



## Boulders Associates Project Abstract

**Keywords:** Wellbeing, Stress, Distributed Work, Technology Integration, Human-Environment Interaction

While person-centered design aims to optimize human outcomes through the design of the environment, a challenge is how to measure person-environment interactions to evaluate impacts of the environment on human outcomes. In terms of stress impacts specifically, researchers have historically relied on self-reports of stress from building users to understand stress-place interactions. For example, stories shared in focus groups have helped us understand anecdotally where stress points occur along a journey; however, we have not been able to benchmark those stress moments nor understand how design solutions have quantitatively increased or decreased stress. Having access to physiological stress data linked with place would support the design of spaces and processes which reduce stress or support building users during stressful moments.

The primary aim of this project was to develop a mechanism for correlating stress, location, and activity data, and to visualize this layered data as a journey map, or Moodmap. To demonstrate proof of concept, we set up a pilot study evaluating office worker stress under work-from-home and office workplace conditions. To measure stress, office workers wore devices collecting electrodermal activity (EDA) which has been shown to be one of the most direct ways to measure stress response (Boucsein 2012). Location was tracked using Bluetooth low energy (BLE) beacons and sensors. Activity data was collected using experience sampling surveys sent to a worker's mobile device. We used time-stamping to layer stress, location, and activity data in a database to evaluate potential interactions.

Studies on work-from-home preferences over the past pandemic year have suggested future post-pandemic workplaces will include multiple workplace locations, not limited to exclusively home or exclusively office (Steelcase 2021, Wahi et al 2020). Results captured in our pilot study support these existing studies by providing descriptive trends suggesting that because stress response seems to be linked with aspects of place and activity, flexibility in work locations can best support diversity across activity and individual needs. Given the small sample size of our pilot study, our findings are not generalizable; however, they provide data to inform hypotheses for a larger study.

Ultimately, this study supports Moodmapping as an effective means to evaluate physiological stress points along a person's journey through an environment. As a next step, we will deploy Moodmapping to evaluate stress points in a patient journey at a healthcare facility, and use this data to drive decision making for design and process improvement.

### About the ONEder Grant Program

One Workplace, the largest workplace solutions company on the West Coast, launched the ONEder grant program in 2019 to support and celebrate thought leadership in the architecture and design community. As forward-thinking thought leaders in their own right, One Workplace strives to elevate the roles of architects & designers in the constantly-changing landscape of the modern workplace.

A new round of grants is currently open for applications. In 2021, One Workplace will award grants of \$20,000 each to firms in the Bay Area and Sacramento. For more information, please visit: <https://go.oneworkplace.com/oneder-grant-application>.