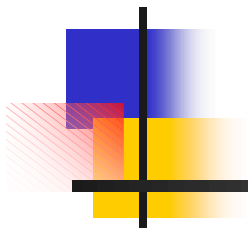


Motorcycle Safety and Intelligent Transportation Systems



ITS World Congress
New York, NY
November 20, 2008



Safe Roads for a Safer Future

Investment in roadway safety saves lives

Michael Halladay
Office of Safety
Federal Highway Administration
US DOT

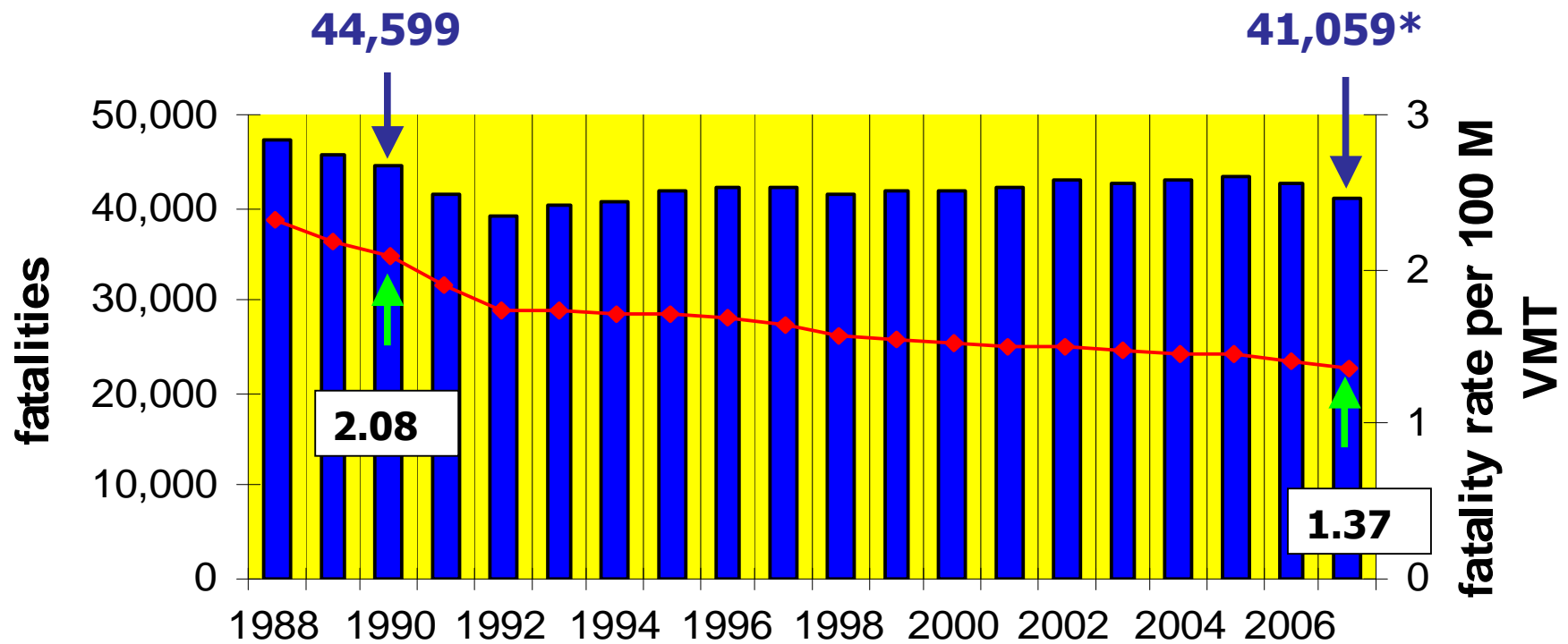


Outline

- **Motorcycle Safety Problem**
- **US DOT Actions to Address Problem**
- **ITS-Related Elements**
- **Future Needs to Integrate Motorcycles into ITS Programs**

