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## **CURRENT POSITION**

**Harvard T.H. Chan School of Public Health**  
Research Analyst

Boston, MA

## **EDUCATION**

### **Emory University**

Atlanta, GA

Master of Science of Public Health, Environmental Health & Epidemiology

May 2017

Thesis: "Air Quality and Morbidity in Dhaka City, Bangladesh:

an estimation of the contribution of brick kilns to air quality & their potential to affect human health"

### **University of Tennessee**

Knoxville, TN

BS Mathematics, Thesis: "Evaluation of the EPA AERMOD in Mountain Top Removal Coal Dust Dispersion"

BS Microbiology, Beta Beta Beta Honor Society

BA Honors History, Honors Religious Studies

Dual Thesis: "Forming the Molds: The Institutum Judaicum's Utilization of Judeo-German in the 18th Century Judenmission"

BA German Studies, Delta Phi Alpha

**University of Pittsburgh & Prolog Language School**  
Summer Language Institute for Intensive Polish

Pittsburgh, PA / Krakow, Poland  
Summer 2011, 2013

## **EMPLOYMENT**

### **Harvard University**

Boston, MA

Research Analyst, PI Nicolas Menzies

October 2017 - Present

Develop and program deterministic mathematic models of tuberculosis disease dynamics.

- Responsible for the programming and troubleshooting of models in R and C++; model design optimized for integration into a R Shiny App.
- Collaborate regularly with CDC Division of TB elimination, local departments of health, and CDC Botswana team to accomplish research objectives.
- Develop various dissemination methods, including scientific manuscripts, conference presentations, and one-on-one trainings of stakeholders.

### **Emory University**

Atlanta, GA

Graduate Researcher, PI Eri Saikawa

August 2016 – May 2017

- Developed method and completed calculations of estimations of brick kiln emissions to particulate matter concentrations in India, Nepal, and Bangladesh. Drafting a chapter for World Bank publication.
- Used Weather Research and Forecasting model coupled with Chemistry (WRF-Chem) to create spatial, temporal models simulating the contribution of brick kiln emissions to air quality concentrations in Bangladesh.

Graduate Research Assistant, PI Juan Leon

October 2015-May 2017

- Quantified GI and GII norovirus in produce wash samples through individual qPCR within an 8-person lab group.
- Conducted systemic review in search of indicators for norovirus and Hepatitis A in an agricultural setting.
- Prepared of NIH R01 grant materials, with focus on investigator bio-sketches and budget materials.
- Optimized protocol for qPCR quantification of Hepatitis A from environmental samples.

- Designed experiments to determine protocol for the use of Turnip Crinkle Virus as a process control for Norovirus qPCR quantification.
- Reviewed and revised previously developed quantitative microbial risk model (qmra) for Norovirus transmission on farms. Edited R code, checked mathematical reasoning and assumptions, drafted manuscript for publication.

#### **Georgia Institute of Technology**

Atlanta, GA

Graduate Research Assistant, PI Nisha Botchway

October 2016-May 2017

- Identified potential research questions from existing dataset on environmental conditions, demographics, and livability in relation to health outcomes in Fulton County, Atlanta.
- Aided in the creation of an online visualization platform of the health, socio-demographic, and environmental characteristics in Fulton County, Georgia. Performed user testing and feedback.
- Worked within a ten person inter-institutional team to complete data analysis, manuscript composition, and presentation of findings.

#### **American Cancer Society**

Atlanta, GA

Public Health Intern

September 2016-January 2017

- Conducted large-scale literature review of over 20,000 articles to inform colorectal cancer screening recommendations.

#### **Environment and Population Research Centre**

Dhaka, Bangladesh

Researcher, Advisor Dr. Bilqis Amin Hoque

May-July 2016

- Developed and implemented pilot study for air pollution and tuberculosis incidence.
- Designed epidemiological study to explore associations between ambient air pollution exposure and tuberculosis incidence, including literature review, survey development, case interview questionnaires, and training of survey administrators.
- Consulted and performed data analysis of evaluation of Community Led Total Sanitation program in 64 wards in Bangladesh.
- Completed data cleaning and analysis in SAS.

