essential elements in our films, allowing us to authentically convey the unique essence of Sierra Leone. Securing approval from the Institutional Review Board (IRB) in Sierra Leone was a pivotal milestone in our project. It allowed us to conduct focus group sessions with both mothers and fathers. The primary aim of these focus groups was to solicit feedback on our films, enabling us to revise our content to ensure it is effective and culturally resonant.

To maximize the reach of our films, we displayed them using a solar-powered, portable cinema kit. This technology allowed us to share our content in diverse settings and communities.

Moreover, our time in Sierra Leone provided us with a unique opportunity to strengthen existing partnerships with clinics, hospitals, and community leaders. Simultaneously, we forged new relationships with healthcare facilities and leaders who graciously welcomed us, facilitating the gathering of essential footage and the conduct of insightful interviews.

## Next Steps

A critical member of our team is MSK, our in-country translator and research assistant. While in the field, we had the opportunity to discuss MSK's role and responsibilities for the upcoming year. These include conducting focus groups, surveys, and making visits to our partner facilities. We are committed to closely supervising and supporting MSK, in conjunction with our colleague Solomon Samura, in order to ensure the successful completion of these tasks during the next year.

Our post-fieldwork activities involve transcribing, translating, and editing the interviews we conducted, which will be crafted into compelling films. Once these films are finalized, we will distribute them to our partner facilities and to MSK. His role extends to sharing these films with mothers and fathers and organizing further focus groups to gather feedback and insights. We are also diligently analyzing the qualitative data already collected from completed focus groups, ensuring that we extract valuable insights for our project.

During our fieldwork, we utilized our Davis Projects for Peace grant to purchase flat-screen TVs for our partner facilities. In the coming phases, we will be actively monitoring the installation process of these TVs, guaranteeing that they are being utilized as intended: to display our films and provide educational health promotion resources. This initiative aligns with our mission to enhance healthcare awareness and access in the Sierra Leonean communities we serve.



LEHIGH  
UNIVERSITY

College  
of Health



# Population Health Summer Intern Dakota Feldman, Valley Health System, December 2023

## Introduction

This summer, I had the opportunity to be a Population Health intern at Valley Health Systems (VHS) located in Paramus, New Jersey.

Daily tasks and activities of the internship included:

- Shadowing at other offices/VHS locations such as The Valley Hospital, Community Health Building, Family Caring at Ridgewood, and the Access and Navigation Center
- Observing meetings regarding physician quality scores and measures, Premier and Horizon insurance, and HCC recapture rate data

## Project 2: Skilled Nursing Facility Value Score Model

Facility Name	Facility Name on Medicare.gov	Total Admits	30 Day Hospitalization	Star RR	Star RR	Avg LOS	Star ALOS	Value Score	Overall Star Rating	Quality Star Rating	Collab Survey
SNF 1	SNF 1	183	16%	3	3	24.3	4	3.3	5	5	Do you feel you were utilized most effectively to help treat patients? If not, what could be done differently?
SNF 2	SNF 2	126	15%	3	3	25.0	3	3.0	4	4	Which specific resources that apply to your work at the SNF were available?
SNF 3	SNF 3	89	9%	4	4	21.5	4	4.0	3	5	Do you feel supported while working at the SNF? If not, what aspects can be improved?
SNF 4	SNF 4	70	13%	3	3	21.5	4	3.3	5	5	Do you have recommendations for ways to provide care that you have heard/seen at another SNF?
SNF 5	SNF 5	64	17%	2	2	24.4	3	2.3	5	5	



LEHIGH  
UNIVERSITY

College  
of Health

## Project 1: HCC Recapture Reports

ICD	ICD Description	Visit Status	Last Visit	Sum of Amount Lost to Benchmark Target
K743	Primary biliary cirrhosis	AWV	9/8/2022	\$ 3,474
I700	Atherosclerosis of aorta	Incomplete	None	\$ 3,131
D573	Sickle-cell trait	AWV	None	\$ 3,246
E1165	Type 2 diabetes mellitus with hyperglycemia	Incomplete	None	\$ 3,651
E211	Secondary hyperparathyroidism, not elsewhere classified	AWV	None	\$ 3,932
E6601	Morbid (severe) obesity due to excess calories	Incomplete	None	\$ 1,904
# Not Recoded	# Recoded	Total	Percent Recoded	
	1	1	100.0%	
	4	4	100.0%	
	1	1	100.0%	
	3	3	100.0%	
	2	2	100.0%	
2	7	9	77.8%	
23	44	67	65.7%	
8	13	21	61.9%	
94	145	239	60.7%	
8	12	20	60.0%	
2	3	5	60.0%	

## Project 1 Description & Outcome

- HCC recapture is the rate of which recurring chronic conditions are captured from year to year by a physician
- Created and sent out spreadsheets for individual physicians in the hospital analyzing how much money is being lost per chronic condition (top image)
- Produced and sent out an overall report per hospital department comparing each physician to one another, showing them where they rank compared to their peers in terms of how many HCC codes have been recaptured (bottom image)

## Next Steps

- I am continuing to research and understand information on Accountable Care Organizations (ACOs) and government backed health programs through my Honors Capstone Proposal and Execution this Fall
- Inspired by my work this summer, I will be comparing Indian Health Services' (IHS) use of benchmark targets for care with Medicare's benchmark targets
- The guiding question will be looking at why is one more successful than the other?

## Internship Discovery

I discovered this internship with Valley Health System (VHS) through the College of Health's Advising Team and the relationship they created with VHS.

The COH has established a partnership with VHS where each summer, one COH Population Health student will interview and be selected as a summer intern in the Population Health Department.



# Summer Comparative Public Health Systems I + II (London + Amsterdam)

Paulina Gonzalez, CIEE, Class of 2025

## Introduction

**Summer Experience Title:** Summer Comparative Public Health Systems I + II (London + Amsterdam)

**Organization:** Council on International Educational Exchange (CIEE)

**Locations:** London, United Kingdom and Amsterdam, Netherlands

During my summer experience with the Summer Comparative Public Health Systems I + II program, organized by the Council on International Educational Exchange (CIEE), I had the incredible opportunity to explore healthcare issues from the intercultural perspectives of the British and Dutch healthcare systems. In the first part of the program, I conducted research in London to understand the challenges facing the British National Health Service. Then, I traveled to Amsterdam to delve into culturally sensitive topics like euthanasia and elder care. Throughout the eight-week program, I took courses in Contemporary Challenges in Global Health and Public Health in the Netherlands.

In London, I had the chance to interact with healthcare professionals and researchers, visit relevant sites, and analyze the impact of cultural dynamics on the delivery of public healthcare. In Amsterdam, I delved into discussions about the health effects of drugs and alcohol, euthanasia, and home birth, all while gaining insights into the Dutch approach to norms and standards in public health.

I worked closely with fellow students from diverse backgrounds, healthcare professionals, and faculty members from CIEE, who guided us through the academic content and facilitated our interactions with the healthcare systems. My role in this larger organization was that of a student researcher and learner, contributing to the discussions, site visits, and cultural immersion activities.



## Internship Discovery

I discovered this internship opportunity through the study abroad office and research online. I was already interested in public health and was specifically looking for programs that offered an international perspective. The CIEE program caught my attention due to its focus on comparing healthcare systems in different cultural contexts. I also reached out to my professors and mentors, who provided valuable insights and encouraged me to pursue this opportunity.

## Project Outcome

Throughout the program, I engaged in in-depth research and discussions on a wide range of healthcare topics. I learned how healthcare systems are shaped by cultural, social, and economic factors, and how these factors influence health outcomes and policy decisions. It was fascinating to compare the British and Dutch healthcare systems, each with its strengths and challenges. One interesting aspect was observing how cultural attitudes towards topics like euthanasia led to distinct approaches in the two countries.

