

Driver-Centered Research and Outreach at FHWA

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The Federal Highway Administration is conducting a driver-centered research program at its Turner-Fairbank Highway Safety Research Center. The program includes research efforts addressing a broad range of issues associated with highway design, traffic operations, and traffic control. Current efforts include the following.

Older Drivers. Since the late 1980s FHWA has sponsored a high-priority research program aimed at improving safety and mobility for older drivers. The results and findings of that program have been synthesized in the *Older Driver Highway Design Handbook*, which provides assistance to practitioners in accommodating the special needs of older motorists in highway design. In addition, a series of Older Driver Highway Design Workshops for practicing highway and traffic engineers who are responsible for highway design and operations are being offered across the United States.

Intelligent Vehicle Systems. FHWA has been performing driver-centered research on in-vehicle systems since the late 1980s. Human factors guidelines have been produced in the areas of advanced transportation information systems and automated highway systems. This ongoing research is currently addressing alternative visual, auditory, and tactile means of presenting information to drivers through use of advanced traveler information, warning, traffic management, collision avoidance, and driver convenience systems.

Retroreflectivity of Sign and Pavement Markings. In recent years FHWA has been developing guidelines for use by states and others in determining when pavement markings and signs should be replaced because they have reached the end of their useful life. Guidelines for signing materials have been completed; those for pavement markings are now being reviewed by states and others in the highway engineering community. In addition to these guidelines, computerized tools have been developed specifically for analysis of retroreflectivity, as well as for evaluation of the legibility of symbol signs. The latter tools allow analysis of the effects of the design, type, size, and location of sign and pavement markings, along with other factors such as headlamp design, driver position and visual capabilities, roadway features, and traffic conditions.

Enhanced Visibility. About half of highway fatalities occur at night, even though only one-quarter of all motor vehicle travel takes place during nighttime hours. The need for improved visibility and guidance during adverse weather and at night is one of the problems noted most frequently by drivers. In addition to the above work on retroreflectivity of sign and pavement markings, FHWA has been studying the possible joint use of ultraviolet headlights and fluorescent materials to enhance drivers' ability to see objects on and near the roadway. This research, while still exploratory, has had encouraging results. It has been found that this approach allows most drivers to increase their range of visibility to that provided by high-beam headlights without blinding approaching drivers.

Operator Duties in Traffic Management Centers. There is a growing need for better management of existing highways. Under the Intelligent Transportation Systems Program, 78 metropolitan areas have been identified in which the transportation infrastructure needs to be enhanced. Many of these areas will use traffic management centers to help coordinate and control traffic on freeways, major arterials, and city streets. FHWA has developed guidelines for the planning and design of these centers to enhance operator efficiency and productivity. These guidelines are incorporated in the *Human Factors Handbook for Advanced Traffic Management Systems Design*. Workshops providing instruction and guidance on the content and use of this handbook will be conducted during 1999.

Human Factors Highway Safety Handbook Program. This new effort focuses on incorporating human factors highway safety information into a handbook that can be used by traffic engineers to ensure that highway designs meet user needs. Cooperation with a broad range of partners, including the Transportation Research Board and committees of the American Association of State Highway and Transportation Officials, is a key factor in the success of this program.

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