The Urban Heat Island (UHI) effect is a phenomenon that occurs when urban areas are significantly hotter than the surrounding suburban areas because of the denser concentration of heat-retaining surfaces. As global temperatures increase and climate change worsens, the UHI effect will be exacerbated. In addition, urbanization leads to more impervious surface cover, directly impacting the urban heat island effect. For this project, we are addressing the problem of heat vulnerability at the University of North Carolina at Chapel Hill. The campus is expected to continue developing to meet the needs of students and the University, which may impact the tree canopy that mitigates heat throughout campus. This study aims to understand what areas on UNC's campus are most susceptible to the UHI and what opportunities exist to mitigate these effects.

We gathered temperature and humidity data along highly trafficked corridors on UNC's campus and studied the tree canopy cover. We combined point observations of temperature and humidity with elevation, land use, and tree canopy data in a Random Forest Model to create a continuous map of heat index on campus. In addition, we analyzed how temperatures varied across campus at different times of the day. Our results show that areas on campus with the highest density of impervious surfaces and the least amount of tree cover had the highest temperatures. We used these findings to write a policy brief to inform the University administration on where heat vulnerability is most prevalent and how to consider this during future developments.