Initially, my goals were to gain a comprehensive understanding of global health challenges and learn about different healthcare systems. As the program progressed, my goals evolved to include developing a deeper appreciation for cultural sensitivity in healthcare delivery and policy-making. By the end of the internship, I had accomplished these goals by actively participating in discussions, conducting research, and engaging with local healthcare professionals.

## Next Steps

This experience has significantly impacted my college experience and future career plans. As a Population Health major, I now have a deeper understanding of how healthcare systems operate in diverse settings. I've gained valuable insights into designing culturally sensitive health interventions and policies. The program also allowed me to network with professionals in the field and develop skills like leadership and adaptability.

My next steps involve applying the knowledge and skills I've gained from this program to my academic and professional pursuits. I plan to seek out more internships and research opportunities that allow me to continue exploring global health challenges. I'll use the evidence-based policy opinions I've developed to contribute meaningfully to improving health outcomes in populations.

For the organization, the CIEE program will likely continue to provide students with unique insights into comparative healthcare systems. They might identify new destinations or expand their course offerings to encompass emerging global health issues. The program's success lies in its ability to provide students with a well-rounded experience that combines academic learning with cultural immersion, fostering intercultural understanding and informed global health perspectives.



LEHIGH  
UNIVERSITY

College  
of Health





# Maternal Health in Sierra Leone

*R. Chaulagain, L. Rwasoka*



LEHIGH  
UNIVERSITY

College  
of Health

## The global maternal health crisis

Urinary tract infections are the second-most common infection in the world. More than 50% of women will contract one in their lifetime. Preeclampsia is a leading cause of maternal mortality and can lead to birth complications. Sierra Leone has the third-highest maternal mortality ratio in the world. 1,120 deaths per 100,000 live births. Most maternal deaths are preventable. The Ukweli Test Strip is designed as a specific, accessible, low-cost, and efficient method to screen for UTIs and preeclampsia.



## Implementation and progress

Introduced to over 56 community health units. Over 3,000 tests were administered, vast majority positive for UTIs and preeclampsia. Vast network of NGOs, product distributors, and health workers onboarded. Ukweli Test Strip en route to scaling beyond northern Sierra Leone, nationwide and into Liberia. Team currently engaged in cervical cancer implementation methodology research, educative community fieldwork, and scaled business model creation.

## Ukweli Test Strip technological success

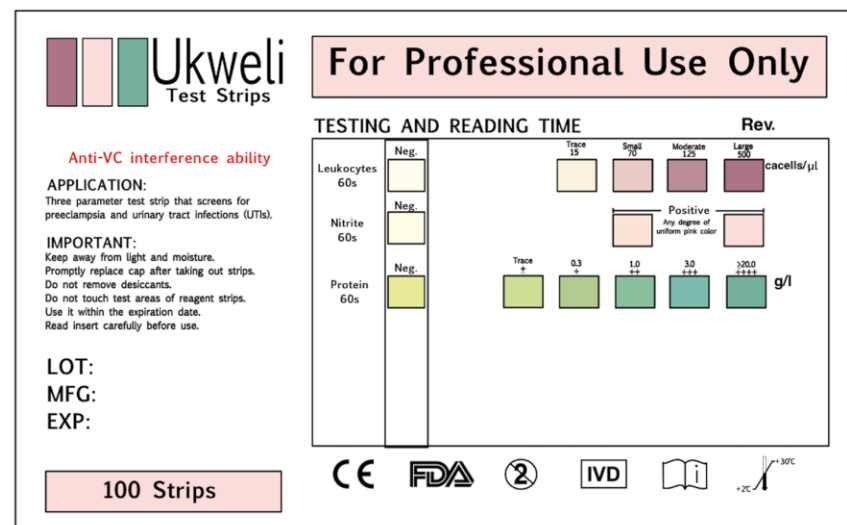


Ukweli  
Test Strips

**Affordable** Ukweli Test Strips are produced in novel methods that reduce cost to \$0.02.

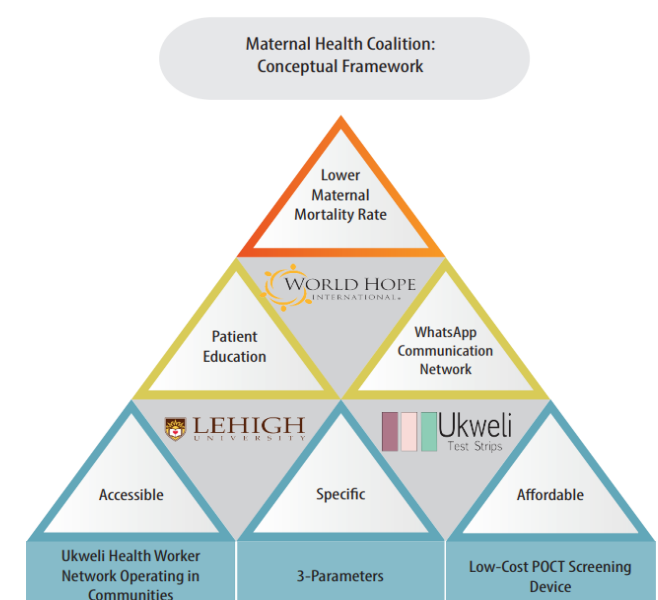
**Specific** Ukweli Test Strips test for 3 parameters instead of 10, allowing for an easy interpretation of results. Our strips test for leukocytes, protein, and nitrites.

**Accessible** We currently have a partnership with the NGO World Hope International and a distribution network of over 1,000 trusted community health workers through UNICEF across 56 health units in northern Sierra Leone.



## Transition to scale

The Ukweli Test Strip team received a \$100,000 grant in 2019 that allowed the project to come to life. The team has been invited back by its primary funder, Grand Challenges Canada, to apply for several million dollars in order to scale the venture across Sierra Leone, and into Liberia. This will bring the health technology into exponentially more hands, allowing tens of thousands of women to test themselves for infections. Scaling entails meticulous grant proposal writing, comprehensive research on effective screening implementation methods across low- and middle-income nations, and a dedication to constantly pushing boundaries.



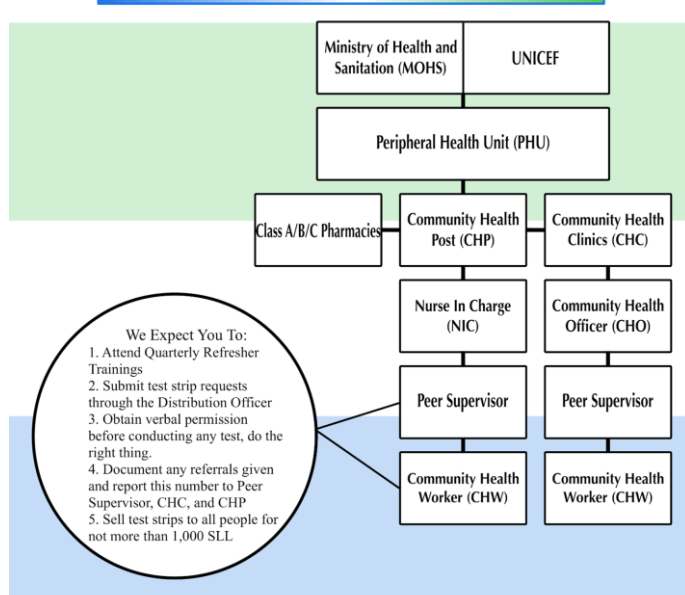
## Our mission is strong

Saving mothers' lives, one step at a time.