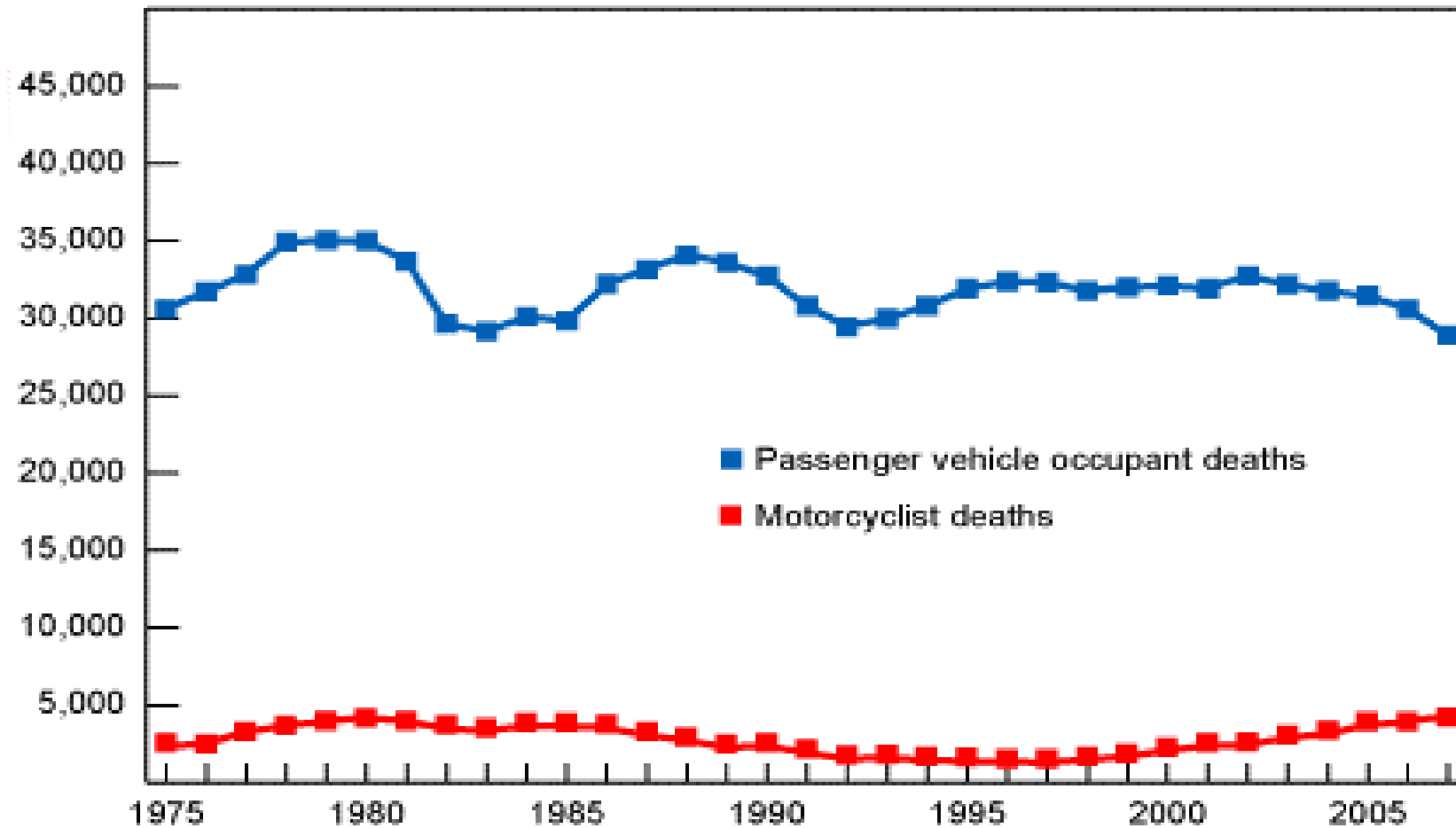
Safety Has Been at a Plateau

Highway Fatalities in 2005 Highest Since 1990 2006 & 2007 Show Improvements



* NHTSA FARS data for calendar 2007; released 8/2008

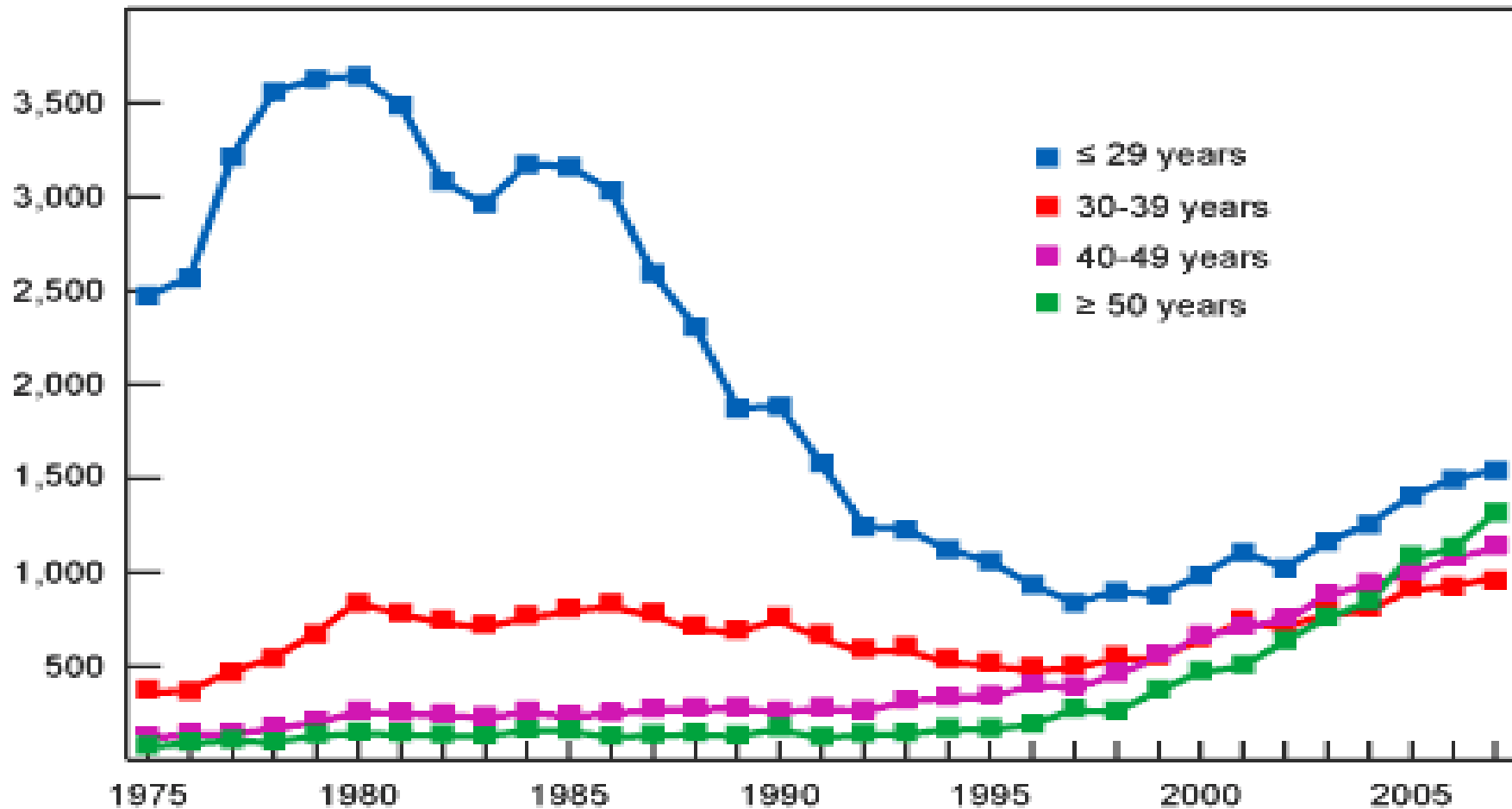
Motorcycle Deaths: Key Facts



Passenger vehicle occupant deaths and motorcyclist deaths, 1975-2007

Thanks to: Insurance Institute for Highway Safety (http://www.iihs.org/research/fatality_facts_2007/motorcycles.html)

