Who We Are

The NHTSA Office of Crash Avoidance Research is responsible for identifying and developing effective vehicle systems for helping drivers avoid crashes. Our work utilizes the expertise of human factors engineers and psychologists, mechanical engineers, and electrical engineers to plan, manage and conduct research to better understand vehicle technologies, driver performance, and driver behavior.

The goal of our research is to determine how vehicle design can be enhanced to help drivers better detect and quickly respond to impending collisions. Such countermeasures may include advanced technologies to alert drivers of impending collisions as well as enhancements to conventional systems, such as mirrors and lights. The research seeks to provide the government and industry with knowledge of countermeasure capabilities, driver useability, and safety benefits.

DOT/FHWA

Developing Performance Specifications for Crash Preuention Systems

The ITS collision avoidance program is problem driven. Three of the major safety problems are rear-end, road departure and intersection collisions. These crash types and others are the subject of research to understand system capability needed for effective collision avoidance support to drivers.

Developing and Using State-of-the-Art Research Tools

Research into the science of collision avoidance requires the development of new research tools for measuring driver behavior and performance. These tools will assist NHTSA in establishing capabilities, useability, and benefits of collision avotdance systems.

Cooperating With Industry

Deployment of collision avoidance technologies is dependent on development of effective systems by the auto industry A key part of the NHTSA program is a set of cooperative agreements that are helping facilitate early deployment of effective collision avoidance systems.

Making Trucks Safer

Recognizing the special requirements of trucks, NHTSA is exploring systems to enhance braking, prevent rollover, and reduce rear-end crashes.

Encouraging Driuer-Centered Design

To help foster the enhancement of conventional crash avoidance systems, such as rear signals and mirrors, research is directed to developing knowledge of how their design should be compatible with driver performance capabilities.

Safe and Effective Commercialization

The bottom line of system performance is the number of collisions, deaths, and injuries that will be prevented. NHTSA research is helping to generate estimates for system safety benefits through experimental and analytical studies,

For futher information, contact:
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202-366-5662 FAX: 202-366-7237

Crash Avoidance Research

Enhancing Vehicle Safety Through Advanced Technology

U.S. Department of Transportation
National Highway Traffic Safety Administration

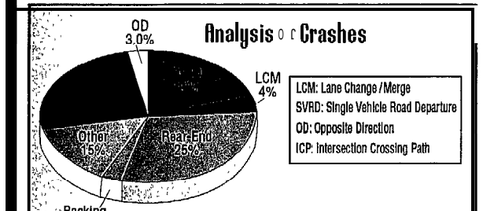
NHTSA
People Saving People

150143

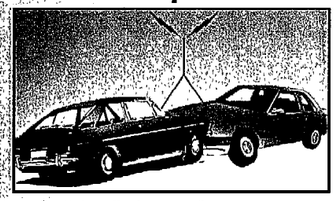
Crash Avoidance Research at NHTSA

Intelligent Transportation Systems Research

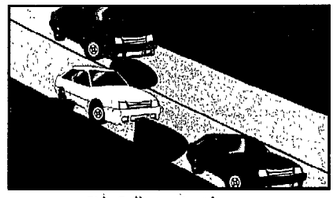
Analysis of Crashes



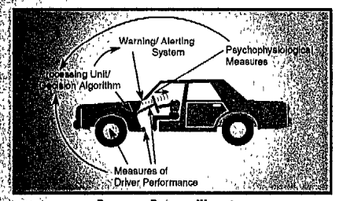
Performance Specification Projects



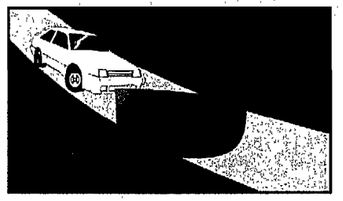
Automatic Collision Notification



Side Collision Avoidance
Forward Collision Avoidance

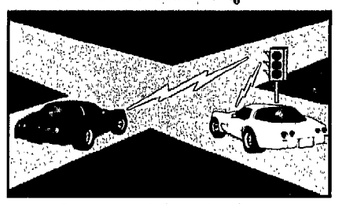


Drowsy Driver Warning



Run-Off-Road Warning

Night Vision Enhancement



Intersection Collision Avoidance

Crash Avoidance Products by Industry

Cooperative Agreements with Industry

DELCO ELECTRONICS · GM · ERIM · UCDAVIS · HUGHES

- Automotive Collision Avoidance Systems Development

- Forward looking radar sensors (ERIM and TRW)