#### **Medical Home Primary Care**

Lewisburg, TN

Healthy You Coordinator

September 2014 – January 2015

- Complete annual insurance health screenings for over 3000 employees; screenings included vitals, real-time cholesterol and H1AC testing, risk factor interview and targeted health education based on patient's needs.
- General Medical Assistant duties including immunization, patient intake and vitals screening, patient follow-up, prescription notifications, and administrative responsibilities.
- Follow-up with cases of influenza to identify contacts to proactively limit spread of disease within the factory the clinic served.

#### **University of Tennessee**

Knoxville, TN

Field Supervisor, PI Erin Darby and Robert Darby,

2013- Present

- 'Ayn Gharandal Archaeological Project
- Collected samples of calcium carbonate deposits from bathhouse. These samples to be analyzed for mineral evidence of water pollution from a mine site in a neighboring wadi.

Undergraduate Research Assistant, PI Judy Day

January-May 2014

- Built an agent-based model to investigate the process of inhalation anthrax lethality.
- Learned new NETLOGO language through self-study

### **TEACHING EXPERIENCE**

#### **Emory University**

Teaching Assistant, EPI 570. Infectious Disease Dynamics: Theory and Methods

### **PUBLICATIONS**

Menzies, N.A., **Swartwood, NA.**, Testa, C., Malyuta, Y., Hill, A.N., Marks, S.M., Cohen, T. and Salomon, J.A., 2021. Time Since Infection and Risks of Future Disease for Individuals with Mycobacterium tuberculosis Infection in the United States. *Epidemiology (Cambridge, Mass.)*, 32(1), p.70.

Menzies, NA, Bellerose, M, Testa, C, **Swartwood, NA**, Malyuta, Y, Cohen, T, Marks, SM, Hill, AN, Date, AA, Maloney, SA and Bowden, SE, 2020. Impact of Effective Global Tuberculosis Control on Health and Economic Outcomes in the United States. American Journal of Respiratory and Critical Care Medicine, (ja).

Sheffield, SR, York, A, **Swartwood, NA**, Bilinski, A, Williamson, A and Fitzpatrick, MC, 2020. Strict Physical Distancing May Be More Efficient: A Mathematical Argument for Making Lockdowns Count. medRxiv.

Bilinski A, Birger R, Burn S, Chitwood M, Clarke-Deelder E, Copple T, Eaton J, Ehrlich H, Erlendsdottir M, Eshghi S, Farid M, Fitzpatrick M, Giardina J, Gonsalves G, Hsieh YL, Iloglu, Kao Y, MacKay E, Menzies N, Mulaney B, Paltiel D, Perniciaro S, Phillips M, Rich K, Salomon J, Sherak R, Shioda K, **Swartwood N**, Testa C, Thornhill T, White E, Williamson A, York A, Zhu J, and Zhu L., 2020. Defining high-value information for COVID-19 decision-making. medRxiv.

## CONFERENCE PRESENTATIONS

**Swartwood NA**, Testa C, Cohen T, Marks SM, Hill AN, Cochran J, Cranston K, Randall LM, Tibbs A, Salomon JA, Menzies NA. Modeling the Population Effects of Testing & Treating for Latent TB in Clinically Recommended Populations. Poster presented at National TB Controllers Association meeting; October 2, 2020; Virtual.

**Swartwood NA**, Testa C, Cohen T, Marks SM, Hill AN, Cochran J, Cranston K, Randall LM, Tibbs A, Salomon JA, Menzies NA. MITUS (Modeling interventions for TB in the United States): a flexible framework for modelling TB epidemiology and policy efforts. Poster presented at National TB Controllers Association meeting; April 23-24, 2019; Atlanta, GA.

