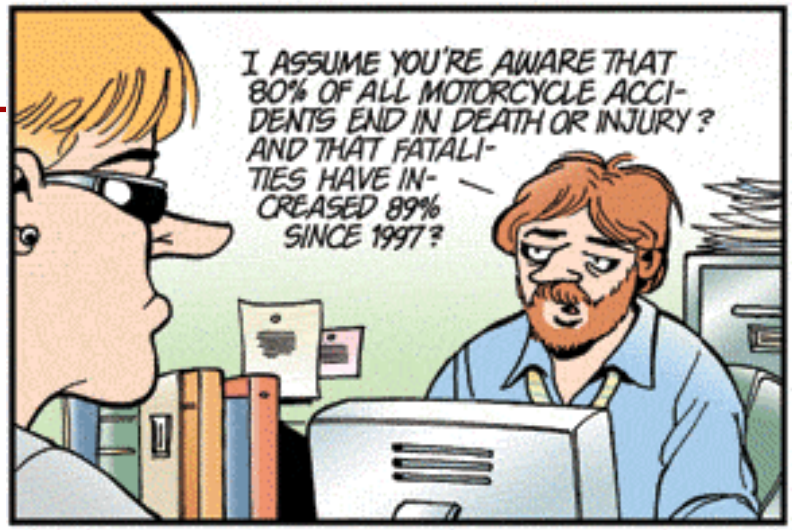
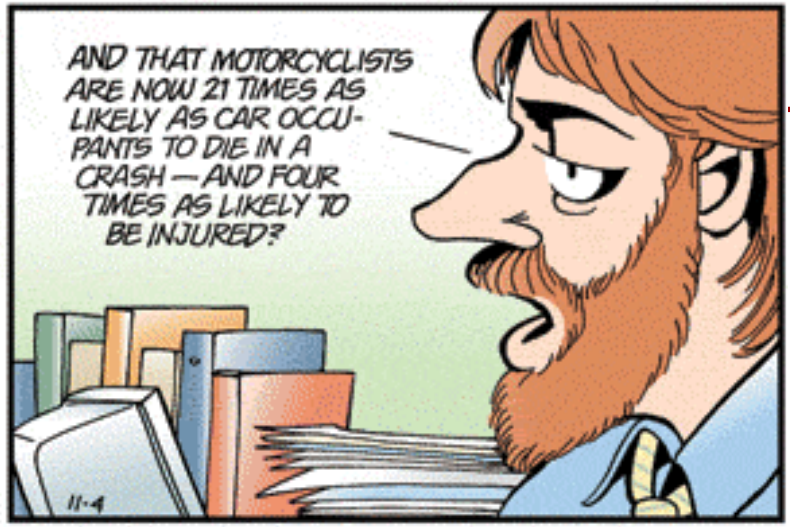
Intelligent Transportation Systems
U.S. Department of Transportation