ERIM · TRW

Ford · GM

- Human factors aspects of intelligent cruise control (Ford Motor Company and Systems Technology)

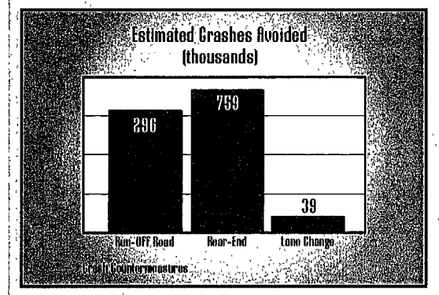
Leica

- Forward crash avoidance systems (UMTRI & LEICA)

UMTRI — The University of Michigan Transportation Research Institute

- Vehicle-based lane detection (Rockwell International)

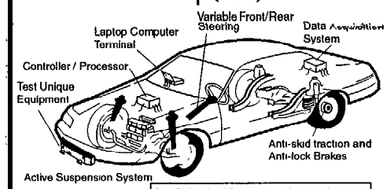
Commercialization of Effective Safety Systems



Assessing Safety of In-Vehicle Devices

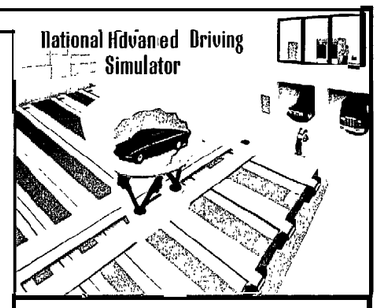
Research Tools and Knowledge Base

Variable Dynamic Testbed Vehicle Concept (VDTV)

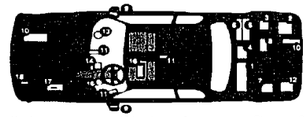


Drive-By Wire Capability	Computer Controlled Subsystem
• Throttle	• Engine (non-friction braking)
• Steering	• Steering
• Braking	• Adaptive Wheels

National Advanced Driving Simulator



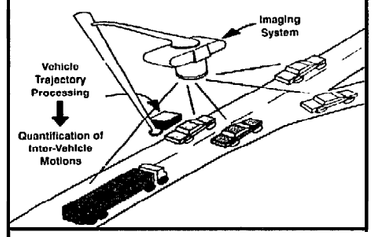
Data Acquisition System for Crash Avoidance Research



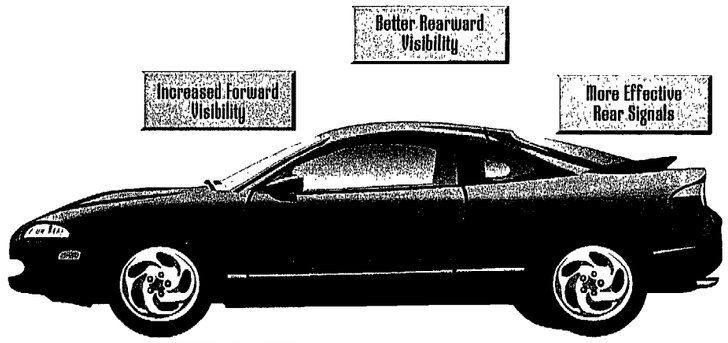
Major Hardware Components
- Data Processing Unit
- DC-DC Power Supply
- 12V Battery System
- 486DX2-66MHz Lap-Top Computer
- Radio Telemetry
- Satellite Uplink
- Video digitizer & Compression Sensor

Sensor Suite
- Six Degrees of Freedom Sensor
- Lane Tracking Unit
- Headway / Tailway Measuring Device
- Micro CCD Video Camera
- Video Support System
- Electronic Compass
- Linear Position Transducer
- Pedal Force Transducer
- Accelerometer
- Hall Effect Sensor
- Mass Air Flow Sensor

System for Assessing the Vehicle Motion Environment

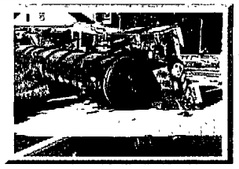


Driver Centered Design

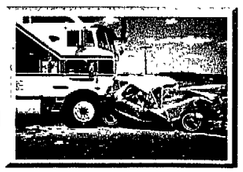


Heavy Vehicle Research

Truck Antilock Brake Research



Truck Rollover Prevention Research



Rear End Crash Avoidance Research