

Executive Summary: Confronting Interstate 93

Introduction

CAFEH, the Community Assessment of Freeway Exposure and Health Study, serves as the larger umbrella for several related air pollution studies. Many of these projects have full participation of the community partners in all aspects of the science including: developing the proposal, leading the study, and collecting, analyzing and interpreting the data.

The CAFEH partnership combines community, government and academic resources to advance scientific understanding of the health risks of highway pollution. Community representatives living in the City of Somerville have been central to CAFEH since its founding.

In 2017, CAFEH received a 5-year grant from the National Institute for Environmental Health Sciences to Tufts University (R01 ES026980) to move research from observational studies to addressing the problem.

Project Summary

In the 1970s, a thriving neighborhood and business district in Somerville was demolished for the construction of Interstate 93 (I-93); residents were uprooted and the local economy displaced. Today, over 200,000 vehicles daily move through these environmental justice neighborhoods. The large volume of traffic creates high levels of traffic related air pollution (TRAP) and noise. People who live or spend a lot of time near busy highways and roadways face elevated exposure to air and noise pollution. Previous CAFEH research as well as many other studies conducted around the world have identified negative health effects associated with these traffic-related exposures.

The Somerville neighborhoods surrounding I-93 are some of the densest areas of the city. They are also the most racially and ethnically diverse areas and home to high numbers of children, foreign-born and low-income residents. While at the time of construction, the State agreed to erect noise barriers along I-93 in Somerville, these promised mitigations never materialized except along one small section of the Ten Hills neighborhood located east of I-93. This leaves Somerville's most vulnerable residents exposed to excessively high levels of air and noise pollution.

In response, CAFEH proposed a project to identify approaches for reducing the negative health impacts caused by the pollution and noise from I-93. The goal of this project was to assess:

- 1) how the health and wellbeing of residents is currently impacted by the proximity of the highway; and
- 2) how noise barriers might mitigate noise and traffic related air pollution for residents living near I-93

A Health Lens Analysis (HLA) of noise barrier installation, a near-highway noise monitoring study of I-93 traffic, and a community participatory design charrette were carried out to advance these goals. The process was community-driven and included multiple public meetings with diverse stakeholders. The resulting reports and additional documents can be found on the [CAFEH Website](#).

There is substantial evidence of the health benefits from building noise barriers along I-93

The Noise monitoring study documented that sound levels next to the highway exceed both regulatory and health-based thresholds.

CAFEH research has documented that UFP are elevated next to I-93 in Somerville and that people with higher exposure to these particles have higher levels of inflammation, which is associated with cardiovascular risk.

A preliminary risk assessment, based on high quality studies from the scientific literature, estimated large numbers of serious health outcomes and mortality in both adults and children due to near highway exposures.

The HLA found that noise barriers effectively reduce both noise and traffic pollution. Somerville residents were especially interested in increasing vegetation as well and noise barrier installation could provide an opportunity to increase greenery within some of Somerville's densest residential and highest-need neighborhoods.

The HLA also found that siting constraints and environmental conditions do not make all locations along I-93 equally strong candidates for hosting noise barriers.

In response, the design charrette produced detailed recommendations for noise barriers or other noise and pollution reduction techniques at four sites along I-93: Mystic Housing, States Avenues, Ten Hills & Boat House, and Foss Park. Innovative design ideas included walls with solar panels that could harvest energy to power additional pedestrian safety lighting, barriers curving over the roadway that block pollution at shorter wall dimensions, and barriers incorporating climbing walls.

Conclusion

It is important to mitigate the air and noise pollution along the I-93 corridor in East Somerville in order to protect vulnerable populations from the effects of noise and air pollution. The ultimate goal of this work is to see the ideas and recommendations generated by these reports enacted by the city or state. CAFEH will continue to work with local activists and community groups as well as elected officials and government employees to raise awareness of this issue and promote evidence-based solutions.