The Role of New Technologies for Safety in the 21st Century

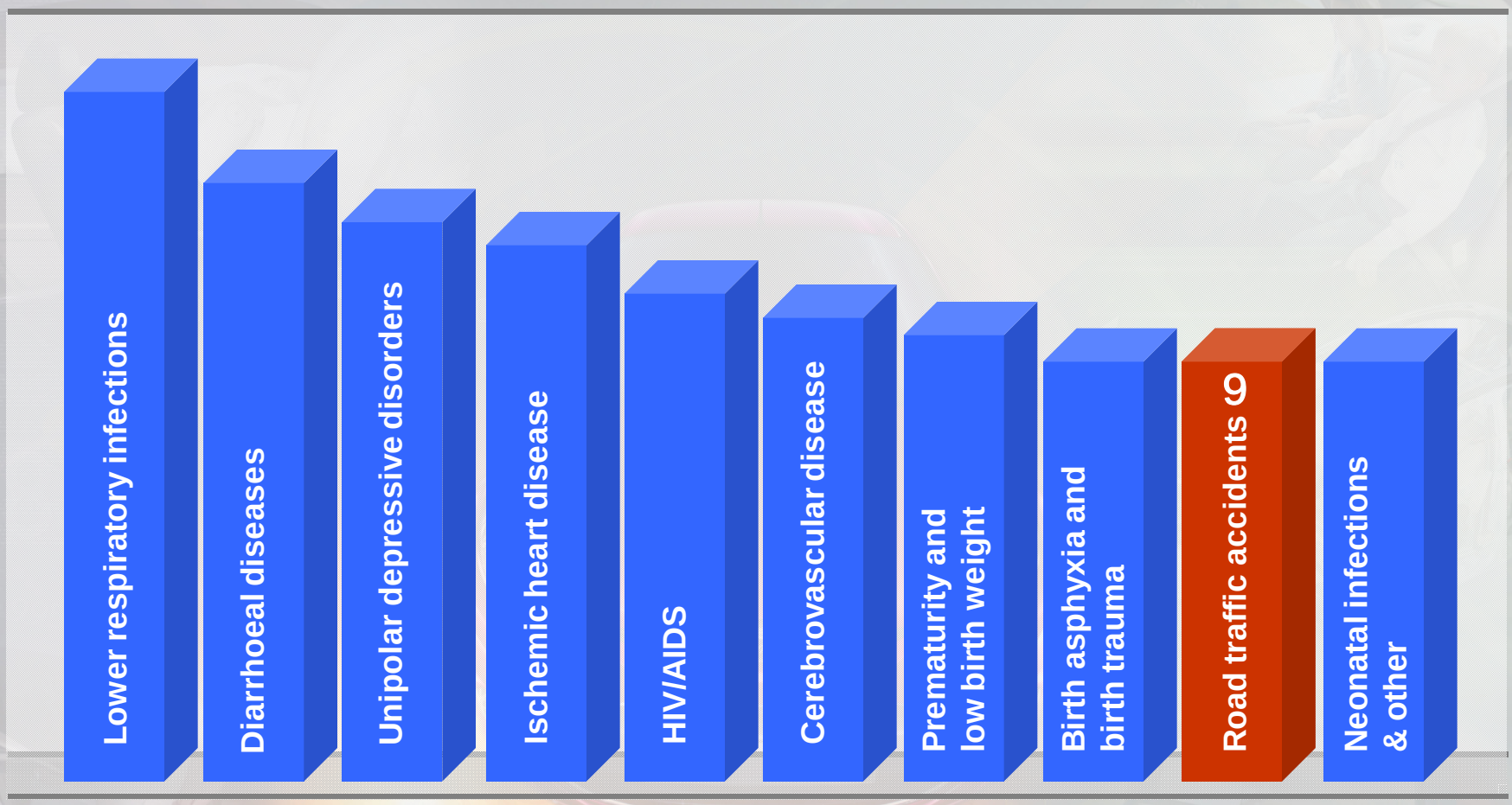
21st ESV Conference
Stuttgart, Germany
15 – 18 June, 2009