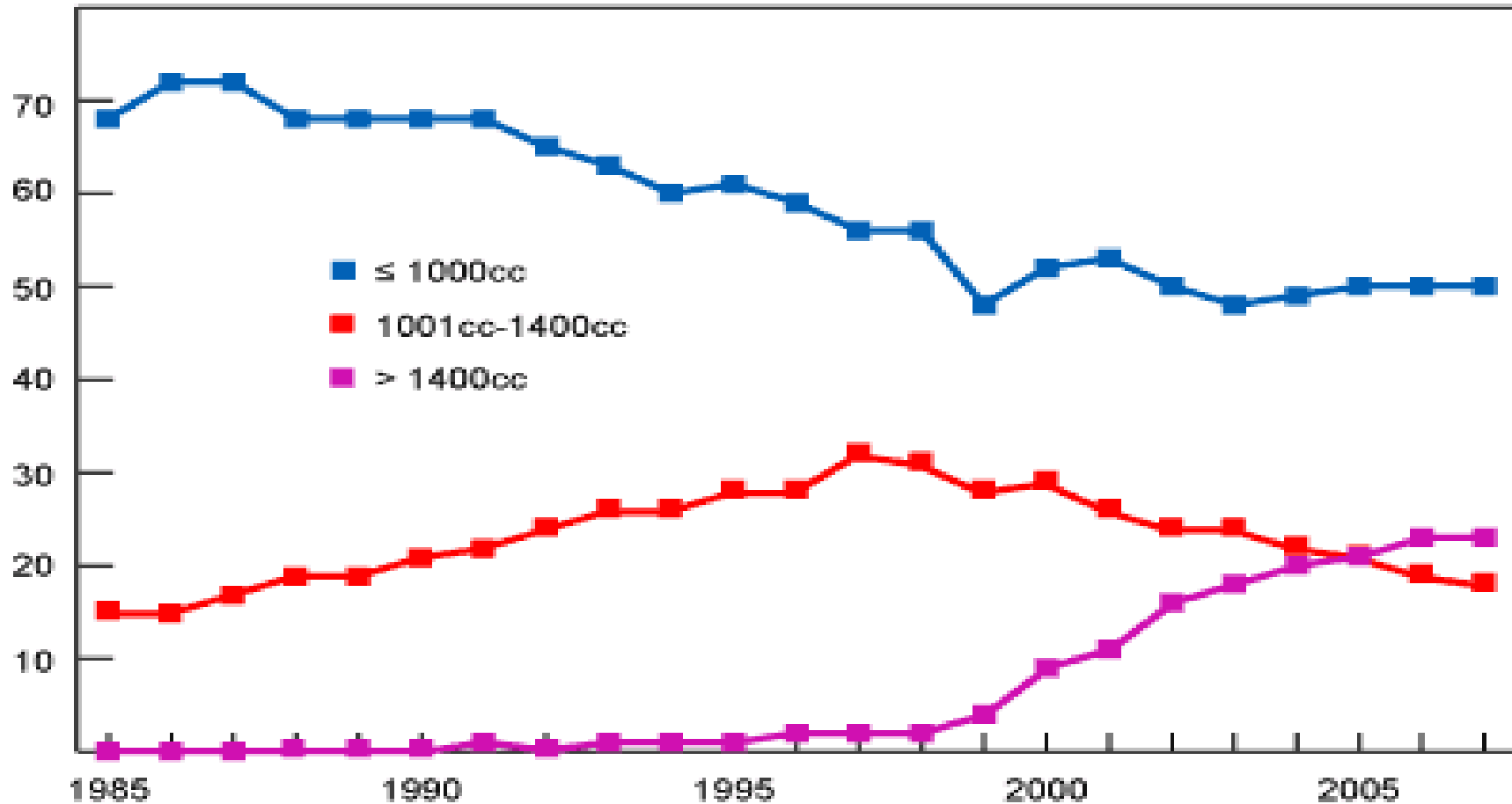
Motorcycle Deaths: Key Facts



Motorcyclist deaths by age, 1975-2007

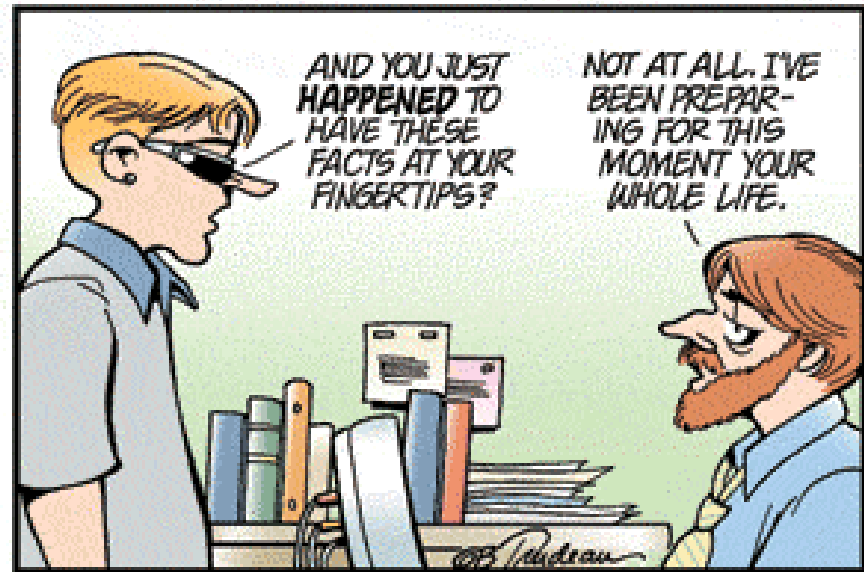
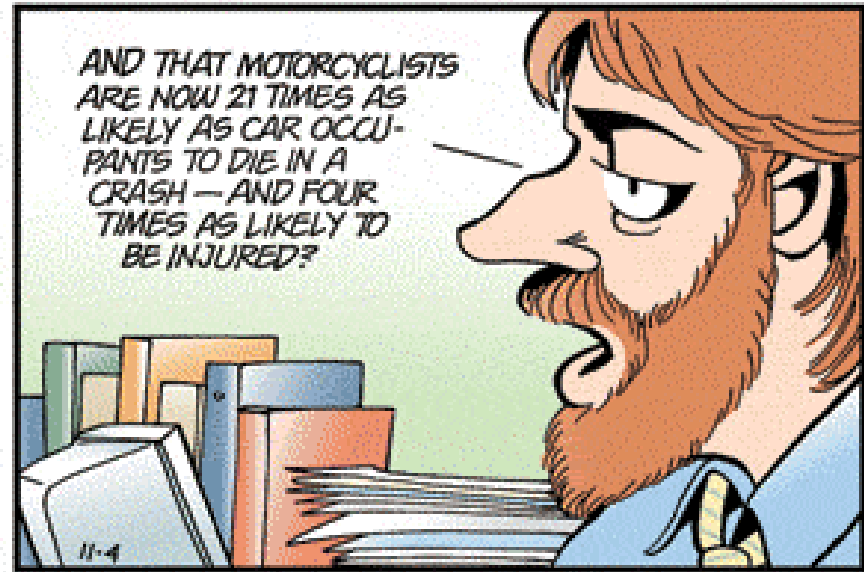