## Working through international healthcare systems

### SIERRA LEONE HEALTHCARE SYSTEM

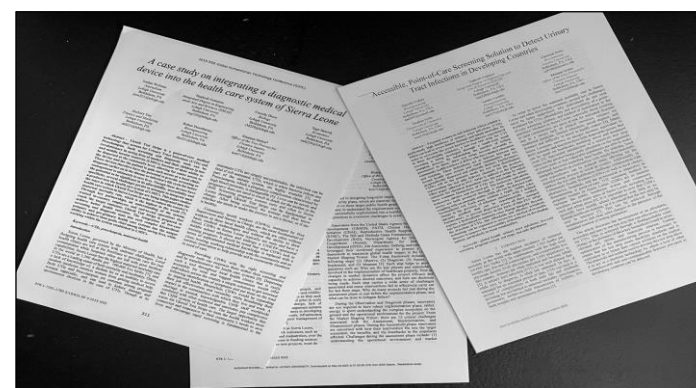


Zach Day, Ukweli Team 2019

Sierra Leone has a complex healthcare system. There is a free healthcare mandate for pregnant and postpartum mothers that is not effectively implemented due to a lack of government funding. This means healthcare devices cannot be sold to our highest-impact consumers. This makes creating a self-sustaining business model for the Ukweli Test Strip venture very difficult! However, our team has dedicated a large amount of research to comprehensively analyzing effective methods of implementing screening programs in other similar nations. Liberia is a similar nation, but with no free healthcare mandate, making it a great candidate for expansion. Our research, healthcare device, technological innovation, and community fieldwork provide a strong baseline for future projects too.

## Effective methods of cervical cancer screening implementation

Cervical cancer remains a significant global public health challenge, disproportionately burdening women in LMICs. Although numerous programs and projects have been implemented to address this challenge, their effectiveness and sustainability vary widely. Our team is thoroughly analyzing existing literature on cervical cancer programs and projects in low-resource settings and developing a comprehensive analysis of what supports their efficacy best. Analyzing successful programs and projects will identify the most effective and sustainable strategies that can be replicated in similar settings. Our study serves as a research reference for individuals and organizations interested in starting a cervical cancer program in LMICs.



## Sierra Leone Fieldwork 2023

During our fieldwork, we conducted semi-structured interviews with around 200 women (ages 18 to 64) in Makeni, Sierra Leone. World Hope International facilitated our connection, enabling trust-building within the community. Split into groups, we used four translators and gained verbal consent and recording permission. Our research focused on We employed door-to-door interviews to understand women's perceptions of cervical cancer and HPV vaccine with a focus on sexual and reproductive health.

## Acknowledgements

Creative Inquiry at Lehigh University. Khanjan Mehta. Grand Challenges Canada. VentureWell. World Hope International.

LEHIGH  
UNIVERSITY

Grand Challenges Canada  
GRAND CHALLENGES CANADA  
BOLD IDEAS WITH BIG IMPACT

WORLD HOPE  
INTERNATIONAL

VENTUREWELL

MINISTRY OF HEALTH  
AND SANITATION  
THE REPUBLIC OF SIERRA LEONE



# PAVING the Path to Wellness at Boston Medical Center

## Martha Bosworth, Massachusetts General Hospital Cancer Center, May 2024

### Introduction

This summer I worked as an intern at Massachusetts General Hospital Cancer Center. I had the privilege of working with Dr. Amy Comander and Dr. Erica Warner based out of both Boston and Waltham, MA. Dr. Comander, a breast oncologist, is also the Director of Lifestyle Medicine at the Cancer Center where she has pioneered the PAVING the Path to Wellness program specifically for breast cancer survivors. I was able to collaborate on this Lifestyle Medicine projects and programs, as well as shadow Dr. Comander in her breast clinics, giving me the opportunity to expand my knowledge and connect with patients.

The main project I worked on this summer was coordinating and assisting facilitation of a six-week PAVING program for black breast cancer survivors at Boston Medical Center. This program consisted of eight women, all at different stages in their survivorship journey, but all sharing the same goal of lowering the chance of a cancer recurrence.



### Project Outcome

The PAVING program was originally a 12-week program for MGH patients but it is now tailored as a 6-week program specifically for black women. The goal was to promote healthy behaviors, not just to lower the chances of cancer recurrence, but also to support and ease the side effects of chemotherapy, radiation, and surgery. While the education the participants received was beneficial to their survivorship, the most impactful part of the program was the social connections made and the opportunity to share their experiences. During the first session, one of the woman shared that she already felt so much less lonely and more understood, and these feelings continued through the entirety of the program with all the participants. They would meet with each other to achieve their physical activity goals or send each other recipes and cooking tips. A difficult aspect for me was not being able to relate to the struggles the participants shared, however the experience of the other facilitators in this field provided support.

### Internship Discovery

I found this internship through online research and looking at different lifestyle medicine programs. I have always been interested in the field of oncology, specifically breast cancer since my mom is a survivor herself. There was no position to apply for but after reading about the PAVING program, I emailed Dr. Comander expressing my interest. We then met on Zoom, which is when she connected me with Dr. Warner and Nebulla Stephen, NP., her colleagues and co-facilitators for the BMC program.

With the support of Hannah Lee, Dr. Comander's Clinical Research Assistant, I was able to construct this internship and corresponding projects to align with my interests and expand my skills. I am grateful for the many opportunities and connections that I gained throughout this experience.

### Next Steps

As I approached this summer experience, I knew I had a passion for helping others. A Masters in Public Health has always seemed like my next step, however working so closely with these patients has made me consider other options. While an MPH is still on the horizon for me, I now plan on pursuing an accelerated nurse practitioner program, as well, in order to continue working closely with patients in a medical setting. I was able to consider many aspects and roles in patient care and programming and was able to see the positive impact on patients and their care. The ability to support so many patients in a small role this summer through the program and clinic made my experience very fulfilling. I will continue to work with Dr. Comander this fall on the regular MGH 12-week program, as well as making educational materials for survivors. PAVING and the lifestyle medicine program will continue to promote healthy behaviors in order to improve survivorship and lower the chance of recurrence, as well as host events to foster social connections.

Through my work this summer, I learned about the "Superwoman Schema" that black women possess. This explains that black women resist any support and always put the needs of others before themselves. I had started analyzing interviews with black women on this topic that my colleagues had orchestrated. This is a very interesting theme that I hope to research more in the future.