Gerhard Schmidt
Ford Motor Company
Chief Technical Officer
Vice President, Research and Advanced Engineering

Outline

- State of Safety
- Sustainability and Safety
- Safety Technologies
- Shared Responsibilities

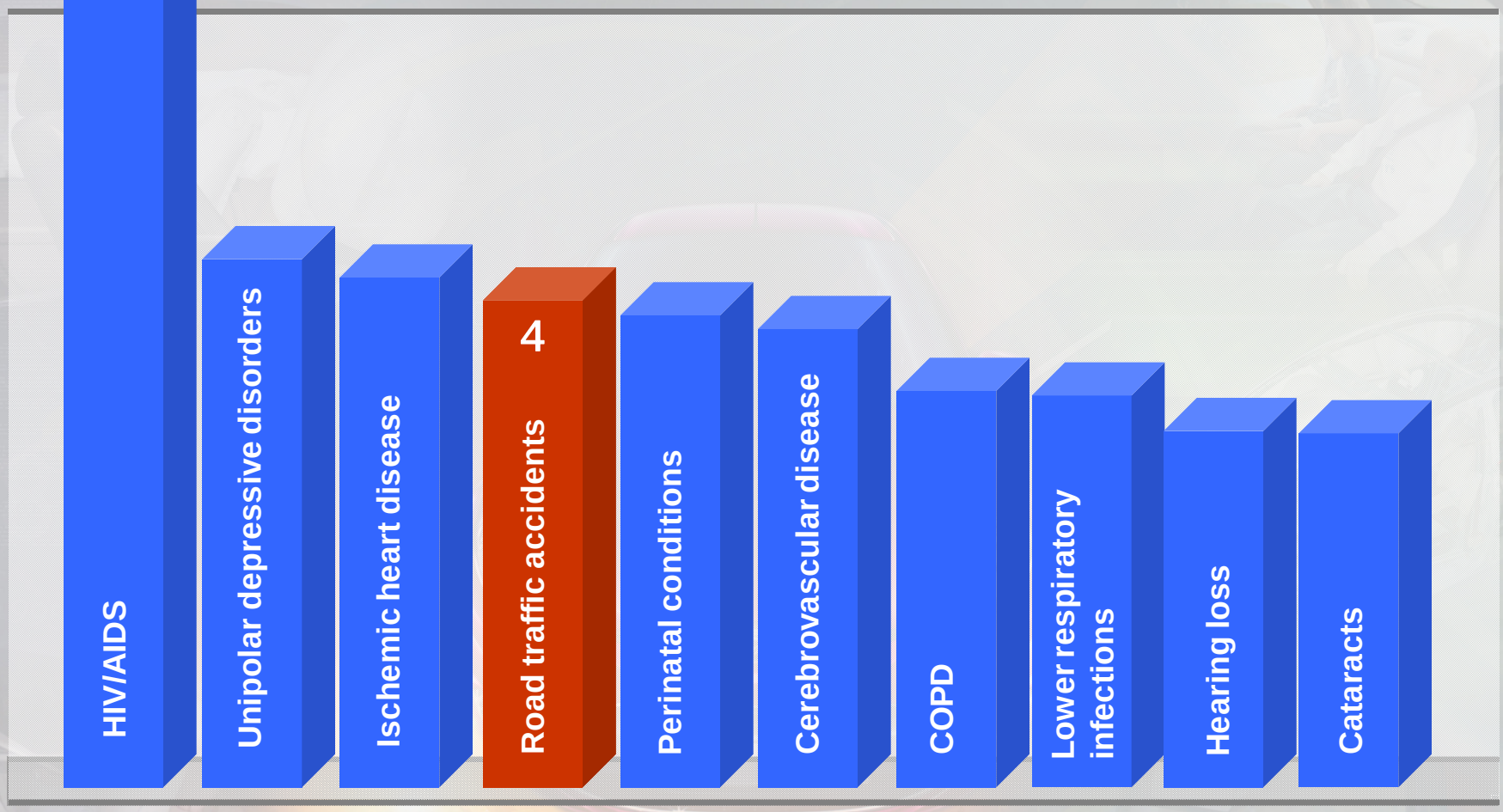
Top 10 Causes of Death & Disability in the World (2004)



Road Accident Fatalities are a significant cause…..