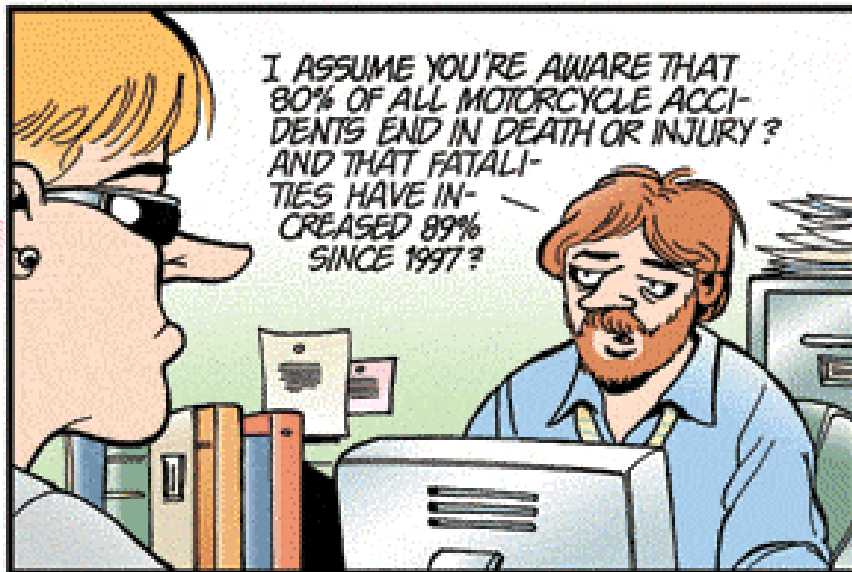
Thanks to: Insurance Institute for Highway Safety (http://www.iihs.org/research/fatality_facts_2007/motorcycles.html)

