

Tank, U.<sup>1</sup> & Coseo, P.<sup>1</sup>. *Urban Shade Where Trees Cannot Grow: Everyday Shade Strategies from Sidewalk to Bus Stop.*

Tree planting is widely promoted as a primary cooling strategy, yet many urban areas cannot support mature canopy growth due to limited soil volume, irrigation constraints, and underground utility conflicts. This design-applied research project examines practical non-tree shade strategies that can deliver immediate thermal relief where trees cannot thrive. The study contributes directly to the **Urban Climate** IRT by evaluating how built shade structures influence heat exposure and pedestrian microclimates, and to the **Environment & Human Wellbeing** IRT by assessing how accessible shade supports comfort, mobility, and safety for heat-vulnerable residents.

The research focuses on community perceptions of temporary, semi-permanent, and permanent shade options such as umbrellas, shade sails, vine-covered pergolas, building-mounted awnings, and bus-stop micro-structures. Three methods guide the project. First, existing studies are reviewed to assess the thermal performance of non-tree shade in hot, arid cities. (e.g., [Middel et al., 2021](#)). Second, neighborhood site observations in Phoenix's Sunnyslope area document current shade conditions, pedestrian behavior, and constraints on installing vegetation. Third, conversations at an Urban Nature community workshop in Fall 2025 provide insight into how residents and local stakeholders evaluate effectiveness, safety, and maintenance demands.

Using shade mapping and common heat-exposure scenarios, the study compares how different interventions reduce direct sun exposure and improve thermal comfort. The poster presents a visual typology linking non-tree shade options to specific urban conditions, emphasizing equity, feasibility, and long-term resilience. The work positions non-tree shade as an essential component of urban climate adaptation and everyday wellbeing.

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