

The Role of IVI in Highway Safety

June 25, 2003



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Talking points for the FHWA portion of the presentation may be viewed by selecting "View" and "Note pages"

A graphic with a dark, textured background. The text "FHWA IS a Safety Agency" is centered in a bold, red, 3D-style font with a slight shadow effect.

FHWA IS a Safety Agency

While safety isn't part of Federal Highway's name, (or FTA's) it is very important to all of us.

FHWA is a safety agency that is dedicated to SAVING LIVES.

The Intelligent Vehicle Initiative is a powerful tool that will help us reach our safety goals.

When the department FY2004 budget was released, Secretary Mineta emphasized SAFER - SIMPLER - SMARTER and challenged all of us throughout the department to become safety advocates.

FHWA takes its safety role very seriously.

That's why SAFETEA creates a new "core" safety program and more than doubles the funds available for infrastructure safety. It elevates safety to the status of a core funding program and recognizes that, as a nation, we must not accept that nearly 43,000 people are killed and three million are injured annually.

In addition it reauthorizes the ITS program – which is the parent program of IVI. This will allow us to continue our pursuit of advanced safety improvements.

Integrated Approach



Safety outcomes are related to the interaction between drivers, vehicles, and the roadway.

This is no small issue given that in the US there are:

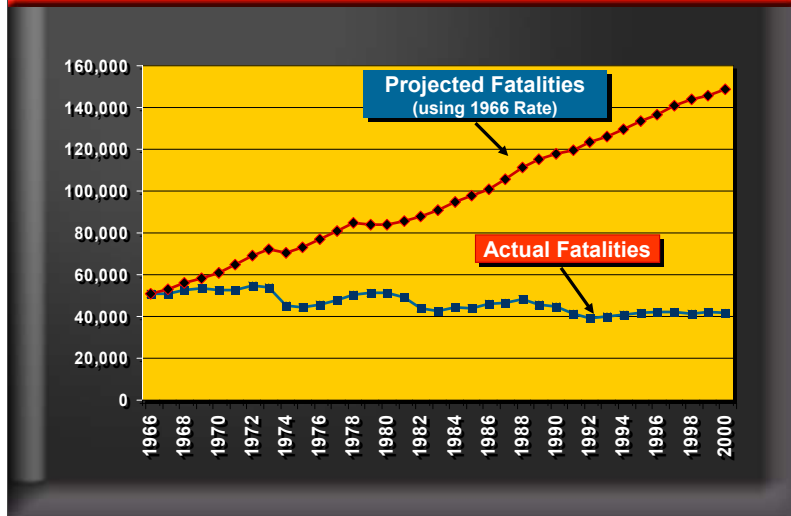
- 191 million licensed drivers (and estimates of 10 million unlicensed)
- 2.8 trillion vehicle miles traveled annually
- 4 million miles of roadway – owned and operated by over 35,000 state, local or private entities. Please keep in mind that safety funding may be used on any of these 4 million miles.

We must work together – using a four Es approach (Engineering- Education-Enforcement-Emergency Response) to make a difference.

FHWA's primary responsibility is infrastructure issues – engineering of roads and bridges, but we partner with NHTSA, FMCSA, and FTA and others on issues related to education and enforcement.

The IVI Program is another way that the agencies are working together to improve safety.

Positive Trends Level Off



Our fatality rate is the lowest in history, but it has flat lined.

The immense number of lives saved comes from improved technology and resources invested over the years. Highway crashes are destroying promising lives (the #1 killer of Americans ages 2 to 40) and shattering families.

IVI can help prevent crashes before they happen.

90 percent of crashes are caused by driver error.

The safety systems being developed under IVI will warn drivers of dangerous situations, recommend actions, and even assume partial control of the vehicle to avoid a collision.

FHWA Safety Priorities

Within 5 Years

- | | |
|---------------------------------------|-------------------------------------|
| ▪ Reduce roadway departure fatalities | Save 2,292 Lives
Annually |
| ▪ Reduce intersection fatalities | Save 860 Lives
Annually |
| ▪ Reduce pedestrian fatalities | Save 465 Lives
Annually |

FHWA is committed to using our resources where they can have the greatest impact.

As an agency, we are focusing our attention in three areas:

- Safety
- Environmental Stewardship and Streamlining
- Congestion Mitigation

Within safety, we have three top priorities:

- Roadway departures
- Intersections
- Pedestrians

The IVI program actively addresses two of our top priorities – road departure and intersection crashes.

Under SAFETEA, IVI will place greater emphasis on pedestrian crashes as well.

Roadway Departure Fatalities



- **Three** roadway departure **fatalities** every hour
- **One** roadway departure **injury** every minute
- **Three** roadway departure **crashes** every minute

Roadway departure includes run-off-the-road and head-on collision crashes – any crash where drivers leave their lane.

Roadway departures are a critical area, because they account for:

- 55 percent of all total fatalities (23,139 fatalities) and 35 percent of injury crashes (740,000 injury crashes).
- Run-off-the-road crashes account for 70 percent of all roadway departure fatalities.

Roadway Departure Programs



Here are the current and **PROVEN EFFECTIVE** infrastructure approaches to preventing road departure crashes

Forgiving roadside:

Providing a “Clear Zone” so that if someone leaves the road, they have time to recover.

Rumble strips

- Warning inattentive, fatigued, and other drivers who wander from their lane.

Improved nighttime visibility

- Increasing the nighttime visibility of signing and pavement markings. This is particularly important for older drivers.

