

# Web Mapping Tool Calculates Length and Cost of School and Transit Bus Delays

(STRIDE Project E3: Locating and Costing Congestion for School Buses and Public Transportation)

## PROJECT OVERVIEW

Roadway congestion creates delays and increased costs for all roadway users, including transit and school buses. When buses are subjected to congestion, operating and capital costs increase, travel time reliability decreases, and the overall competitiveness and attractiveness of these modes decreases.

This research integrates three large datasets to develop a web mapping tool that allows transportation planners and engineers to model the relationship between traffic flow and congestion affecting public transportation and school buses. The model estimates delays and the costs resulting from these delays.

## GOAL

The goal was to develop methodologies that would enable the use of three large datasets in a new web mapping tool.

## PRODUCT

### Web Mapping Tool

Three different datasets were used: congestion data from Regional Integrated Transportation Information System (RITIS), transit route and frequency data from General Transit Feed Specification (GTFS), and school bus routing data from Edulog. Four methodologies were developed to 1) display Edulog data spatially, 2) display GTFS data spatially, 3) merge the Edulog and GTFS datasets with RITIS data, and 4) determine minutes of delay by hour and segment.

The resulting web mapping tool allows users to examine minutes of delay for transit buses and school buses at any time of the day, using an expandable map. With the tool, transit systems, school districts, municipalities, and related stakeholders can determine congestion “bottlenecks,” streets or areas where buses and other vehicles face high congestion.

The tool also estimates of the costs incurred allowing practitioners to prioritize locations where treatments will be the most cost-effective and impactful. Possible solutions may include changing routes or times, adding special lanes, signal prioritization, etc. Regional planners can use these results to prioritize their general congestion mitigation efforts.

The tool was tested in Durham County, NC and Pinellas County, FL, providing results to the local public schools, transit agencies, and planning organizations. It is hoped that future research will further refine these methodologies so that more districts and transit agencies are able to use them.

## PRODUCT

### Web Mapping Tool

The tool calculates delay time and the relative costs of delays school and public transit buses experience due to congestion.

## IMPACT

Practitioners can use the tool to determine cost-effective solutions.

## WHO BENEFITS?

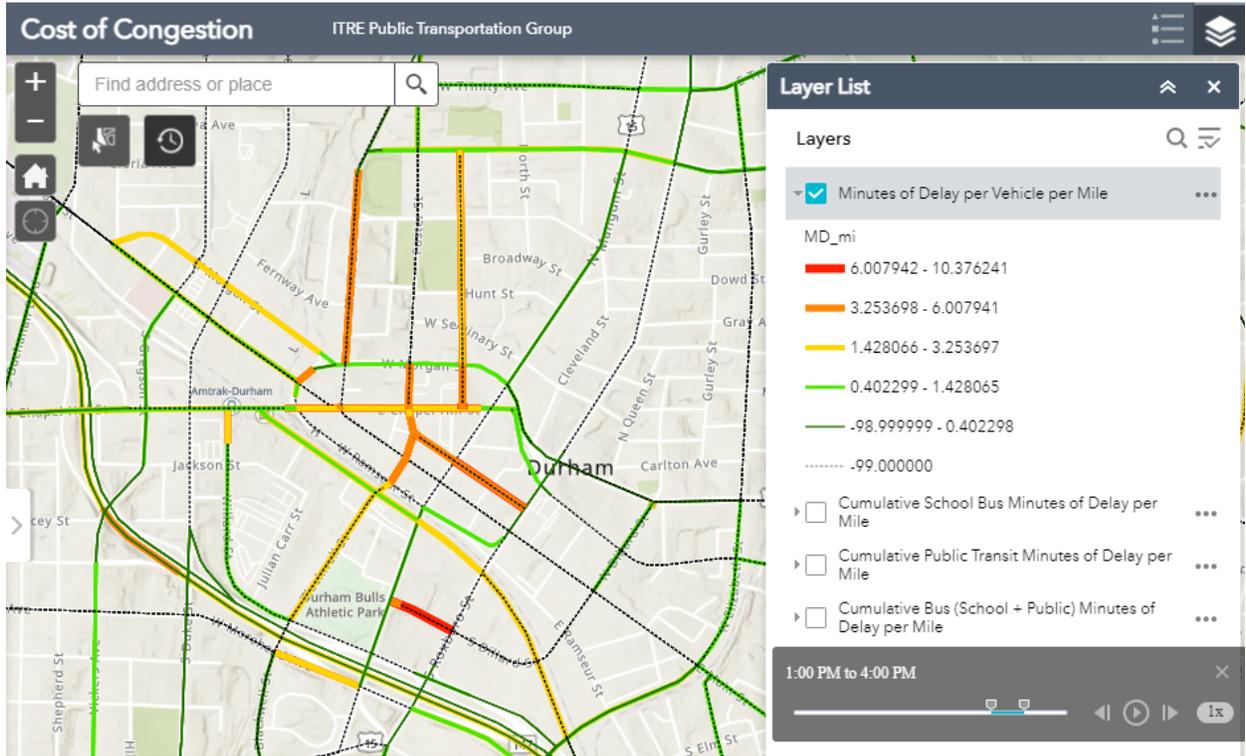
- Transit Agencies
- School Districts
- Municipalities
- Regional Planners

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The map can be accessed via [www.transitportal.org/cost\\_of\\_congestion.html](http://www.transitportal.org/cost_of_congestion.html).



For more information on Project E3 (Locating and Costing Congestion for School Buses and Public Transportation), visit the [STRIDE Project page](#).

## About STRIDE

The **Southeastern Transportation Research, Innovation, Development & Education Center (STRIDE)** is the 2016 Region 4 (Southeast) U.S. Department of Transportation University Transportation Center headquartered at the **University of Florida Transportation Institute (UFTI)**.