LEHIGH  
UNIVERSITY

College  
of Health

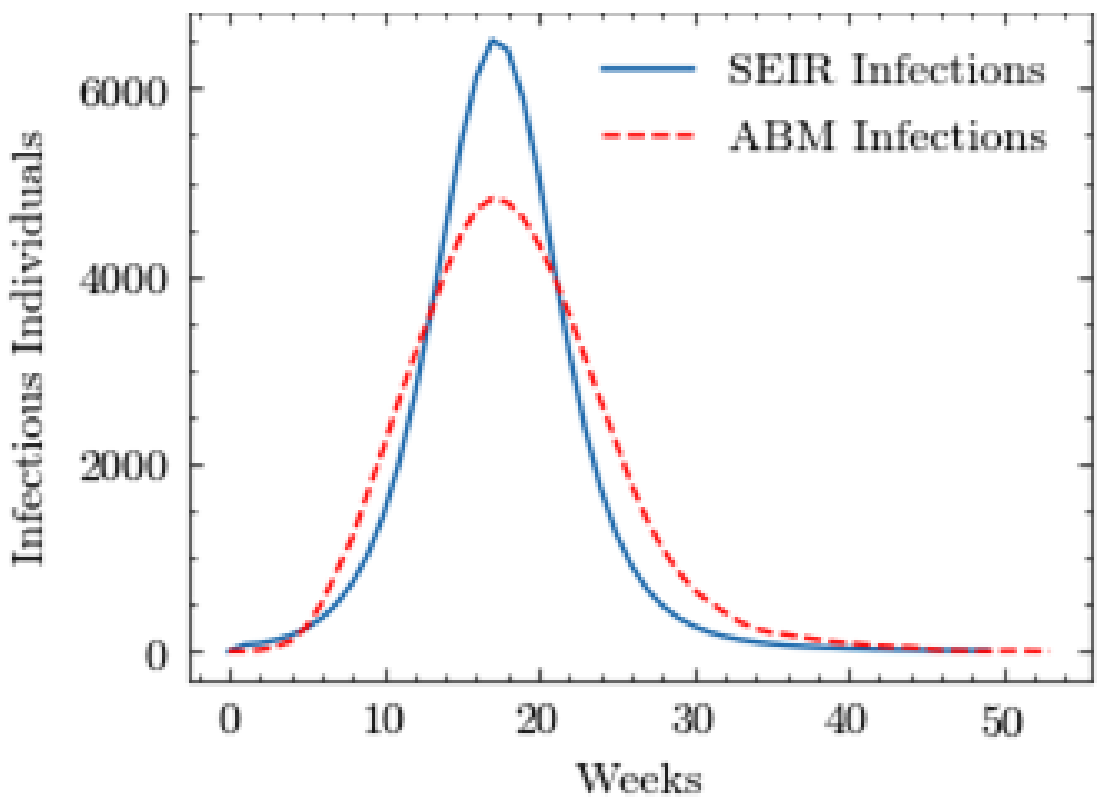


# Agent-Based Modeling of Influenza Research

Kimberly Palaguachi-Lopez, STEM - Summer Institute Lehigh, '24

## Introduction

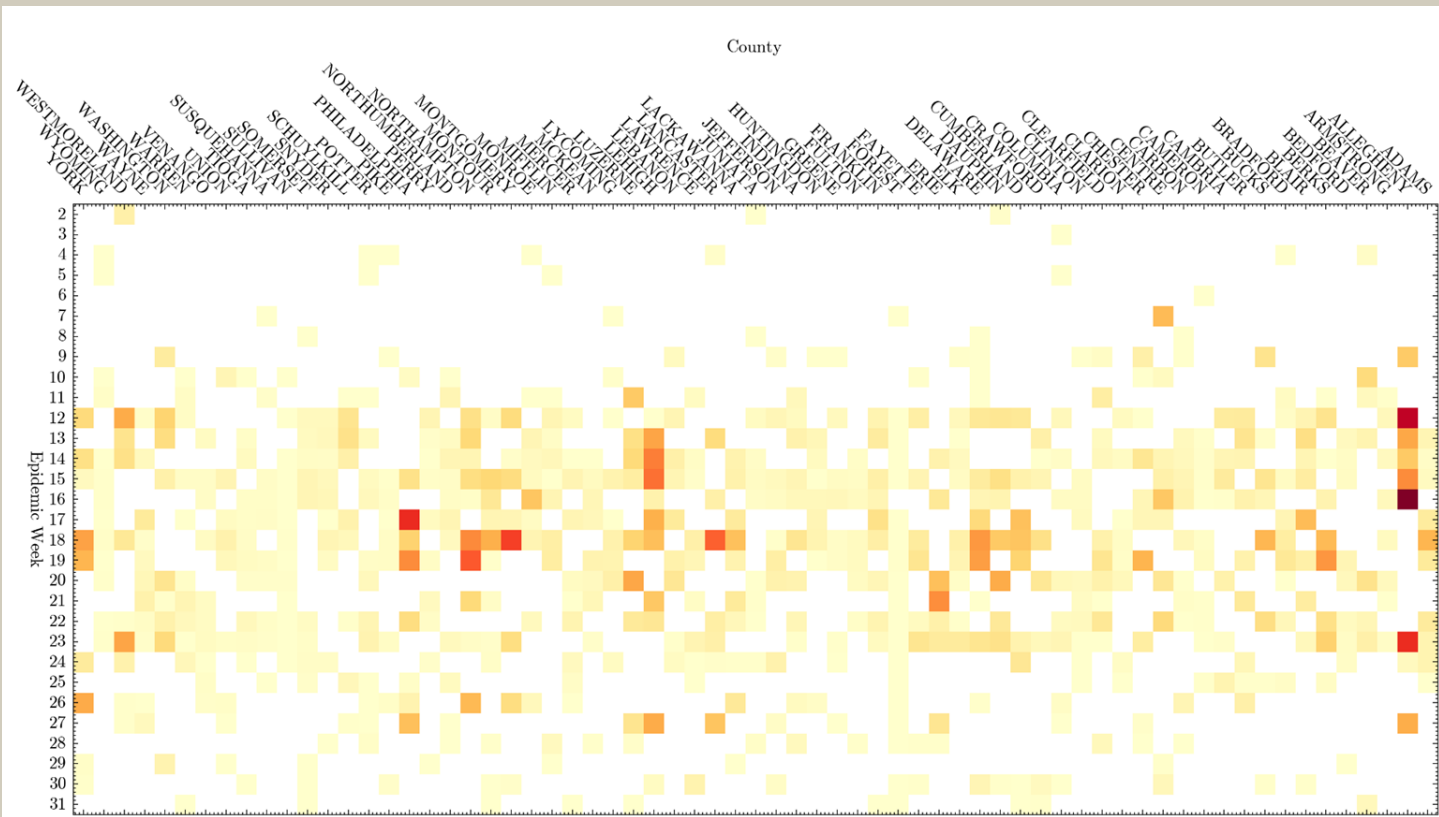
This summer I participated in the STEM-Summer Institute at Lehigh University which is a 10-week summer intensive research program. In this program, I used python code and Netlogo programming languages to analyze influenza characteristics to evaluate the effectiveness of Agent-Based Models (ABM) forecasting outbreaks in comparison to a traditional Susceptible, Exposed, Infectious, and Removed (SEIR) model.



**RESULT02:** The SEIR historical data peaks around week 15 similar to the ABM. Less infections occurred in our ABM simulation compared to our SEIR modeled historical data as vaccinations lowered susceptibility among the sample population.

## Project Outcome

We trained an SEIR model on historical influenza data to estimate parameter values that can be inputted into our ABM. Our comparison indicates the use of ABMs are capable of showing the effect of vaccination on the proportion of infectious individuals. We found that with this model, either SEIR or ABM, we expect these results could better guide public health policy when addressing epidemics to minimize the burden of disease in the population.



**RESULT01:** Average peak intensity per county across all seasons. We defined peak intensity as the maximum number of cases over one season. Season peaks were generally concentrated between weeks 15-20.

## Internship Discovery

College of Health advising informed me of this research opportunity through the weekly newsletter. I then was supported and received letters of recommendation from my professors in the College of Health. I have a passion for data, and each biostatistics class I have taken so far in my undergraduate studies has taught me foundational data science skills.

## Next Steps

I am currently writing a research paper with my professor and other students to characterize peak timing and intensity of influenza over a long period of time. I will also run regression models to correlate known associated covariates that may increase influenza rates. In this paper we also explore using a cluster model, mixture model, of influenza trajectories to assign probabilities to a future season behaving more like a pre-pandemic or post-pandemic season.



# Allentown Health Bureau

## Ashley Pen, Allentown Health Bureau, May 2024

### Allentown Health Bureau



245 N 6th St, Allentown, PA 18102

#### Overall Experience ~

Shadowed various health professions and programs including...

