Transportation Planning & Traffic Engineering Laboratory

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This laboratory researches the following themes in the pursuit of the ideal state for a safe, convenient, comfortable, and environmentally-friendly transport system that is in unison with regional society, and how it might be realized.

Theme 1 ► Traffic Calming in Community Street Spaces Using Intelligent Transport Systems
The creation of safe and reliable community street spaces presents a vital requirement for traffic calming, including a reduction of the influx volume of vehicles and vehicle speeds. Intelligent Speed Adaptation (ISA), primarily being researched in Europe in recent years, has the potential to be a drastic tool for traffic calming. ISA is an intelligent transport system (ITS) that uses sources such as GPS and digital maps to provide limit speed information regarding the current road segment being driven through, and restrictions to prevent that limit from being exceeded. Our laboratory is performing a survey and analysis into the effects, costs, side effects and introduction process for bringing ISA into the Japanese transport system. We are also conducting research into incentive measures (tax reduction for safe cars etc.) to reward vehicles that are designed with safety on community streets in mind.
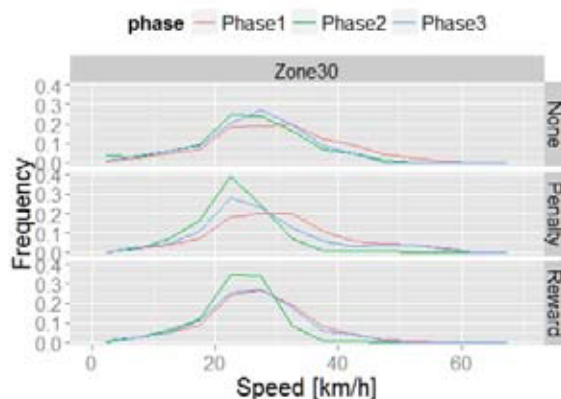

Changes in speed distribution due to advisory ISA (None) and incentive program for not speeding (Reward, Penalty)
(Red: Before test, Green: During text, Blue: After test)

Theme 2 ► Traffic Safety Management Methods that Make Use of Traffic Big Data
The effective and efficient realization of traffic safety management that lies at the center of improving the road traffic environment demands a scientific understanding of the risks posed by traffic accidents. Our laboratory is aiming to construct a traffic safety management method that uses not only traffic accident statistical data, but also traffic big data such as drive recorder data, vehicle probe data, and three dimensional road space data. Our approach is focused on Aichi Prefecture and Toyohashi City, and includes the construction of an accident risk statistical model, the evaluation of accident risks by location and type of accident and an analysis of their causes, the observational survey, analysis and construction of a simulation model for detailed traffic flows at specific accident risk points, and the proposal and evaluation of traffic safety measures based on all of this information.
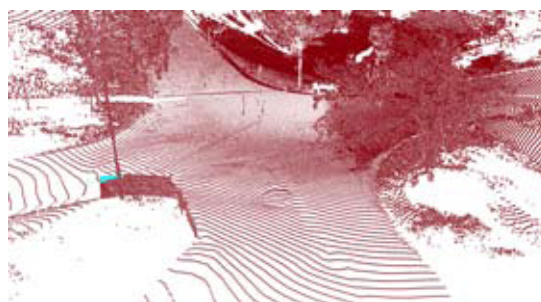

Three dimensional data of an intersection space using 3D laser scanner

Theme 3 ► Evaluation of Road Network Improvement Plans and Traffic Management Plans Using Simulations
When implementing road network improvement plans and traffic management plans (traffic signal control etc.), there is a requirement to be able to accurately predict and evaluate their effects prior to their actual implementation. Our laboratory is aiming to construct a method that combines a macro traffic assignment simulation with a micro traffic flow simulation, and investigating its application to road network improvement plans and traffic management plans.

Simulated predictions of changes in traffic volume on roads in the vicinity of Toyohashi (Red: Increase, Green: Decrease)

In addition to the above, we are also involved with research relating to traffic safety plans on roads leading to elementary and junior high schools, research relating to traffic jams on freeways, researching regional characteristics of travel behavior, and research into local public transport plans (community buses etc.**).**