Source: World Health Organization, 2006

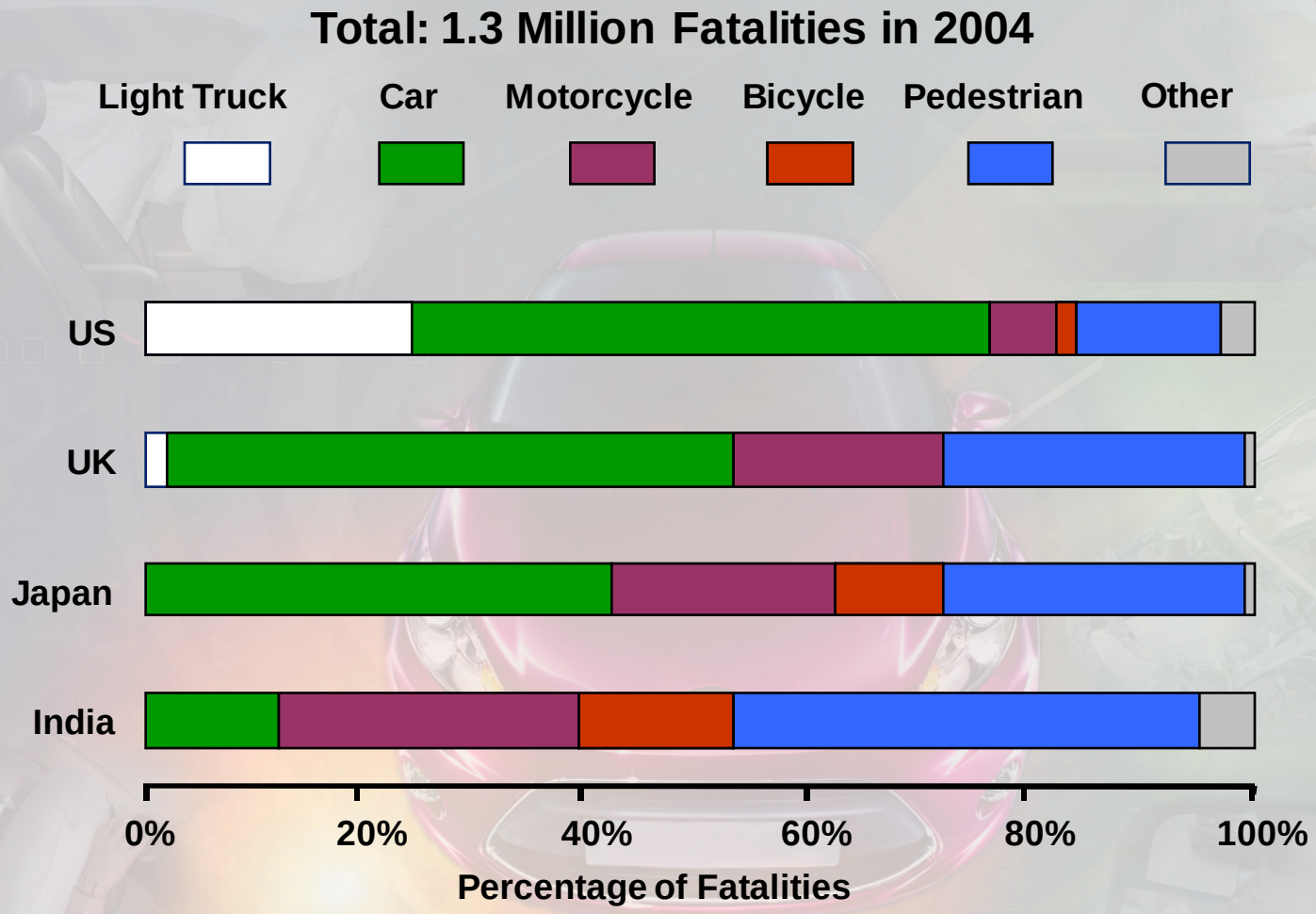
Top 10 Causes of Death & Disability in the World (2030)



