Rophence Auma Ojiambo

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EDUCATION

Brown University,
Providence, RI | Class of 2023
Master of Science in Biostatistics
Thesis Title: Generalizing Cluster Randomized Control Trial Results to a Target Population.
Advised by Jon A. Steingrimsson, **PhD**

Moi University,
Eldoret, Kenya | Class of 2020
Bachelor of Science in Applied Statistics with Computing, First- Class Honors Distinction
Project Title: An investigation into the Malaria prevalence among children under 15 Years in Kenya using Multiple Linear Regression Model.

RESEARCH EXPERIENCE

The Academic Model Providing Access to Health Care (AMPATH) Kenya Eldoret, Kenya | Fall 2023 – Present
Role (Biostatistician | Monitoring and Evaluation Officer)
Multiple Myeloma Cancer Program at Moi Teaching and Referral Hospital (MTRH) Hematology & Oncology Directorate
Principal Investigator: Dr. Teresa Lotodo

- Conducting statistical analyses to interpret clinical data related to multiple myeloma.
- Implementing data quality control measures to maintain high standards in data integrity such as data verification of the data collection tools vs clinical forms.
- Developing and implementing monitoring and evaluation frameworks for the 2024-2026 proposal (in process).
- Generating comprehensive reports and presentations summarizing statistical findings and program evaluations.

Brown University Providence, RI, USA | Fall 2021 – Spring 2023
Role (D43 Trainee/Graduate Research Fellow)
Moi-Brown Partnership for Biostatistics Training in HIV (D43TW010050)
Principal Investigators: Joseph W. Hogan, **ScD** and Ann Mwangi, **PhD**.

- Statistical programming using R to analyze extensive datasets and generate meaningful insights.
- Expertise in regression analysis, survival analysis, and longitudinal/multilevel data analysis and machine learning methods. Proficiency in dimension reduction, clustering, neural networks, and deep learning techniques.
- Study design, data collection and analysis, and manuscript preparation.
- Presenting research findings in departmental journal club meetings, and workshops.

MANUSCRIPT IN PREPARATION

1. Ojiambo, R.A, et al. (in preparation). "Generalizing Cluster Randomized Control Trial Results to a Target Population." Expected submission to the Journal of Clinical Epidemiology, Spring 2024. This study extends inferences from a cluster randomized trial to a general clinical population.

PRESENTATIONS

- Fogarty International Center HIVRT D43 Trainees and HIV K 43 Grantees Network Meeting, October 03, 2023. Oral presentation on Generalizing Cluster Randomized Control Trial Results to a Target Population.
- Oral Presentation at Global Health Research Day, The Warren Alpert Medical School, Brown University, April 24, 2023; Global Health Research Day Abstract ; Global/ Public Health Research Day Poster Presentation
- DSI Collaborative Meeting, New York University School of Global Public Health, April 12, 2023. Oral presentation on Generalizing Cluster Randomized Control Trial Results to a Target Population.
- Oral Presentation at Public Health Research Day, Alumnae Hall, Brown University, April 4, 2023; Public Health Research Day Abstract

RELEVANT PROJECTS

Spring 2023 **Statistical Machine Learning Methods for Listeria Monocytogene foodborne disease source attribution.**
Team leader for final project in Statistical Learning and Big Data (PHP 2650) with Dr. Alice Paul, collaborated with Anusha Kumar. This final project centered around learning a topic outside the scope of the class, with a particular emphasis on applying reinforcement learning techniques to the field of stock trading. Our primary objective was to develop effective trading strategies by implementing SARSA and Q-Learning algorithms using the R programming language, as well as the DQN (Deep Q-Network) algorithm using Python. These algorithms were employed to analyze historical stock data and create adaptable trading strategies that can learn from market dynamics, ultimately optimizing investment decisions. Through this exploration of reinforcement learning, we sought to unlock the potential of the algorithms in enhancing stock trading performance.

Fall 2022 **Statistical Machine Learning Methods for Listeria Monocytogene foodborne disease source attribution.**
A class project in Practical Data Analysis (PHP 2550) with Dr. Alice Paul, collaborated with Zexuan Yu and Amos Okutse. This was a collaborative project with Dr. Ernest Julian (Co-chair with the Centers for Disease Control and Prevention [CDC] and the Food and Drugs Administration [FDA] of the Healthy People 2030 Foodborne Illness Reduction Committee). In the project, we employed statistical machine methods for multiclass classification including Random forests, Naïve Bayes Classification, and Bayesian Additive Regression Trees (BART) to predict the food source a Listeria monocytogene outbreak using data from the National Center for Biotechnology Information (NCBI) Pathogen Detection Database. The project's final report, offers more comprehensive details on the outcomes and findings. The goal is that the results of the implemented models will aid in predicting the sources of foodborne outbreaks involving Listeria monocytogenes. We created a Shiny App to showcase the practical application of the model's predictions in identifying the food sources associated with such outbreaks.