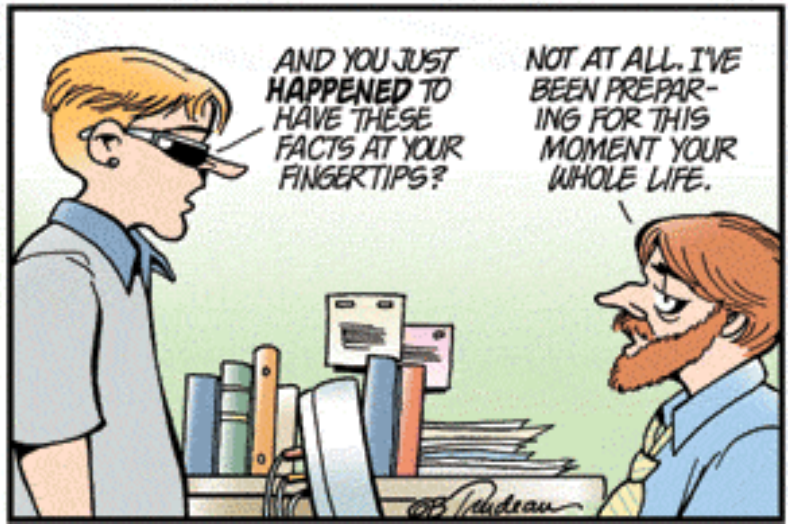
ITS for Motorcycle Safety

Motorcyclist Advisory Council
to the Federal Highway Administration

December 5-6, 2007

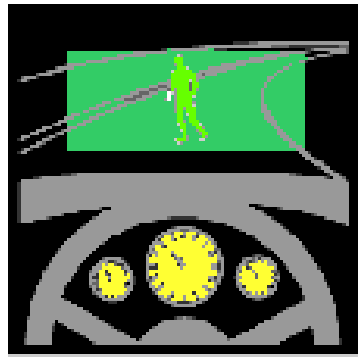

I ASSUME YOU'RE AWARE THAT 80% OF ALL MOTORCYCLE ACCIDENTS END IN DEATH OR INJURY? AND THAT FATALITIES HAVE INCREASED 89% SINCE 1997?

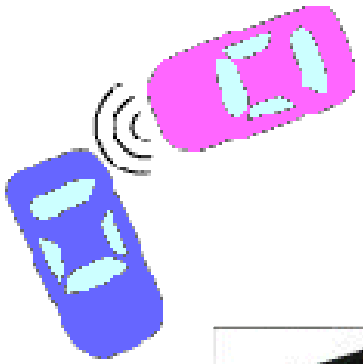

AND THAT MOTORCYCLISTS ARE NOW 21 TIMES AS LIKELY AS CAR OCCUPANTS TO DIE IN A CRASH — AND FOUR TIMES AS LIKELY TO BE INJURED?
11-4

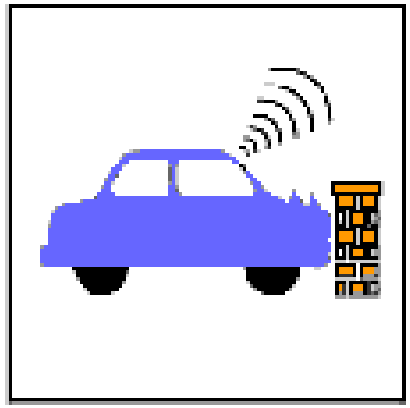

AND YOU JUST HAPPENED TO HAVE THESE FACTS AT YOUR FINGERTIPS?
NOT AT ALL. I'VE BEEN PREPARING FOR THIS MOMENT YOUR WHOLE LIFE.

Maryland
Class CM Driver's License
CM
DL
LIC #:
LINDA DIANE DODGE
2806 SEASONS WAY
ANNAPOLIS AA MD 21401
BIRTH DATE:
EXPIRES: 02-05-2010
Sex: F
Type: DG
Restr: C
Issue Date: 07-21-2006
01003E0CD

What is ITS?