Motorcycle Deaths: Key Facts



Percentage of motorcycle driver deaths by motorcycle engine size, 1985-2007

Thanks to: Insurance Institute for Highway Safety (http://www.iihs.org/research/fatality_facts_2007/motorcycles.html)



Motorcycle Safety

The Bottom Line



- Deaths Have Doubled in Past 10 Years
 - Growing more significant as transportation choice
 - Changing nature of riders & vehicles
- A Significant Element of Our Highway Safety Challenge
 - NTSB Public Forum on Motorcycle Safety, Sept 2006
 - Concerns heightened among government, manufacturers, MC organizations
- Solutions Are Multi-faceted



US DOT Action Plan to Reduce Motorcycle Fatalities

- **National Highway Traffic Safety Administration**
 - Behavioral Topics
 - Vehicle-Based Improvements
- **Federal Highway Administration**
 - Motorcyclist Advisory Council (MAC)
 - Better Exposure Measurements
 - Infrastructure Construction, Maintenance, and Operation
- **ITS Joint Program Office (RITA)**
 - ITS Technologies and Programs



ITS and Motorcycle Safety

- Individual manufacturers have made advances
- A comprehensive scanning study of ITS applications for motorcycle safety was published by Monash University in July 2006 (<http://www.monash.edu.au/muarc/reports/muarc260.pdf>). There is very little else of note in the literature.
- Motorcycles have not been significantly represented as a distinct vehicle class within the USDOT ITS Program

Foundational Technology: Smart Helmets or ...



