

Thesis Project Portfolio

**Design of a Prioritization Methodology for Equitable Infrastructure
Planning**
(Technical Report)

**Redefining Active Transportation Infrastructure Can Lead to Planning Processes With a
Greater Focus on Equity**
(STS Research Paper)

An Undergraduate Thesis

Presented to the Faculty of the School of Engineering and Applied Science
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Bachelor of Science, School of Engineering

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Incorporating Equity into Planning for Active Transportation Infrastructure

Charlottesville schools, like many school districts across the country, have struggled in the past two years to get children to school following the bus driver shortages that resulted from COVID-19. While the City has a strategic plan for infrastructure improvement, it is not currently school focused, and there is concern that some communities are overlooked in the process. My technical team worked with the City of Charlottesville on a project to design an equitable prioritization methodology for improving walking infrastructure around the City's elementary schools. My STS research was focused on how analogies can be used to redefine active transportation infrastructure in order to create planning approaches that give more attention to equity. The link between these two projects is the interest in developing planning and prioritization processes that are equitable for all.

The technical component of my thesis was focused on designing a methodology for prioritizing infrastructure projects that the City of Charlottesville can use to increase the number of children walking to school. From working closely with the City's Safe Routes to School Coordinator and engaging with other key stakeholders (school administrators, neighborhood organizations, planners, parents, etc), it was determined that ideally the new process would contain four key characteristics: equity, usability, transparency, and measurability. The tool created for this methodology consists of three steps - identifying areas of need (and selecting projects in those areas), prioritizing selected projects, and finally comparing projects using factors such as cost, equity, and school readiness. Each one of these steps helps achieve at least one of the key characteristics. Only selecting projects in areas of need ensures that underfunded

areas are looked at more closely, and the prioritization process uses publicly available data and is largely automatized. Finally, the comparison process is data-oriented and centered around the goal of increasing walkability to schools.

In my STS work, I research the current state of infrastructure built for active transport (sidewalks, shared use paths, crosswalks, etc.) and investigate how equity is considered in the planning of active transportation infrastructure. Schwarz-Plaschg (2018) explains how analogies can function as tools for presenting and exploring ideas. In my paper I use the techniques that she outlines to explain how active transportation infrastructure should be redefined, and how this shift could make the landscape more equitable. I do this by fleshing out two primary analogies - one that describes active transportation infrastructure as a resource, and another that explains how it can be considered a product. Viewing built features such as sidewalks as an intersection of all of these things - infrastructure, products, resources - can lead to planners devoting more energy to ensuring there is equitable access to this type of infrastructure.

At the outset, equity was one of many factors that my technical team was taking into consideration when it came to prioritizing infrastructure improvements. However, it slowly moved to the forefront as we discussed the project with key stakeholders. The research that I was doing as part of my STS work underscored the importance of engaging with equity early on in the planning process - and ultimately the first step of the methodology that my technical team developed was heavily focused on equity. As a whole my project had to consider active transportation infrastructure as a sociotechnical system - the organizational, technical, and cultural actors - in order to provide comprehensive and appropriate solutions.