- Injury prevention
- Sexually Transmitted Disease/HIV Prevention
- Rabies
- Maternal and Child Health Services
- Period Poverty

#### Internship Focus~

- Creating a series of picture frames containing historical local newspapers focused on various health topics



### Project Outcome

*Goal: Demonstrating how far we have come in public health*

Assessed historical news articles relating to public health in the Allentown Health Area

Selected articles and organized based on health topic and what the bureau focuses on

Framed articles and distributed frames across bureau's clinic, allowing patients to see and access services and resources offered



- Rabies
- Maternal/ Child Health
- Injury prevention

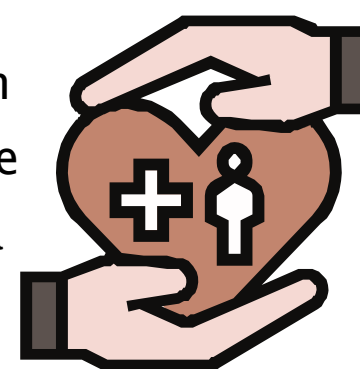
- Lead control
- AHB History
- Tuberculosis
- Nutrition & Physical Activity

- Adult immunizations
- Child immunizations
- STD/HIV/AIDs
- Tobacco Use

### Internship Discovery

The importance of interconnectivity in public health

Establishing relationships with the people you are helping creates a stronger community



Being proficient in another language, especially Spanish helps breaks down barriers and aids in effective communication

***This internship was a great way to get first hand experience with various health professions!***

A huge thank you to those who made this experience a reality for me

Dr. Albert Liu, PhD, MS

Won Choi, PhD, MPH

Erin Barron, RN, BSN, CPN, MHA

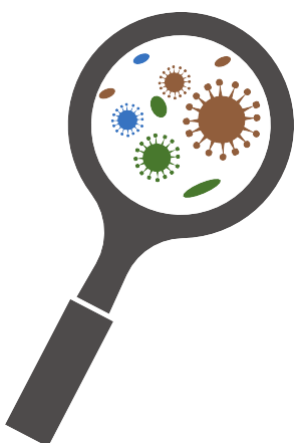
Employees of the Allentown Health Bureau

### CONNECTING PATIENTS TO RESOURCES & SERVICES

- Each frame has a unique QR code that is affiliated with a certain health topic addressed by the AHB (example: injury prevention)
- Patients can scan the QR code with their cellular device, taking them to the specific health topic on the Allentown Health Bureau webpage

### What is Next?

- Continue exploring various health professions
- As the effects of climate change become more prominent →Public Health Emergency Planning



**LEHIGH**  
UNIVERSITY

**College  
of Health**

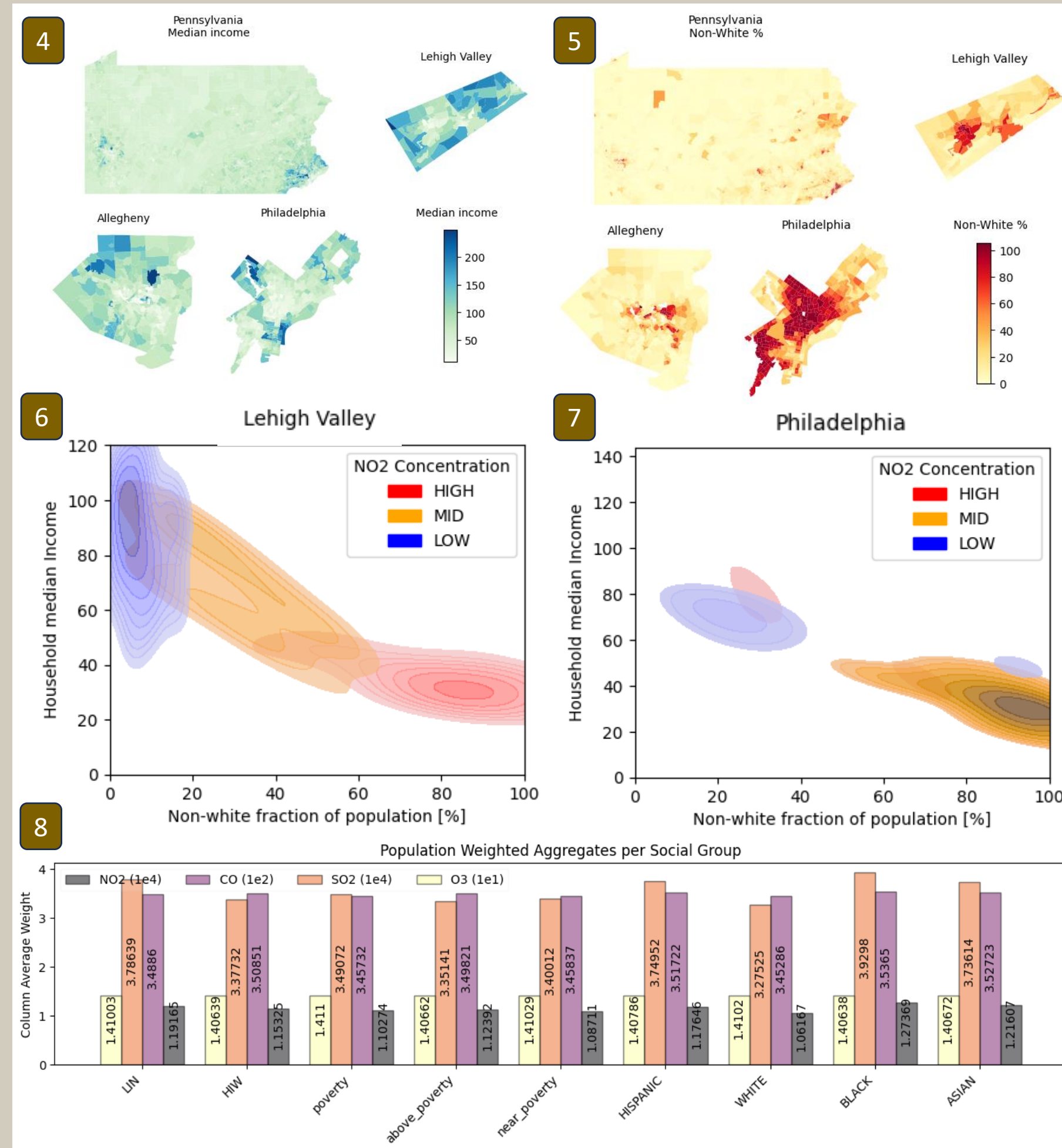
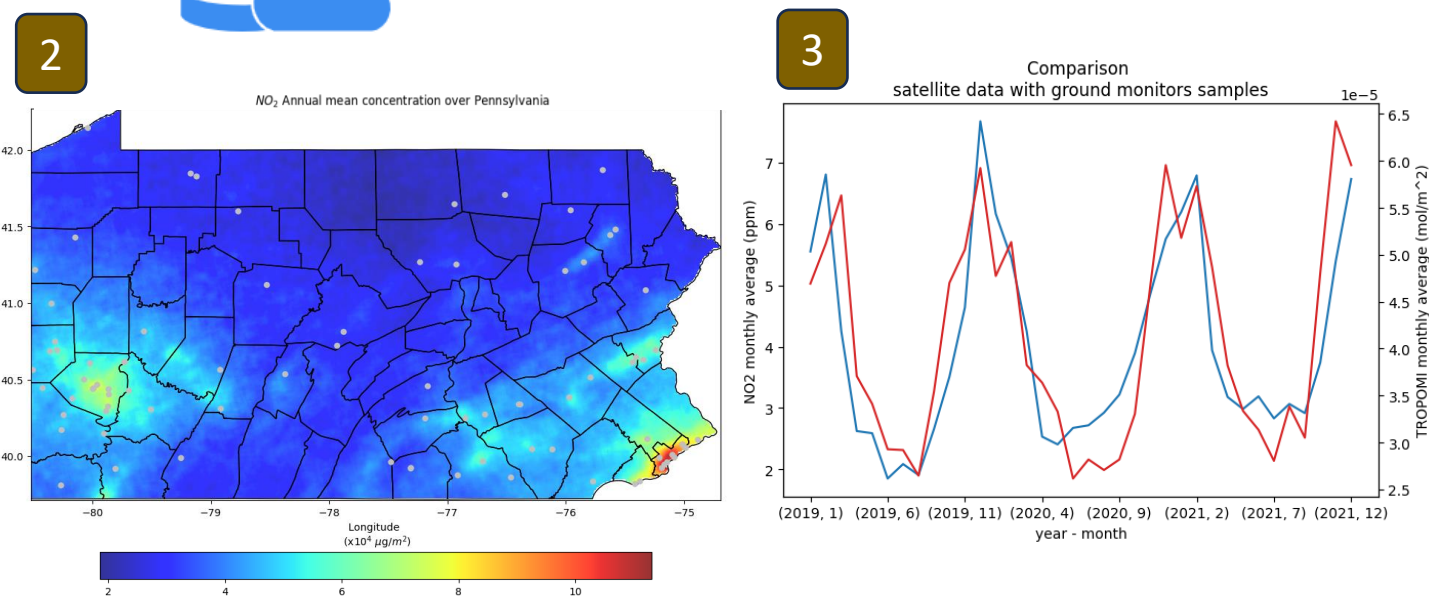
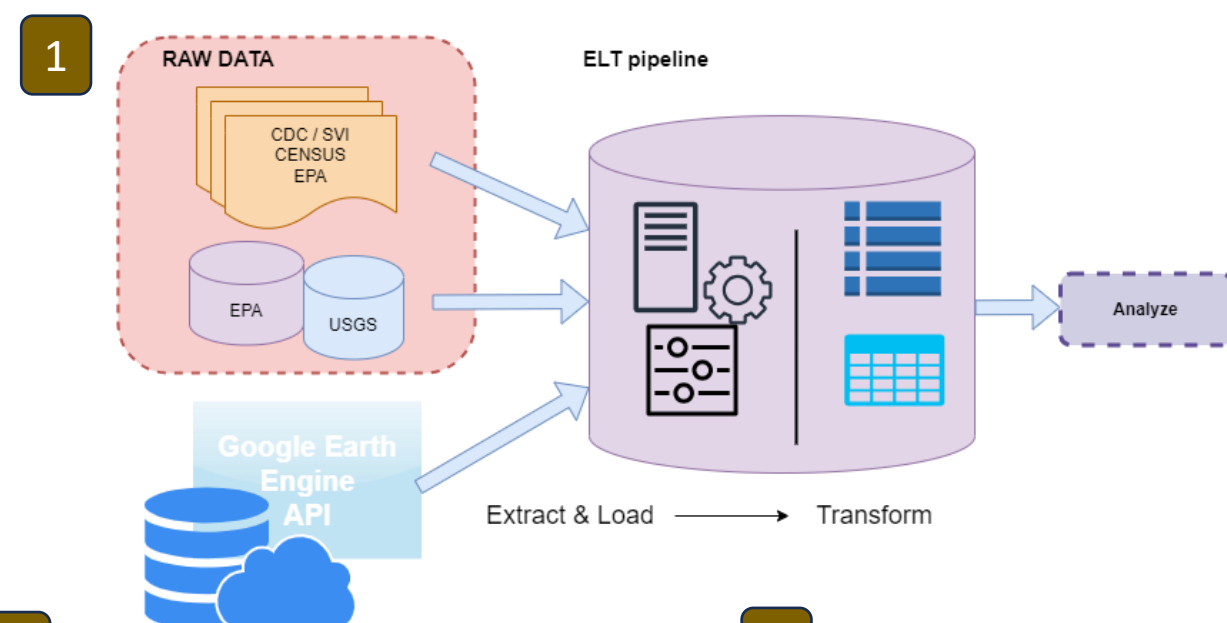