BRUNEL UNIVERSITY

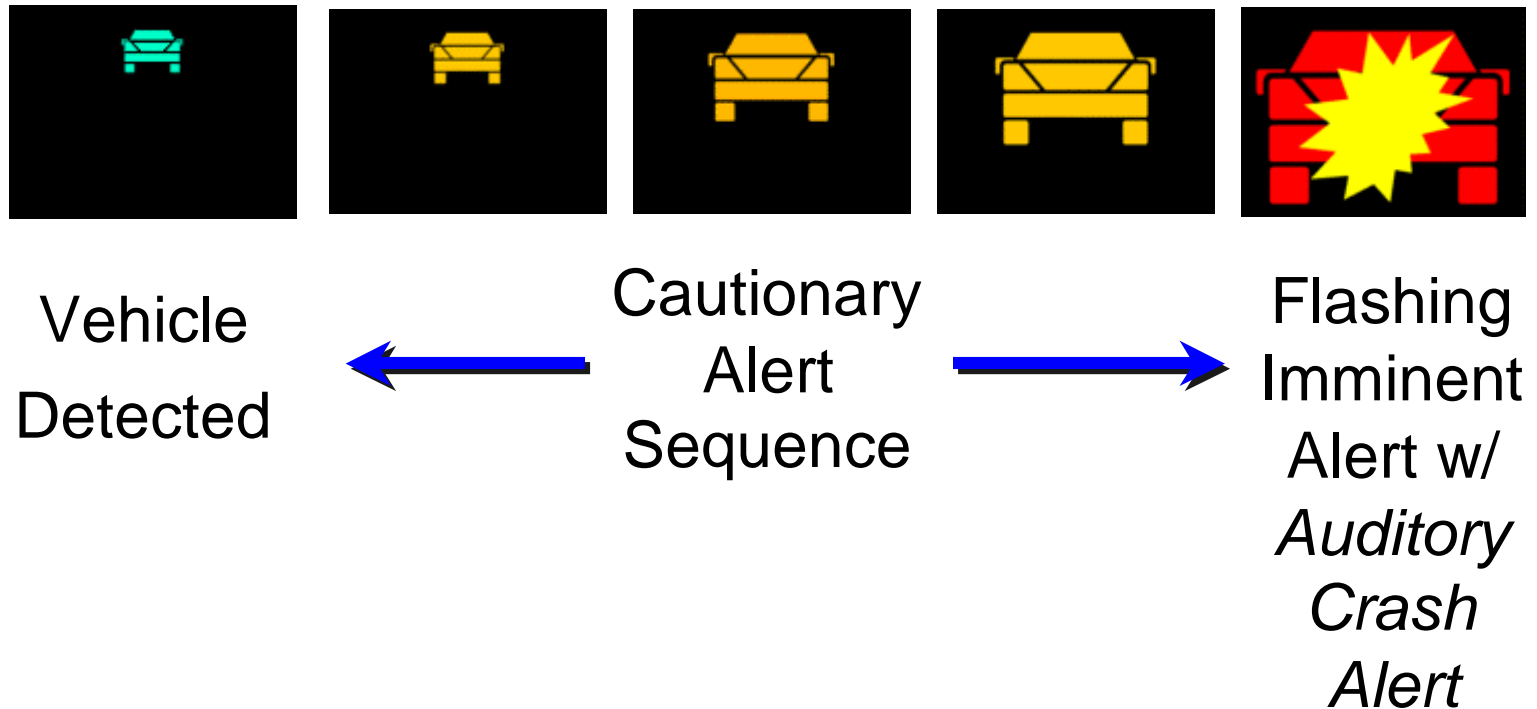
- **Wireless audio**
- **Embedded GPS**
- **Head Up Display**



...Head Down Displays



Integrated Vehicle-Based Safety Systems (IVBSS)



Reference: Evaluation of an Automotive Rear-End Collision Avoidance System (HS 810 569), April 2006, US Department of Transportation, Washington, DC