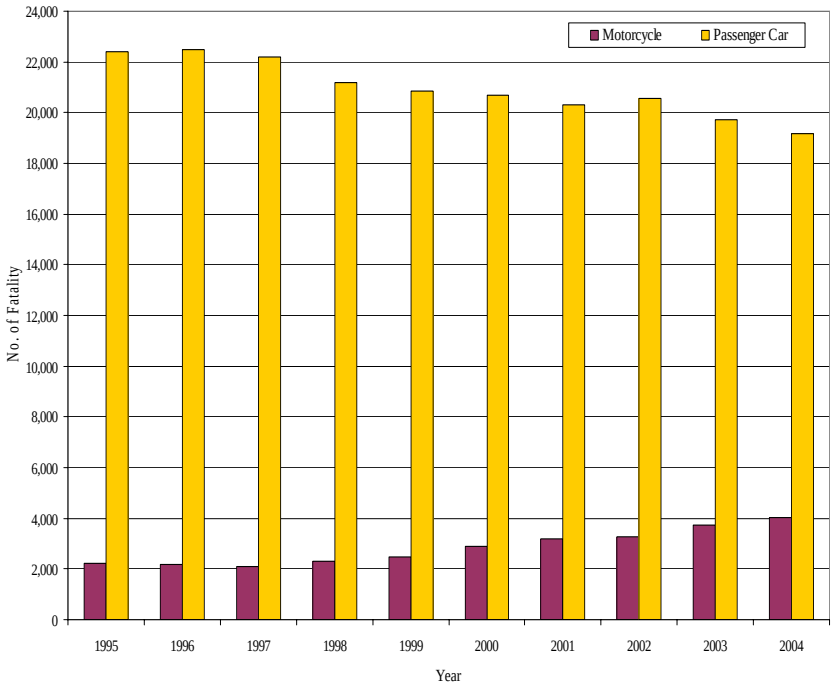


Background

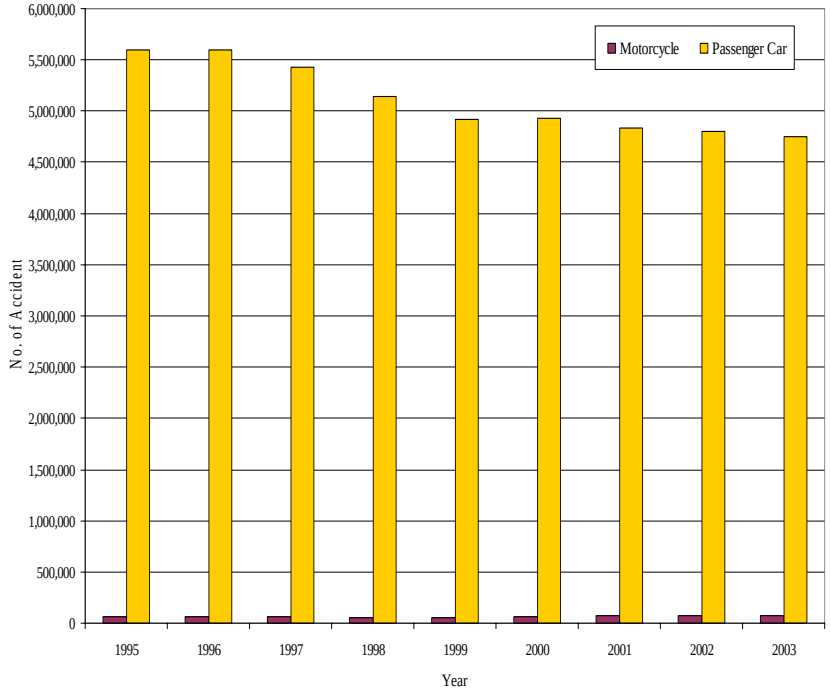
- Motorcycles have not been a significant part of the USDOT ITS Program
- The motorcycle safety problem is increasing.
- A comprehensive scanning study of ITS applications for motorcycle safety was published by Monash University in July 2006 (http://www.monash.edu.au/muarc/reports/muarc260.pdf). There is not much else of note in the research literature.
- NTSB Public Forum on Motorcycle Safety, Sept 2006