# Pennsylvania Asthma Syndromic Surveillance (PASS)

## Juan Ramirez, CEPHI, 2024

### Introduction

- Multimodal data alleviates overfitting, can help to uncover hidden relationship within the data, and offers new perspectives into the problem.
- The data was collected using an ELT (figure 1) methodology were, static files were downloaded from the different public data sources covering the period from 2014 to 2022, all stored in a static DB and then scripts were made to transforms and extract the data for any queried analysis.
- EPA monitors, as seen in figure 2, are sparsely located over the PA territory, cluster towards urban areas, for higher spatial resolution of pollutant measurements we introduce the TROPOMI satellite data



### Methods

- Performed spatial cluster for House median income and fraction of non-white population per census tract (figures 4, 5)
- Bivariate probability density functions of household income and fractional non-white population per census tract, sorted into the lowest, intermediate and highest NO2 quintiles. (figure 6, 7)
- Population aggregate of pollutants per social group, Low Income Non-white(LIN), High Income White (HIW), Poverty, Near Poverty, Above Poverty, Hispanic, Asian, White, Black

### Results

- In Figure 3, we can identify the high correlation between the data measured by the EPA ground monitors and sample data from TROPOMI satellite for NO2
- Figure 4 and 5, shows that Pennsylvania is a homogenous state, on both variables (income and fraction of population) but towards urban areas it presents clusters of high non-white population fraction, and high median income
- Figure 6, shows in detail the correlation between race and income, where lower income and non-white ethnicity census tracts have higher NO2 concentration, whereas high income and white ethnicity census tracts present the lowest NO2 concentration, in the Lehigh Valley area
- Figure 8, shows the Black community and LIN group presents the highest proportion of pollutant per social group.

### Materials

- For this preliminary analysis we collected data from Census and TROPOMI satellite for the year 2019 and computed annual means over the state of PA.
- Census data contributes measurements of socio-economical factors, such as, Household Median income and population per race (Asian, Black/African-American, Hispanic, White Non-Hispanic)
- From TROPOMI data, we computed the average column of pollutants (NO2, SO2, CO, O3) in the troposphere, per census tract.



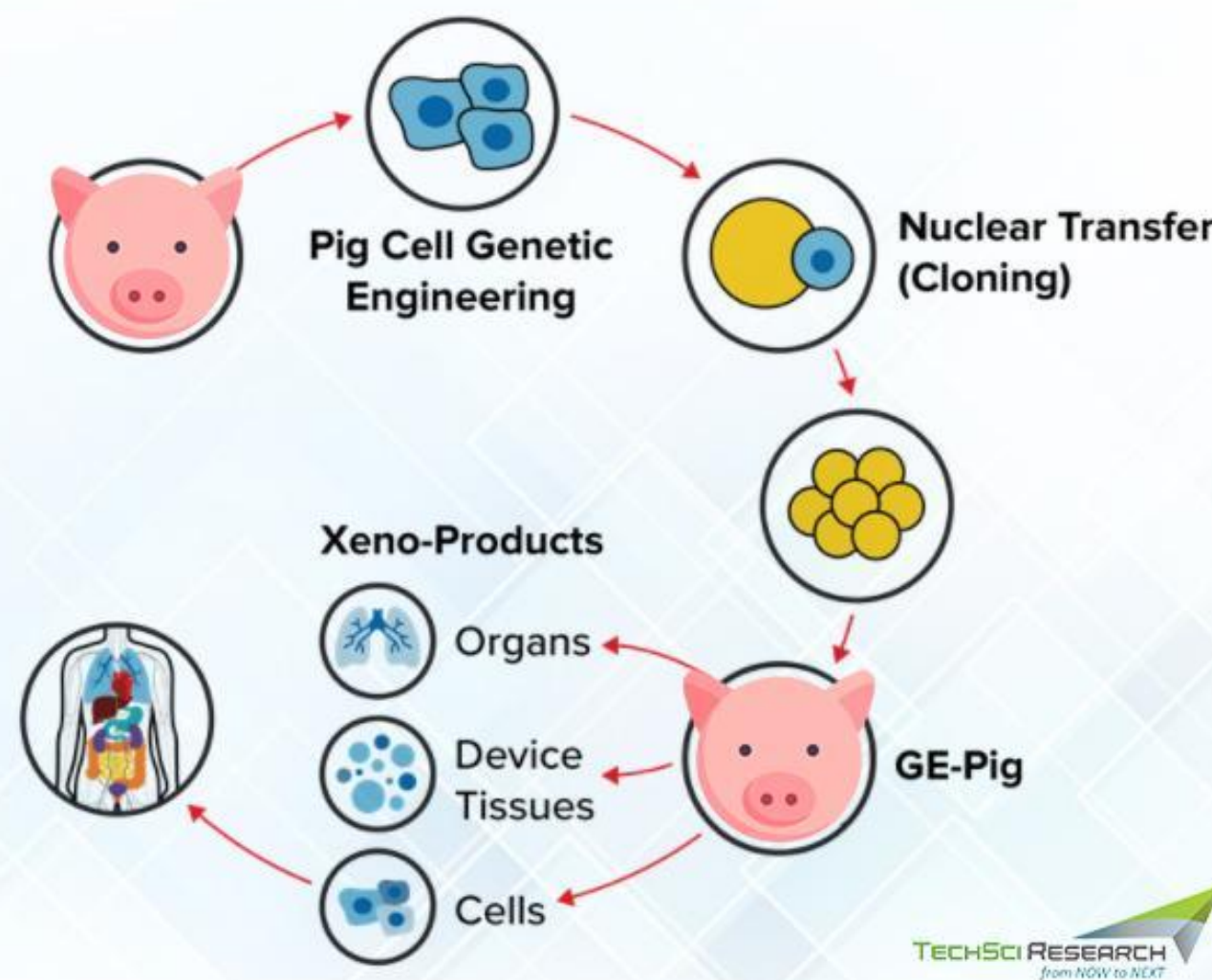
# Undergraduate Researcher w/ Professor Gusmano