IVBSS and Motorcycles

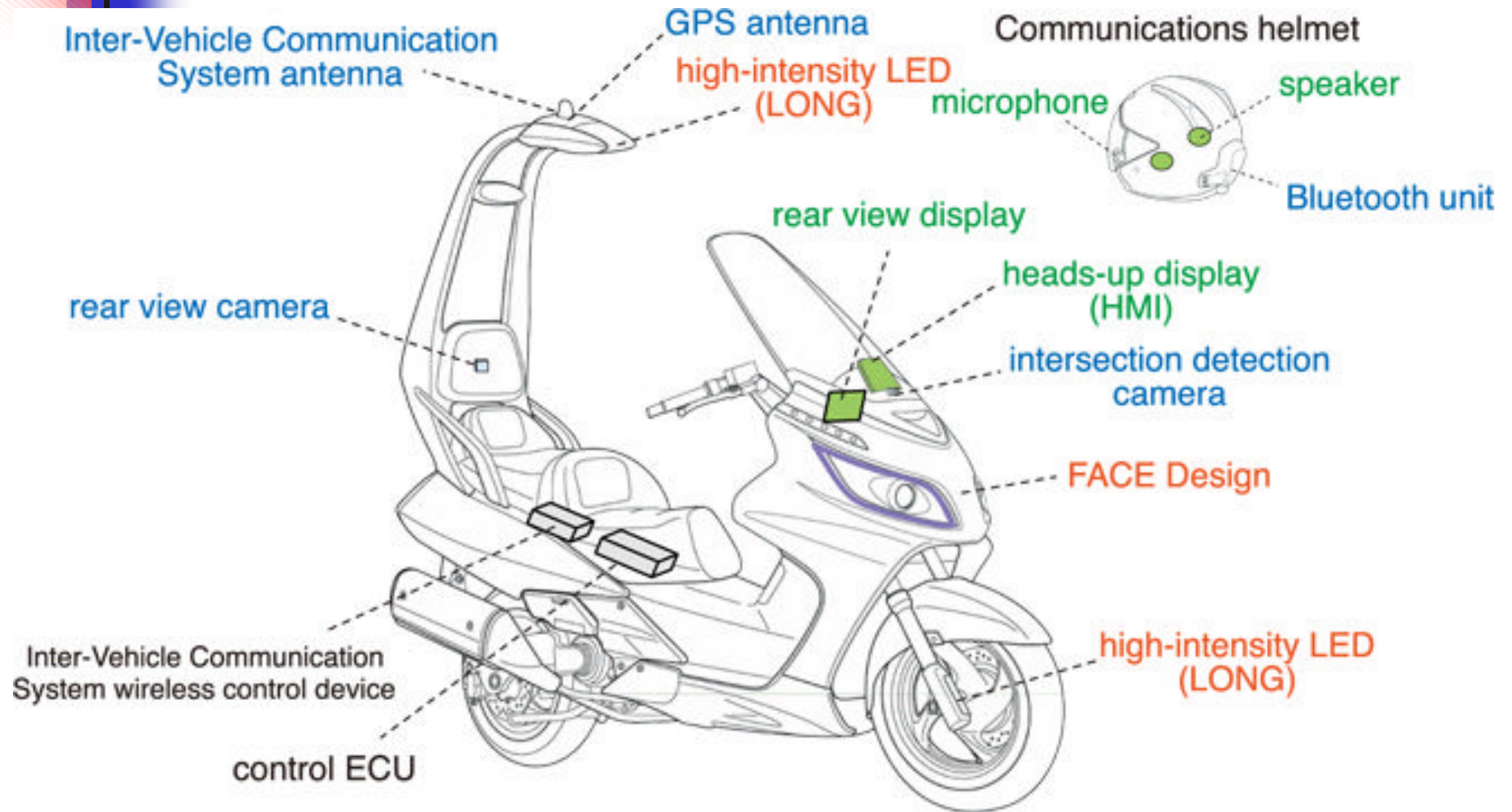
- Purpose is to integrate crash warning systems to assist drivers in avoiding rear-end, run-off-road, and lane change crash warning systems.
- IVBSS explicitly designed to detect even the smallest motorcycles
- Due to size, would be difficult to install IVBSS system on a motorcycle
- Acknowledges motorcyclists as vulnerable and included motorcycle avoidance in verification tests (October 2007)



VII and Motorcycles

- The work plans and cooperative agreements with State and industry partners do not explicitly identify motorcycles, although the technologies are relatively easily adaptable.
- The project recognizes the need to detect “vulnerable road users” but does not explicitly identify motorcycles.
- As much of the work is applicable to all road users, it will support potential motorcycle applications.
- At least one industry partner, Honda, has conducted similar motorcycle-focused R&D in Japan.

Honda Advanced Safety Vehicle Program





Summing It Up

- **ITS R&D has focused on automobiles, motor carriers and transit vehicles**
- **While many ITS efforts are adaptable to motorcycles, they have not historically been specifically included in ITS research.**
- **As motorcycle fatalities increase, value of ITS technologies should be revisited**
- **ITS Community should increase engagement with motorcycle organizations and manufacturers**
 - **Assure migration path for products to MCs**
 - **Recognize and proactively respond to needs of MCs**
 - **Specifically include MC user groups in outreach**