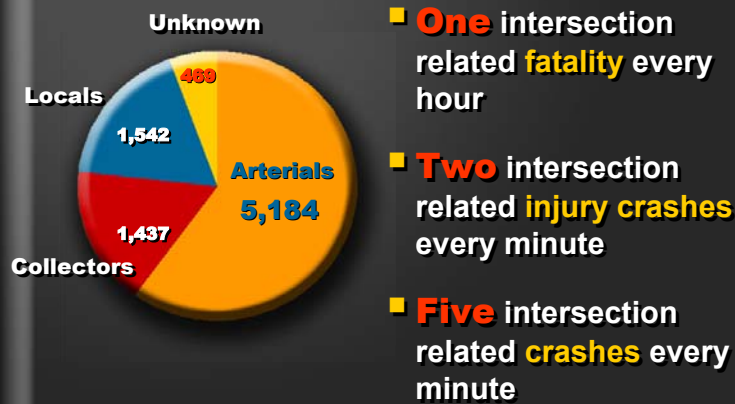
IVI has several complementary approaches to prevent these types of crashes:

The University of Michigan Transportation Research Institute and Visteon Corporation field test will use onboard sensors, GPS and digital maps to warn drivers of imminent crashes or when they are traveling too fast for an approaching curve.

Infrared based vision enhancement systems are already available on many cars and trucks. In fact they were demonstrated at the first IVI meeting in 2000.

CALTRANS is demonstrating a transit bus at Turner-Fairbank that automatically keeps the vehicle in the travel lane using road-based markers and onboard sensors.

Intersection Fatalities



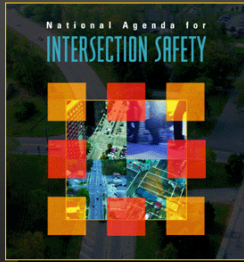
Over 3 million intersection-related crashes every year.

Over half of all intersection fatalities occur on arterials.

Intersection crashes account for 21 percent of total fatalities (8,689 fatalities).

Intersection Programs

National Intersection Agenda



Our current approach to intersection safety is:

- National intersection agenda in partnership with AASHTO
 - Strategies include engineering improvements, training for local safety professionals, increasing public awareness, selective and automated enforcement.
- Red light running and roundabouts
 - When “properly applied and designed,” automated enforcement for red light running and efficient roundabouts can save lives.

The Promise of Cooperative Systems



- Intersection collision countermeasures
 - Stop sign and signal violations
 - Left Turn



By SHARING information - vehicle and infrastructure systems can provide more effective safety solutions.

Secretary Mineta has announced the opening of the intersection test facility at Turner-Fairbank.

This facility will be used to develop, demonstrate and evaluate advanced safety countermeasures.

I hope you have the opportunity to visit this facility during the IVI meeting.

Vehicles equipped with onboard sensors, GPS and digital maps can address part of the intersection crash problem such as drivers inadvertently violating stop signs.

Advanced infrastructure approaches can use road based sensors and infrastructure warning signs to prevent other parts of the problem.

And finally, when the vehicle and roadway communicate, we can effectively tackle more of the problem.

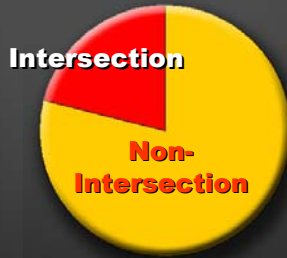
We have been working with 3 state DOTs - California, Minnesota and Virginia - as well as the Virginia Tech Transportation Institute on developing and evaluating intersection collision countermeasures.

Each of these countermeasures is being demonstrated at our intersection test facility.

Here is a film clip that shows the intersection test facility in action:

(run Movie clip) about 3 minutes

Pedestrian Fatalities



- **One** pedestrian **killed** every two hours
- **Eight** pedestrians **injured** every hour
- **Thirteen** pedestrians **killed** each day



All of us are pedestrians at some point in our travels and people over the age of 65 are disproportionately killed.

4,882 pedestrian fatalities and 78,000 pedestrian injuries.

One “jet load” (180) of pedestrians killed every two weeks.

Most (almost 80 percent) killed at non-intersection locations.

Pedestrian Programs



Our current activities include:

Pedestrian Safety Outreach Campaign

- toolkit of outreach materials for states and communities to customize and use locally.

Safer Journey CD

- Award winning interactive CD that takes the user through pedestrian safety scenarios encountered every day.

Safe Routes to Schools

An advanced infrastructure approach:

- Engineering and ITS-based countermeasures
 - Field operational tests to implement and evaluate advanced technology for pedestrian safety underway in California, Florida and Nevada.

In the future the road departure and intersection crash avoidance systems may be extended to the pedestrian problem as well.

The Players

- The automotive industry
- Federal agencies
- State and local agencies



Our goal is to save lives.

We must develop effective and practical solutions.

This requires bringing together all of the players in the private and public sector – each has a critical role.

We are depending on the people who are doing the heavy lifting: the vehicle manufacturers and transportation agencies who in the end have to deploy these systems.

FHWA Is A Safety Agency

- **FHWA is committed to working with our public and private sector partners to help develop and deploy effective solutions**



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IVI provides solutions to complicated safety problems that we need to solve.

- It encourages good driving behavior rather than punishing bad behavior (warns you not to violate a stop sign instead of taking your picture when you do).
- It helps drivers avoid the mistakes that lead to crashes in the first place.
- Because it covers vehicle-based, infrastructure, and cooperative vehicle-infrastructure systems, IVI offers a range of solutions.
 - Vehicle systems work wherever the vehicle is.
 - Infrastructure solutions can solve the problem at the most dangerous locations and open the door for cooperative systems.
- Under SAFETEA, FHWA - and all of DOT - is committed to working with our partners to “Deploy safer systems, sooner!”