## Emily Randolph, Lehigh COH, Class of 2024

### Introduction

- Conducted literature reviews on loss aversion and xenotransplantation (XTx).
- Drafted a paper focused on public opinion surrounding XTx to submit for publication.
- The paper will feature results from a Lehigh student survey on XTx conducted last winter.
- We conclude that there is inadequate information about public views regarding XTx.

### XENOTRANSPLANTATION MECHANISM



Source:  
TechSci Research. (2022). *Xenotransplantation Mechanism*.  
<https://www.techsciresearch.com/blog/xenotransplantation-the-future-of-organ-transplantation/287.html>

### Lehigh Student Survey Results (n=200)

Statement	% Who Strongly Agree or Agree
Participating in XTx gives patients the chance to advance science	93%
XTx is ethically OK because it may reduce organ shortage	73.50%
Animal organs do not belong in human body	23%
I feel comfortable with the idea of having an animal organ inside my body	34.50%
I am concerned that XTx will lead to transmission from animals to general population	69.50%

### Internship Discovery

Sophomore year, I decided to pursue a global health minor and got connected with Professor Gusmano to discuss what it would entail. A requirement of the minor is to conduct research so I researched all the faculty in COH and found that I was most interested in Professor Gusmano's ethics focus. Having already heard about his research projects directly from him, I knew this was something I would be interested in and so I reached out to ask if I could work with him and have been doing so for over a year now!

### Project Outcome

- The Lehigh student survey results were very similar to other public opinion surveys conducted.
- Many survey participants only had a limited understanding of XTx,, which brings into question whether these surveys are actually a good measure of informed public opinion.
- As we get closer to clinical trials, it's now time to more accurately capture public values through tactics such as deliberative polling.
- My goals this summer were to make progress on the paper and learn more about the ethical concerns surrounding XTx, both of which I accomplished.

### Next Steps

I'm a bioengineering major, but when I graduate this spring I will be looking for a job more in the public/global health field. This experience was definitely a huge part of that decision and allowed me to experience a broader definition of research than solely lab work. It has inspired me to get my MPH in the future and it was really fascinating to be able to explore some of the ethical issues that arise in medical innovation. Next up research wise, we are working on draft revisions for the paper. After it is approved for publication, the focus will shift to other projects.



LEHIGH  
UNIVERSITY

College  
of Health



# ISS Men's Health and Wellness Program

## Institute for Indigenous Studies (IIS)

### Ian Scott, Class of 2024

#### Introduction

My summer project consisted of working closely with other students and faculty members to develop a program for men's wellness. Based on surveys and research from previous years, this program was built around the concepts of competitiveness and physical exercise as the key components. Other components we included in the program were diet/nutrition, sleep, and stress management.

There were four of us working on this project and each of us working on the program focused on developing a particular area (exercise, diet/nutrition, sleep, or stress management). The goal of each section was to provide valuable information and have participants select from a list of goals they want to achieve.

#### Internship Discovery

I discovered this internship through one of my academic mentors and advisors, Dr. Christine Daley. She has been monumental in my academic journey and I thought I would be a good fit for this project given my athletic background and passion for men's health and nutrition.

#### Project Outcome

Working on this project has deepened my understanding of the different aspects of being physically healthy, especially for young men. I have learned how to find my role within a group, split up work evenly, and hold myself and others accountable for doing the work.

The outcome of this project is to have an online program that people can sign up for and be a part of. They will be able to select from a list of goals that they may have to improve their overall health. The program will then take them through a step-by-step weekly program.

#### Next Steps

The next steps of this project are completing the final touches of each of the four aspects of the program, and then bringing it all together for one cohesive men's wellness program that can be released on the internet or to specific communities/populations for use.

Once the program is released, we will receive feedback from participants on what they liked and did not like, so that we can modify and improve the program over time to best fit the needs of a specific community or population.





# ISS Men's Health and Wellness Program

## Ian Scott, 2024

**Summer Experience Title:** ISS Men's Health and Wellness program

**Organization:** Institute For Indigenous Studies (ISS)

**Locations:** Remote

My summer project consisted of working closely with other students and faculty members to develop a program for Men's wellness. Based on surveys and research from previous years, this program was built around the concepts of competitiveness and physical exercise as the key components. Other components we included in the program were diet/nutrition, sleep, and stress management.

There were four of us working on this project, and Each of us working on the program focused on the development of a particular area (exercise, diet/nutrition, sleep, or stress management). The goal of each section was to provide valuable information have participants select from a list of goals they want to achieve.

## Introduction

## Internship Discovery



Working on this project has deepened my understanding of the different aspects of being physically healthy, especially for men. I have learned how to find my role within a group, split up work evenly and hold myself and others accountable for doing the work.

The next steps of this project are completing the final touches of each of the four aspects of the program, and then bringing it all together for one cohesive men's wellness program that can be released on the internet or to specific communities/populations for use.

Once the program is released, we will receive feedback from participants on what they liked and did not like, so that we can modify and improve the program over time to best fit the needs of a specific community or population.

## **Next Steps**

I discovered this internship through one of my academic mentors and advisors, Dr. Christine Daley. She has been monumental in my academic journey and thought I would be a good fit for this project given my athletic background and passion for men's health and nutrition.

## **Project Outcome**

The outcome of this project is to have an online program that people can sign up for and be a part of. They will be able to select from a list of goals that they may have to improve their overall health. The program will then take them through a step by step weekly program that will gradually push them to reach their goal over the span of 6 months.

[https://docs.google.com/file/d/1gUViGJU9cfNoXrdX89Co\\_cUqFsG4IN4K/edit?usp=doclist\\_api&filetype=mspresentation](https://docs.google.com/file/d/1gUViGJU9cfNoXrdX89Co_cUqFsG4IN4K/edit?usp=doclist_api&filetype=mspresentation)



# WASH Insecurity and Mental Health in Nigeria

Shashank Vankadari, MS (Data Science), Lehigh University - 2023

## Introduction

This project is related to the study of water, sanitation, and hygiene (WASH) insecurity and revealing the relationship between WASH insecurity and psychosocial well-being in low resource settings. We study these phenomena for Nigeria using UNICEF's Multiple Indicator Cluster Survey (MICS) data under the supervision of Professors John Hughes, Gabrielle String, and Rochelle Frounfelker from Lehigh University's College of Health.

As a Research Assistant, I have studied the MICS data and engineered our dataset, which we call **WASHpsych-Nigeria**. Data engineering involves the design, creation, validation, and documentation of a dataset that is then ready for further analysis.



