Chris Beard, Engineering

Year in School: Senior
Faculty Mentor: Dr. Carlos Sun, Civil Engineering
Funding Source: Missouri Department of Transportation

Evaluation of Saint Louis Motorist Assist Program

My research evaluated the safety and efficiency impacts of the St. Louis Motorist Assist, a program of the Missouri Department of Transportation. The program's purpose is to improve freeway safety and expedite the flow of high-volume traffic by assisting disabled motorists, clearing freeways of stalled vehicles and debris, and assisting emergency personnel at accident locations. Similar programs exist in most major cities, and all previous evaluations of such programs indicate a net economic benefit. This evaluation focused on maximizing the use of actual data from the St. Louis region, such as Motorist Assist operator logs and customer surveys, average freeway volumes, and MoDOT accident records. Efficiency impacts were estimated based on a sample of about 5500 incidents extracted from the 2002 Motorist Assist operator logs. A comparison of incident duration was made between assistance by Motorist Assist and assistance without Motorist Assist. Most incidents were cleared in shorter time with Motorist Assist. Using computed values of freeway capacity and volume and percentages of reduced capacity due to the incident, the traffic delay savings attributed to Motorist Assist was estimated. The annual reduction in delay for 2002 was approximately 188,677 vehicle-hours with a value of $2.4 million. Additional efficiency benefits, not economically quantified, include savings to fuel consumption and police manpower, reduction in emissions, and providing traffic information to Gateway Guide, St Louis's intelligent transportation system.
The evaluation of safety impacts focused on the analysis of accident records from 1987 through 1996 on two high-accident freeways. Two trends of annual secondary accidents were computed: one trend for the years before Motorist Assist debuted in 1993 and one trend for the years with Motorist Assist in service. Expanding the two trends to the year 2002, a total of 456 fewer secondary accidents occurred on the two freeways with Motorist Assist in service. The reduction in secondary accidents saved approximately $14 million. Combining the efficiency and safety impacts, an overall $11 economic benefit was gained for every $1 spent by MoDOT.