And will be more important in the future

Source: World Health Organization, 2006

Estimated Worldwide 2004/5 Traffic Fatalities



Vehicle safety technologies may need to vary by region

Sources: - WHO, World Report on Road Traffic Injury Prevention, 2004
- International Road Traffic and Accident Database (IRTAD - OEC/ITF), 2008

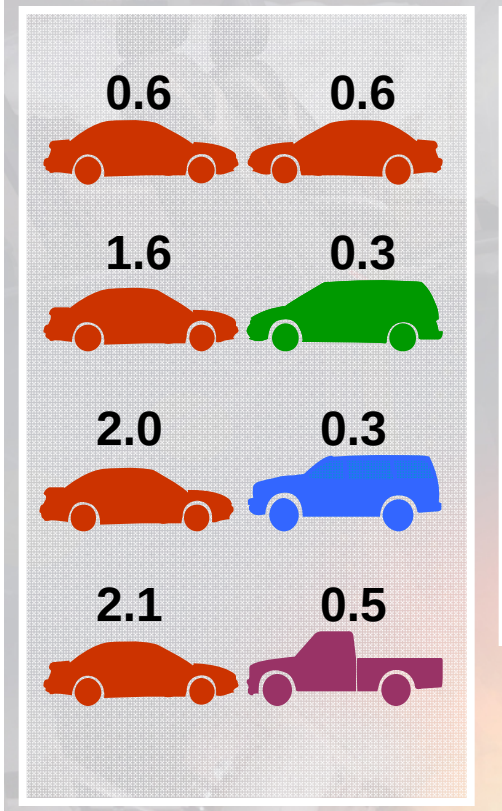
Fuel Economy

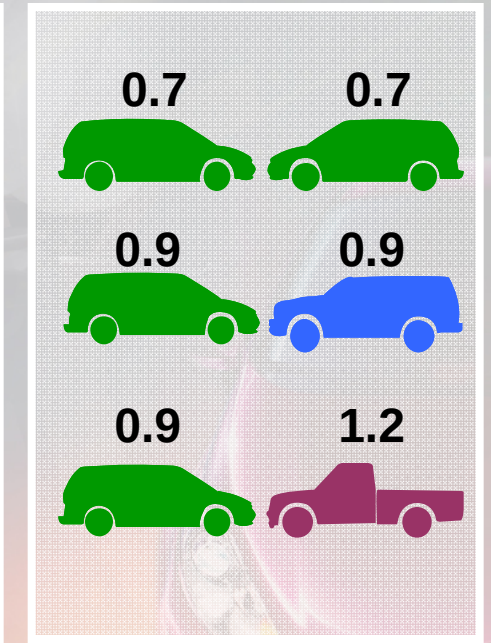
- **Fleet shift to smaller vehicles will increase compatibility challenges**
- **Alignment of structures per Voluntary Agreement will help increase compatibility in North America**
- **Structural enhancements (e.g., adaptive structures) can help reduce the impact of downsizing and weight reduction**