## Project Outcome

We identified the dependent and independent variables from the comprehensive master data within the MICS surveys. Employing best practices in data engineering, we synthesized the **WASHpsych-Nigeria** dataset. The dataset contains information on life satisfaction, health, and hygiene of all men and women who were interviewed across many households from all over Nigeria.

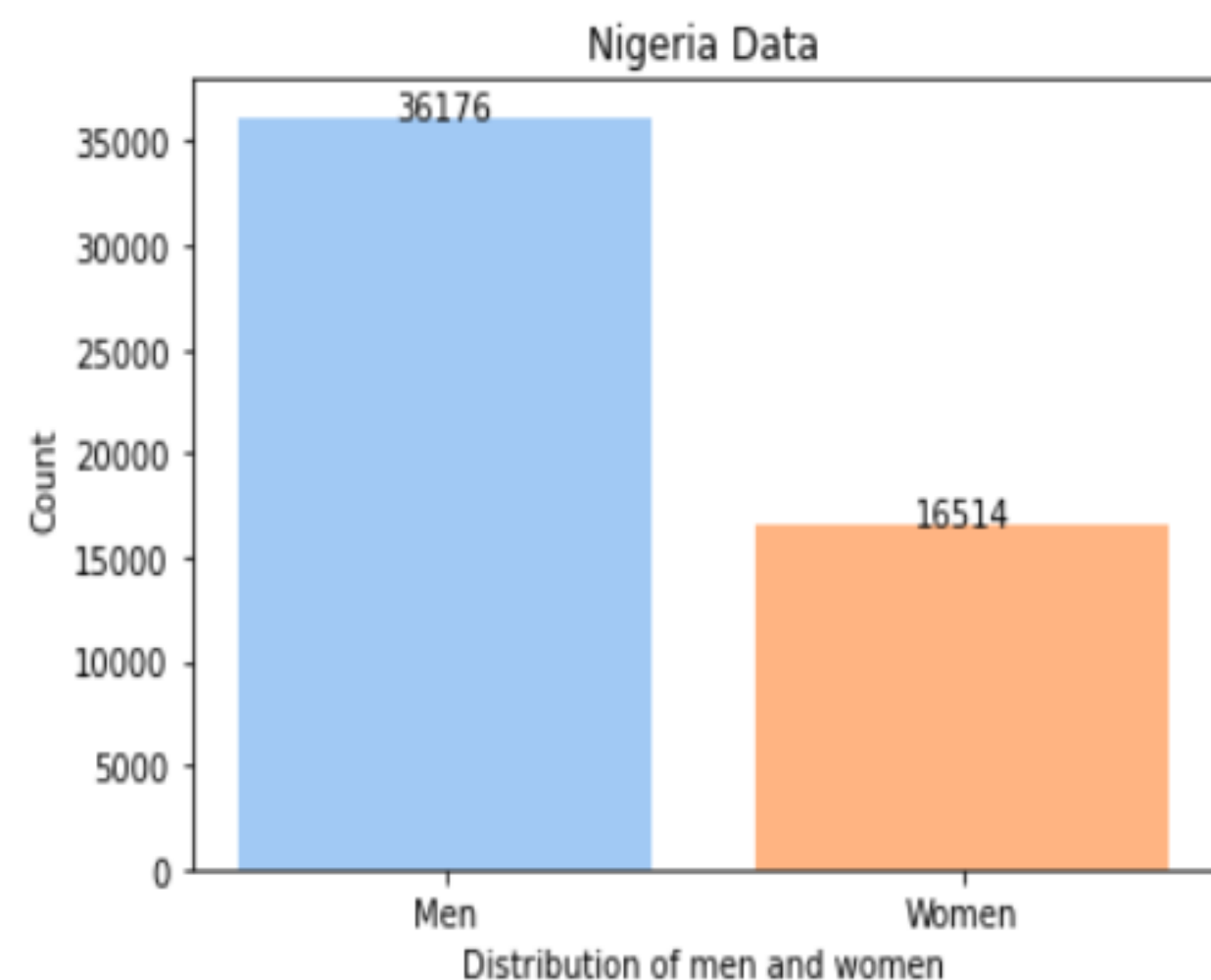
This accomplishment was realized through my successful completion of a specialized DataCamp course on data engineering. This educational pursuit equipped me with an understanding of data engineering and various tools and technologies that are widely used in both the public and private sectors.

## Internship Discovery

This internship opportunity was reported to us by Professor Parv-Venkitasubramaniam, Director of the Data Science program. I have reached out to Professor Frounfelker, who is heading this project along with Professor String and Professor Hughes. As I learned that the project requires data science expertise, I was given the opportunity as Research Assistant to assist in the data engineering phase of the project.

## Next Steps

- Quantitatively examine the relationship between WASH insecurity and psychosocial wellbeing.
- Qualitatively explore WASH insecurity and mental health from the perspective of international WASH experts and, in addition, recipients of WASH programs in Nigeria, using key informant interviews and concept mapping exercises.
- Integrate quantitative and qualitative findings to develop a preliminary conceptual model of the relationships between WASH insecurity and mental health and wellbeing.
- Make **WASHpsych-Nigeria** publicly available in hopes of facilitating similar research by investigators at other institutions.



LEHIGH  
UNIVERSITY

College  
of Health



# Undergraduate Research Assistant

Audrey Vitello, College of Health, Class of 2025

## Introduction

This summer I had the opportunity to work as an Undergraduate Research Assistant for the Institute for Indigenous Studies team. In this position I assisted with the data analysis of multiple publications. Additionally, I was the lead statistician working with Dr. Michael Gusmano on his research surrounding New York Community Health survey data. This experience has not only taught me a new coding language but has brought me closer to professors and mentors in the College of Health.

## Internship Discovery

The opportunity to work with the IIS team as an undergraduate researcher was offered to me by Dr. Won Choi after expressing my interest in learning more about data analysis over the summer. Since a majority of the team was familiar with the SPSS language, I took on the challenge to learn it. I am very grateful for the entire team, especially Olivia Wojtowicz, who was a mentor to me through out the whole process and taught me everything I know about the language.

## Project Outcome

The projects I assisted with this summer included research about community abuse perception, prescription abuse and spirituality of indigenous populations. Outside of the IIS research, I also worked on a project comparing the health of New Yorkers aged 65+ over time. My responsibilities included attending weekly online team meetings. As a statistician, I was also expected to make tables, run ANOVA and Chi Square tests as well as linear regressions. Even though my research position was virtual, my knowledge progressed from the basics of SPSS to thoroughly understanding all of the skills above. Assisting both the IIS and Dr. Gusmano has given me a broader understanding of what the quantitative side of health research entails.

## Next Steps

Because of how positive my experience was this summer I have decided to join the IIS team again during the fall. I am grateful for this opportunity to continue exploring my passion for statistics and data analysis in the health field.

I am confident that the skills I have learned from this opportunity will benefit me in the future.

Table 2: Community Perceptions of Alcohol and Drug Use

	Very Realistic N(%)	Realistic N(%)	Unrealistic N(%)	Very Unrealistic N(%)
How realistic is it to think that a Native teenager will not smoke cigarettes?	113 (22.9%)	124 (25.1%)	162 (32.8%)	95 (19.2%)
How realistic is it to think that a Native teenager will not drink alcohol until age 21?	98 (19.8%)	99 (20.0%)	169 (34.2%)	128 (25.9%)
How realistic is it to think that a Native teenager will never try marijuana?	102 (20.6%)	100 (20.2%)	165 (33.4%)	127 (25.7%)
How realistic is it to think that a Native teenager will never try illegal drugs such as LSD, cocaine, methamphetamine, or heroin?	99 (20.1%)	137 (27.8%)	170 (34.6%)	86 (17.5%)
How realistic is it to think that a Native teenager will never use prescription drugs to get high?	98 (20.0%)	135 (27.5%)	168 (34.2%)	90 (18.3%)

This is Table 2 from the Community Perceptions of Abuse report that summarizes the types of questions that were asked and associations that were found.