

HEALTH DISPARITIES DATA SCIENCE INTERNSHIP

Position summary: We are seeking an enthusiastic data science intern interested in applying mathematical and computational techniques to solve real-world problems in medicine. This internship is a 3-way collaboration between the Whiting School of Engineering, the School of Medicine, and the Bloomberg School of Public Health. The student is expected to work collaboratively with clinical and technical faculty and staff within the Center for Community and Global Health (CCGHE) <https://www.ccgheid.org>. CCGHE is focused on improving health and equity, locally and abroad, through infectious disease research, training, advocacy, and service. CCGHE uses data-driven methods, including large-scale electronic health record (EHR) data extraction, data wrangling, research database building, machine learning, optimization, simulation, and advanced data visualization techniques. Current projects include increasing access to care for low-income immigrants, equitable distribution of Covid-19 vaccines, understanding the epidemiology of diabetes and other chronic diseases in the Latino immigrant community, and more. The data science intern will be directly engaged with the data science pipeline (from EHR and survey data extraction to modeling to decision support systems) used to support and drive ongoing initiatives within the Johns Hopkins Health System and beyond. Their work will be critical to the success of the team. The student can expect an experience similar to a lab rotation and exposure to operational and clinical workflows relevant to translational medical research. Before arrival, each data science intern will receive multiple papers related to their assigned project. The goal of the student's project and its relationship to other work in the area will be discussed. The student will be provided with detailed guidance needed to conduct data analysis and will work under the supervision of experienced engineers, clinicians, and public health researchers at CCGHE. The internship will start as soon as possible and is expected to last at least 6 months. There is a possibility of extension depending on the performance of the student.

Benefits for the student: This internship is ideally suited to students with strong analytic skills and an interest in pursuing a medically oriented career in industry or academia. Interns will acquire theoretical and practical training in advancing the practice of medicine and healthcare delivery using data science and systems engineering – with a particular focus on EHR and survey data. The data science intern will be embedded within CCGHE, a Center that includes experts from infectious diseases, industrial engineering, health behavior, society, and policy – all focused on improving care delivery for vulnerable individuals. Their team has created meaningful cross-disciplinary partnerships and developed novel tools that enhance the practice of infectious diseases, including an improved approach to risk stratification and more accurate identification of risk factors for diabetes and deteriorating mental health. Experiences gained will be highly informative and advantageous to students who plan to pursue further training (Master, PhD, or MD) or work in this arena after graduation, including ample opportunity for writing peer-reviewed scientific publications.

Compensation: Commensurate with experience.

Specific duties:

- Work closely with study leads and data manager to set up quality assurance systems, including longitudinal randomized controlled trials, implementation trials, medical record data, and pilot studies with small samples;
- Conduct analyses related to descriptive statistics and epidemiology, intervention effects, moderation, mediation, and psychometric evaluation, including multivariate analyses and casual inferences;
- Design and produce quality data visualizations;
- Assist study PIs and others in summarizing and preparing data findings for publication in peer-reviewed manuscripts and presentations.

Required education: Undergraduate or master students in applied mathematics, civil & systems engineering, applied math, computer science, biomedical engineering, biostatistics, epidemiology, or relevant fields—no previous research/industry experience required.

Desired knowledge, skills, and abilities:

- High-level communication skills
- Strong critical thinking and analytical reasoning skills
- Proficiency with multiple programming languages (including R, SAS, STATA, SQL or REDCap)
- Proficiency in data and statistical learning (regression, moderation, mediation, and psychometric evaluation, ML-based classification or clustering, survival analysis)
- Ability to execute assigned project tasks within an established schedule
- Sound documentation skills (writes and communicates clearly and concisely)
- Prior experience in healthcare-oriented research desired but not necessary

Application process: Send your resume, one-page cover letter (describing relevant course work, research experience, or plans about industry/research career), and one professional reference contact info. Email applications to Dr. Diego A Martínez at dmart101@jhmi.edu with the subject line “MCEH Internship application.”

Application deadline: May 31, 2023 or until the position is filled.

Anticipated start date: As soon as possible/negotiable.