I. EXTENDED ABSTRACT

The physical environment influences mental health and inevitably well-being. While exposure to natural environments shows salubrious health benefits among those who maintain a consistent connection, little is known about how urban environments impact mental health. As urbanization increases worldwide, it is essential to understand the linkages between urbanized environments and public health. This project is guided by the research question: How do different environmental characteristics affect stress-related responses in users?

The study will guide individual subjects (n > 30) to walk a designated route, exposing them to different architectural and environmental elements in downtown Manhattan, Kansas. Physiological biofeedback sensors, including electrodermal activity (EDA) and heart rate sensors, will be used monitor physiological behavioral changes. GPS will provide spatial location, and a GoPro camera will provide a real-time first-person experience. Data from these sensors will be integrated into a temporal-spatial analysis to ascertain correlations between architectural and environmental elements in space and associated stress responses. Upon completing the walk, participants will take a brief survey asking for their perceptions, both quantitatively and qualitatively, of the different environments they encounter on the walk.

Raw data collected from the biofeedback devices will be refined and analyzed spatially using GIS mapping software. This will allow us to visualize any associations between design characteristics and the elicited behavioral responses in order to determine the environmental characteristics that may illicit heightened stress responses. Analysis of the survey data will seek to identify any correlations between physiological and perception-based responses.

The intent of the research is to provide a foundation for further studies into how public policy can be better informed and augmented to mitigate potential public health issues caused by urban design. Results will also inform architectural and engineering decision-making processes to further improve urban design by identifying characteristics that may improve or decrease mental health of those living and/or frequenting urban environments.

II. REFERENCES