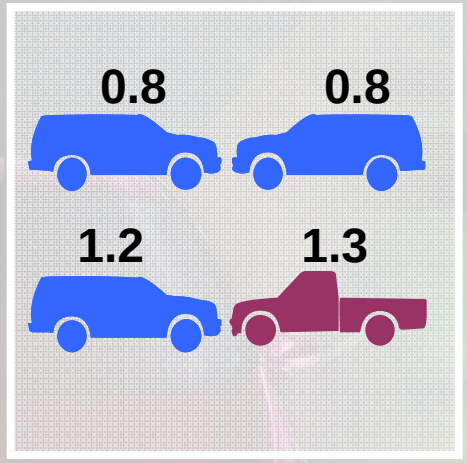
Effect of Changing Vehicle Mix on Fatality Rates

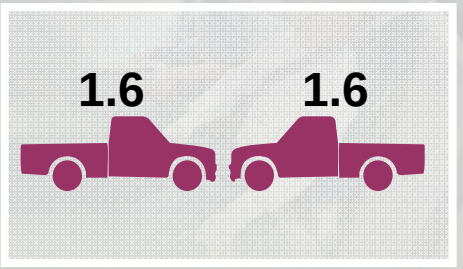
Drivers killed / 1000 crash events*

Vehicle-to-Vehicle Accidents

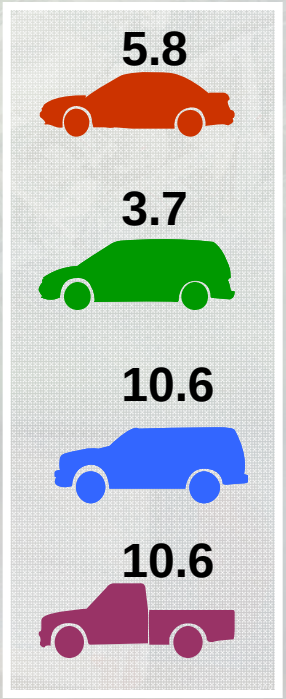








Single Vehicle

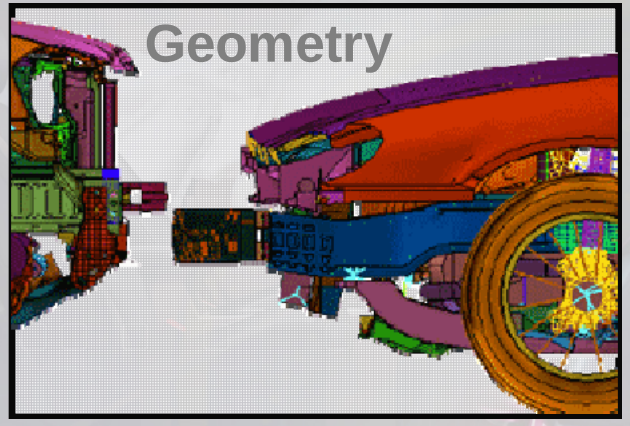


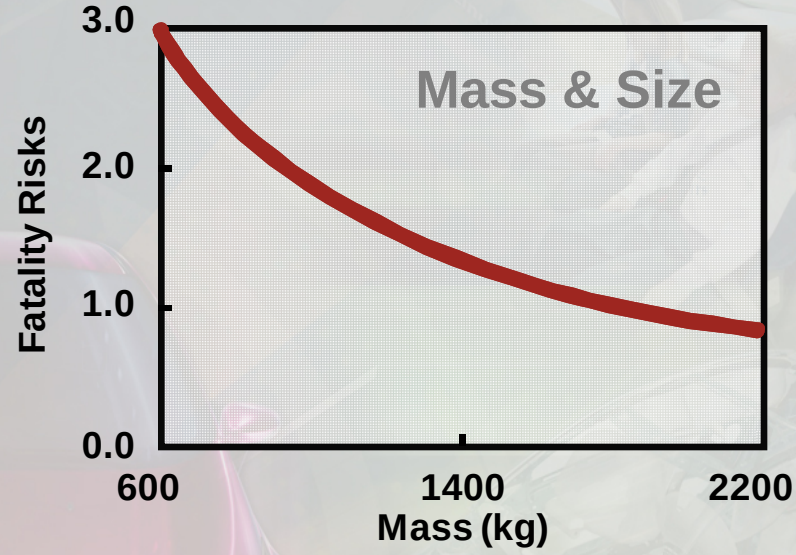
Changing the fleet mix increases the likelihood of incompatible vehicle interactions