Fall 2021 **COVID-19 Pooled Testing**
A collaborative class project with Abraham Liu and Anusha Kumar in Statistical Programming with R (PHP 2560) under Dr. Alice Paul. For this project we were required to create a Shiny app in small groups based on a published paper. Our group's app focused on the research article titled Simulation of Pool Testing to Identify Patients With Coronavirus Disease 2019 Under Conditions of Limited Test Availability. The purpose of our Shiny app, titled "COVID-19 Pooled Testing" is to provide users with a platform to implement pooled testing strategies for individuals suspected of having COVID-19. The app simulates the process of running pooled tests by generating a population of positive and negative cases. Users are able to sample a random group of individuals from this population by specifying the desired sample size, as well as the sensitivity (true positive rate) and specificity (true negative rate) levels for their chosen state or region. Based on the user's input, the app selects a sample from the population without replacement and performs pooled testing to determine whether the sample yields true negative or true positive results. The simulated model then provides the corresponding outcome (positive or negative), which helps determine the number of tests required. The Shiny app can be accessed here.

Fall 2019 **Multiple Linear Regression, A Statistical Consulting Project**
An investigation into the Malaria prevalence among children under 15 Years in Kenya using Multiple Linear Regression Model. Team leader of the project; conducted a comprehensive literature review, data acquisition, data preprocessing, exploratory analysis, fit multiple linear regression model to determine temporal trends in malaria prevalence in Kenya and performed future malaria prevalence projections

RELEVANT COURSEWORK

Moi University Basic Calculus, Introduction to Probability and Statistics I & II, Linear Algebra I & II, Design and Analysis of Experiments I & II, Applied Regression Analysis I & II, Survival Models and Analysis, Applied Time Series Analysis, Applied Multivariate Analysis.

Brown University Applied Generalized Linear Models, Probability & Statistical Inference, Statistical programming with R, Introduction to Methods in Epidemiologic Research, Multilevel Model & Longitudinal Data Analysis, Analysis of Lifetime Data, Practical Data Analysis, Causal Inference & Missing Data, Statistical Learning and Big Data.

SCHOLARSHIPS AND AWARDS

Fall 2021 Brown Moi Partnership for Biostatistics Training in HIV (NAMBARI); The Global Health Initiative [GHI], Brown University, Providence, RI.

- A research training program co-led by Principal Investigators Joseph Hogan, ScD and Ann Mwangi, PhD that aims to build biostatistics capacity for HIV research at Moi University.
- Financial support and mentoring while pursuing my Masters in Biostatistics at Brown University, covering a living stipend along with 50% of tuition costs, all school fees, course-related materials, and health insurance.

Fall 2021 Department of Biostatistics Tuition Scholarship covering 50% of tuition costs
Department of Biostatistics, School of Public Health, Brown University, Providence, Providence, RI.

PROFESSIONAL AFFILIATIONS

2023 - Present International Biometric Society [IBS]. Kenya Chapter, Nairobi, Kenya.

2022 - Present American Statistical Association [ASA]

TRAININGS AND CERTIFICATIONS

- **Epidemiology: The Basic Science of Public Health**, *The University of North Carolina at Chapel Hill and offered through Coursera (Fall 2023)*
- **Essential Epidemiologic Tools for Public Health Practice**, *Johns Hopkins University and offered through Coursera (Fall 2023)*
- **Principles of HIV/STI Research and Public Health Practice,** *Department of Global Health, University of Washington, Seattle, Washington (Summer 2022).*
- **Brown Ethics and Responsible Conduct of Research (BEARCORE) training program,** *Office of the Vice President for Research, Brown University, Providence, RI (Summer 2022)*
- **Responsible Conduct of Research,** *The Collaborative Institutional Training Initiative (CITI) program under requirements set by Brown University (Summer 2022).*
- **Verified Certificate for Data Science: Productivity Tools,** *HarvardX (Summer 2022)*
- **Shiny Fundamentals with R,** *Datacamp (Summer 2022)*

TECHNICAL SKILLS

Data Science: Machine Learning, Data wrangling, Exploratory data analysis, Feature engineering, Dimension Reduction, Clustering, Decision Trees, and Neural Networks.

Programming languages: R, Stata, Statistical Package for the Social Sciences (SPSS)