Research in Progress

Using Traffic Signals to Reduce Speeding Opportunities

Research Need

Preventing speeding on multilane arterials is critical to safety. Traffic signal timing may be able to reduce incidence of dangerous speeding by removing opportunities to drive at high speeds through multiple intersections.

Goals/Objectives

New methods have been proposed for timing traffic signals in a way that supports traffic flow at a safe speed while also removing opportunities for drivers to progress through multiple intersections at dangerously fast speeds. Preliminary studies suggest that, compared to conventional arterial signal timing, they can reduce "speeding opportunities" - the number of cars arriving at an intersection on a stale green and with no vehicle ahead of them - by up to 50% with little or no change in average traffic delay. Objectives are:
1) To do field tests to confirm this theory, measuring changes in speeding, speeding opportunities, traffic delay, and stops.
2) To develop a software tool that enables traffic engineers to estimate the number of speeding opportunities a traffic signal timing plan produces. That will allow engineers to develop and choose timing plans that improve safety while still supporting traffic flow.
3) To write a guidebook on timing traffic signals in a way that reduces speeding opportunities.

Research and Technology Transfer Section
MassDOT Office of Transportation Planning
Planning.Research@dot.state.ma.us

Project Information

This project is being conducted as part of the Massachusetts Department of Transportation MassDOT) Research Program with funding from Federal Highway Administration FHWA) State Planning and Research (SPR) funds.

Principal Investigators:
Peter G Furth
Performing Organization:
Northeastern University

Project Champion:
James Danila, P.E.

Project Start Date:
July 1, 2021

Expected Project Completion Date:
May 31, 2023

Methodology

Traffic signals on two corridors - Route 16 in Everett and Route 12 in Leominster - will be retimed to reduce speeding opportunities while still providing for good traffic flow at a safe speed. Before - after measurements will document changes in the number of speeding vehicles, number of speeding opportunities, traffic delay, and stops.

Simulation models of the same corridors will estimate the number of speeding opportunities afforded for a variety of traffic signal timing plans. The software tool for estimating speeding opportunities from a given traffic signal timing plan will be calibrated by the case studies and simulation studies.

massDOT
Massachusetts Department of Transportation