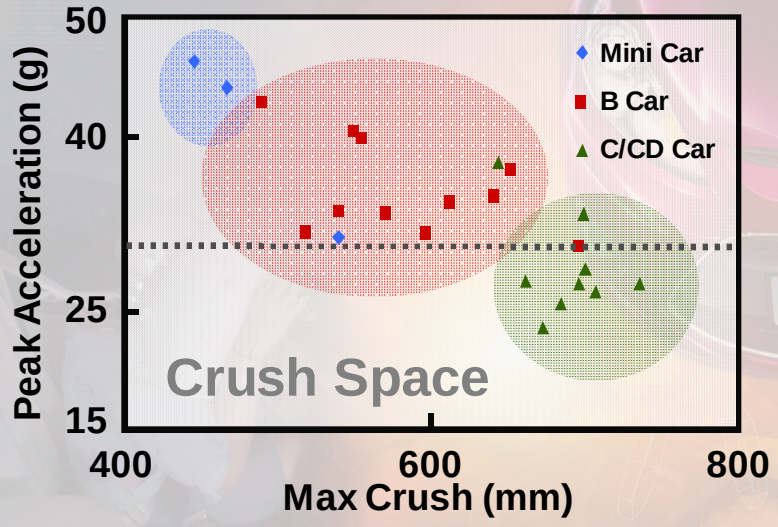
* All crash types included in analysis

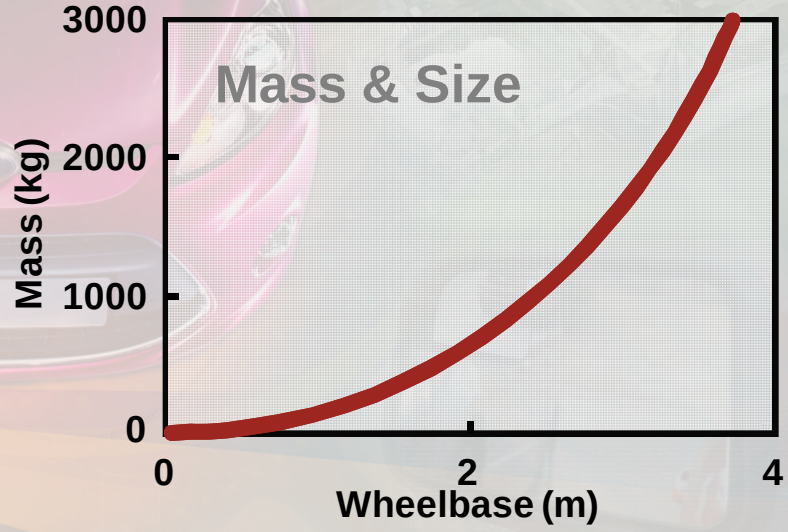
Source: UMTRI

Vehicle Compatibility









Sources: Evans, AJPH, 2001 & Evans, SAE, 2004

Small Vehicle Safety Challenges

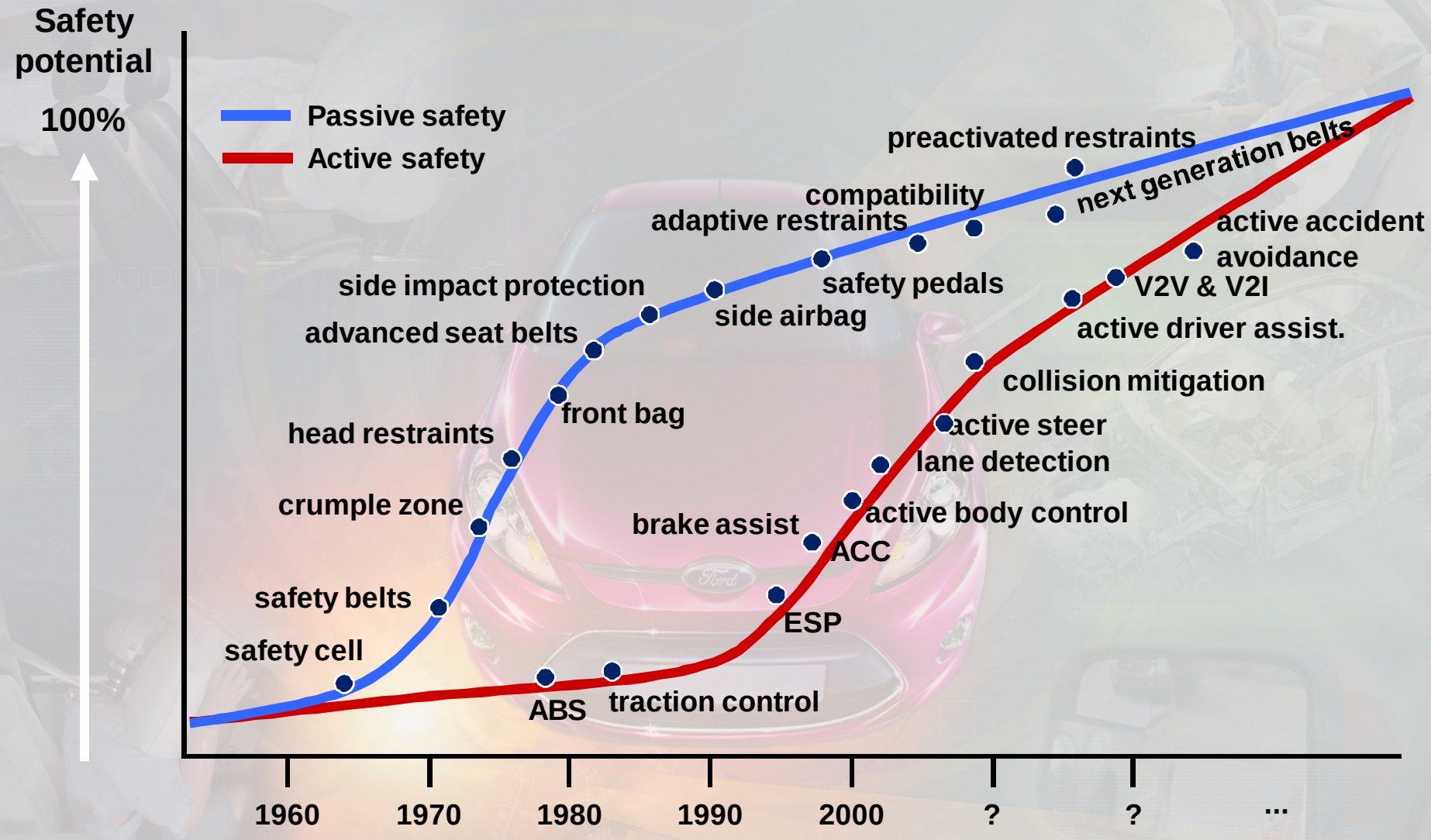
- **Smaller vehicles, in general:**
  - **are lighter and have less crush space**
  - **have lower structural height**
  - **experience higher accelerations than larger vehicles in multi-vehicle accidents**
- **Therefore, the challenge for the safety community is to:**
  - **continuously improve safety by democratization of safety technologies (e.g., airbags, ESC, etc)**
  - **make newer technologies affordable for small vehicles**