Testa C, **Swartwood NA**, Cohen T, Marks SM, Hill AN, Cochran J, Cranston K, Randall LM, Tibbs A, Salomon JA, Menzies NA. Tabby2: A user-friendly tool for comparing state-level B intervention options. Poster presented at National TB Controllers Association meeting; April 23-24, 2019; Atlanta, GA.

**Swartwood NA**. Water Pollution and Public Health: A Geochemical Study of 'Ayn Gharandal. Oral presentation given at the American Schools of Oriental Research meeting; November 2015. Atlanta, GA.

## AWARDS

Best Poster Award for Tabby2: A user-friendly tool for comparing state-level B intervention options. Poster presented at National TB Controllers Association meeting; April 23-24, 2019; Atlanta, GA.

- One of five posters recognized out of 107 submissions.

National Institute of Occupational Safety and Health Trainee Grant recipient, 2015-2017

- One of three recipients for the 2017 MSPH cohort.

Fern and Manfred Steinfeld Scholarship for Judaic Studies, Summer 2013

John L. and Elsbeth V. Kind Memorial Scholarship for German Studies, Summer 2013

Summer Research Grant from UT History Department, Summer 2013

Center for International Education Scholarship, Summer 2013

Fern and Manfred Steinfeld Scholarship for Judaic Studies, Fall 2011

John Osbourne Fellowship in German Studies, Spring 2011

## VOLUNTEER EXPERIENCE

**Junior League of Boston**

**Lutheran Services of Georgia**

Refugee Resettlement Volunteer

**Gamma Sigma Sigma National Service Sorority**

Membership Vice President

**Mothers Against Drunk Driving (MADD)**

UT campus representative on local MADD board.

Recruited and managed volunteers for local Walk like MADD event.

### **Boys and Girls Club**

After School Tutor

### **Campus Beautification Committee**

Director

## **SKILLS**

Familiar with R, Fortran, C++, Netlogo, JMP, SAS, STATA, and Microsoft Office Suite.

- Specialized R packages: EpiModel, GenABEL, Rcpp, & DPLYR

Covidence by Cochrane for systematic and literature review.

Intermediate proficiency in German and Polish; beginners proficiency in Hebrew.

Statistical analysis and mathematical modeling

Laboratory skills including PCR, Gel Electrophoresis, Stains, Serial Dilutions, Bacterial Transformations, Filter Extraction

and analysis, NMR, ICE and other skills.

Community outreach and education

Service organization and recruitment

Distance communication and remote committee coordination and management

## **RESEARCH INTERESTS**

mathematical models, agent based models, tuberculosis, influenza, spatial models, respiratory disease and infection, infectious disease, air pollution, environmental sustainability, alternative energy, public health, atmospheric chemistry, environmental epidemiology, climate change and health, energy and health, refugee health, ancient archaeology, history of public health, archaeological perspective on contemporary health issues.

## **RELEVANT COURSE WORK**

Introduction to Microbiology

Introductory Microbiology Lab

Microbial Ecology, Honors

Advanced Microbiology Lab

Microbial Physiology

Microbial Pathogenesis

Virology

Introduction to Biochemistry I

Computing Techniques in Biochemistry & Related Fields

Organic Chemistry I & II

Organic Chemistry Lab

Numerical Algorithms

Probability and Statistics

Stochastic Processes

Mathematical Models in Biology, Honors

Introduction to Computer Science

Human Toxicology

Environmental Hazards I

Epidemiologic Methods I

Epidemiology of Respiratory Disease

Biostatistical Methods I

SAS Programming

Global Climate Change: Health Impacts and Response

Experimental Methods in Air Quality

Atmospheric Chemistry

Epidemiologic Methods II

Epidemiological Applications of Concepts

Biostatistical Methods II

Epidemiology of Tuberculosis

Field Trials and Intervention Studies

Geographic Information Systems

Epidemiologic Modeling

Advanced Environmental Epidemiology