Motorcycle and Passenger Car Crash Statistics

Fatalities



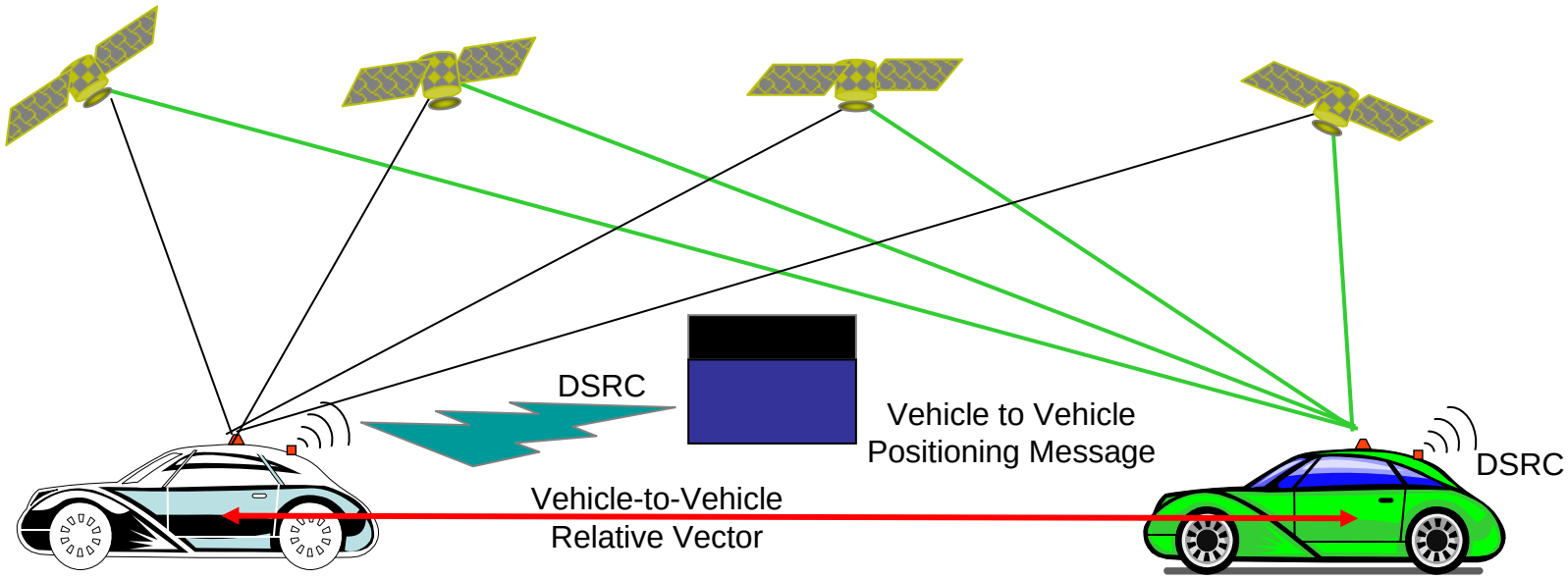
Crashes



Potential ITS Technology Transfer for Motorcycle Safety

- Foundational Technologies
  - Vehicle-vehicle and vehicle-infrastructure data communications
    - A current major ITS initiative (Vehicle Infrastructure Integration)
  - Human-Machine Interfaces (visual or auditory)
- Applications
  - Automatic crash notification
  - Road weather and condition alerts
  - Crash avoidance
  - Training and education tools

Foundational Technology: VII



Picture Reference: VSC-A Project Team's 3rd Quarterly Briefing to US DOT, August 28, 2007

Foundational Technology: Smart Helmets or …

(BRUNEL UNIVERSITY)

- Wireless audio
- Embedded GPS
- Head Up Display

…Head Down Displays

Automatic Crash Notification

- Motorcycle applications would most likely require GPS and communications links in helmets

Road Weather and Condition Alerts

- ITS Clarus Initiative
- Weather information for surface transportation
- National surface weather data collection and reporting using existing network of weather observation systems.

Crash Avoidance Systems

Vehicle Detected

Cautionary Alert Sequence

Flashing Imminent Alert w/ *Auditory Crash Alert*

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

Low Cost Training and Education Tools

- Studies show that low cost simulators can be used successfully for automobile driver education and training
- Used for research driver workload, visual and auditory feedback, and driver impairment factors and effects.

Conclusion

- Motorcycle safety has not received federal ITS research policy direction and funding
- ITS R&D has focused on automobiles, motor carriers and transit vehicles
- Potential technology transfer opportunities presented here have not been formally analyzed by the JPO.
- ACN is the nearest term ITS application since commercial service infrastructure is operational and vehicle/helmet technology components (GPS, wireless communications) are mature.

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