Safety Technology Trends

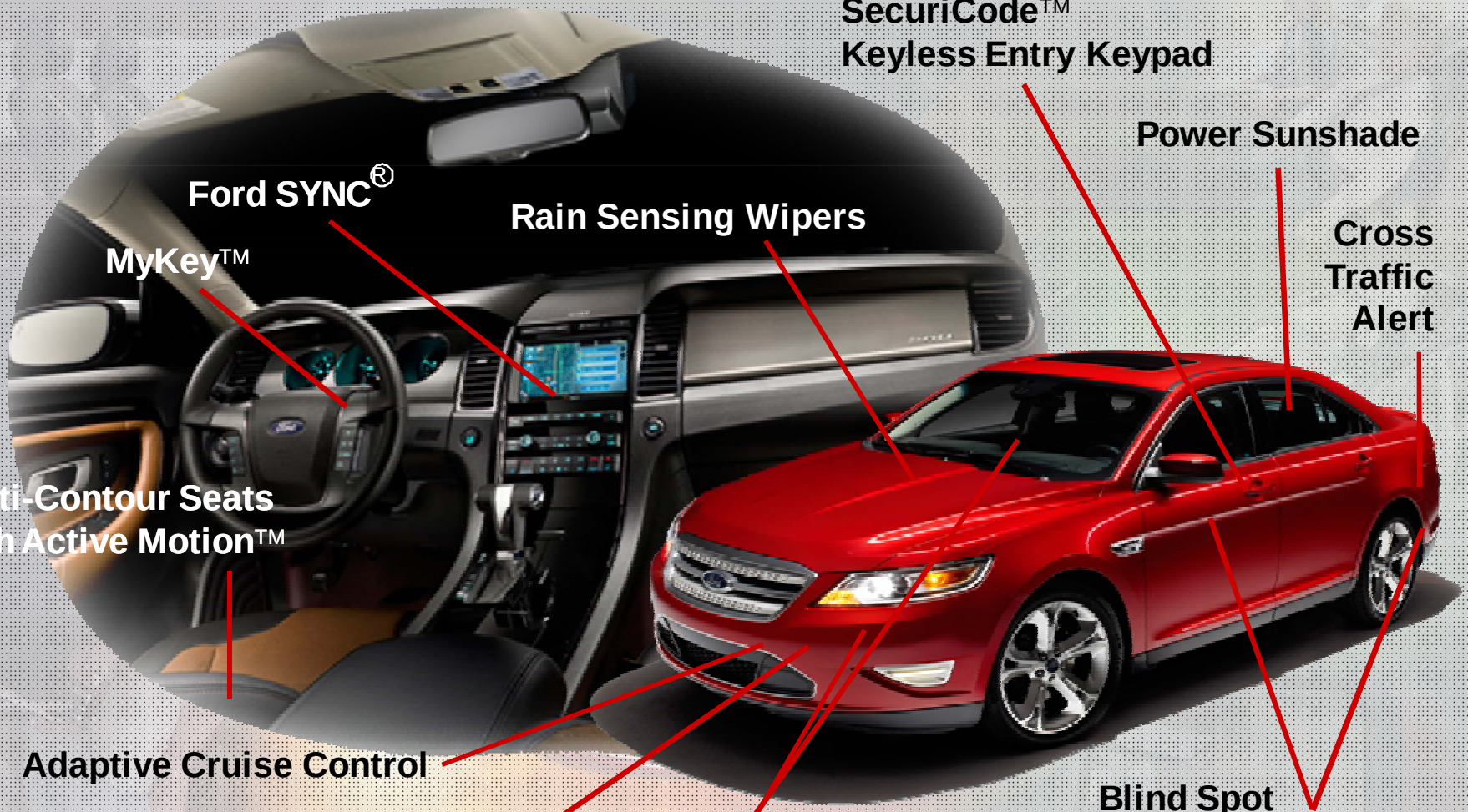
Levels of autonomous safety features for driver assistance/accident avoidance and crash protection will increase due to:

- **Increasing computing power**
- **Faster algorithms**
- **Advanced sensor capabilities**
- **Lower sensing costs**
- **Advanced electrical chassis systems**

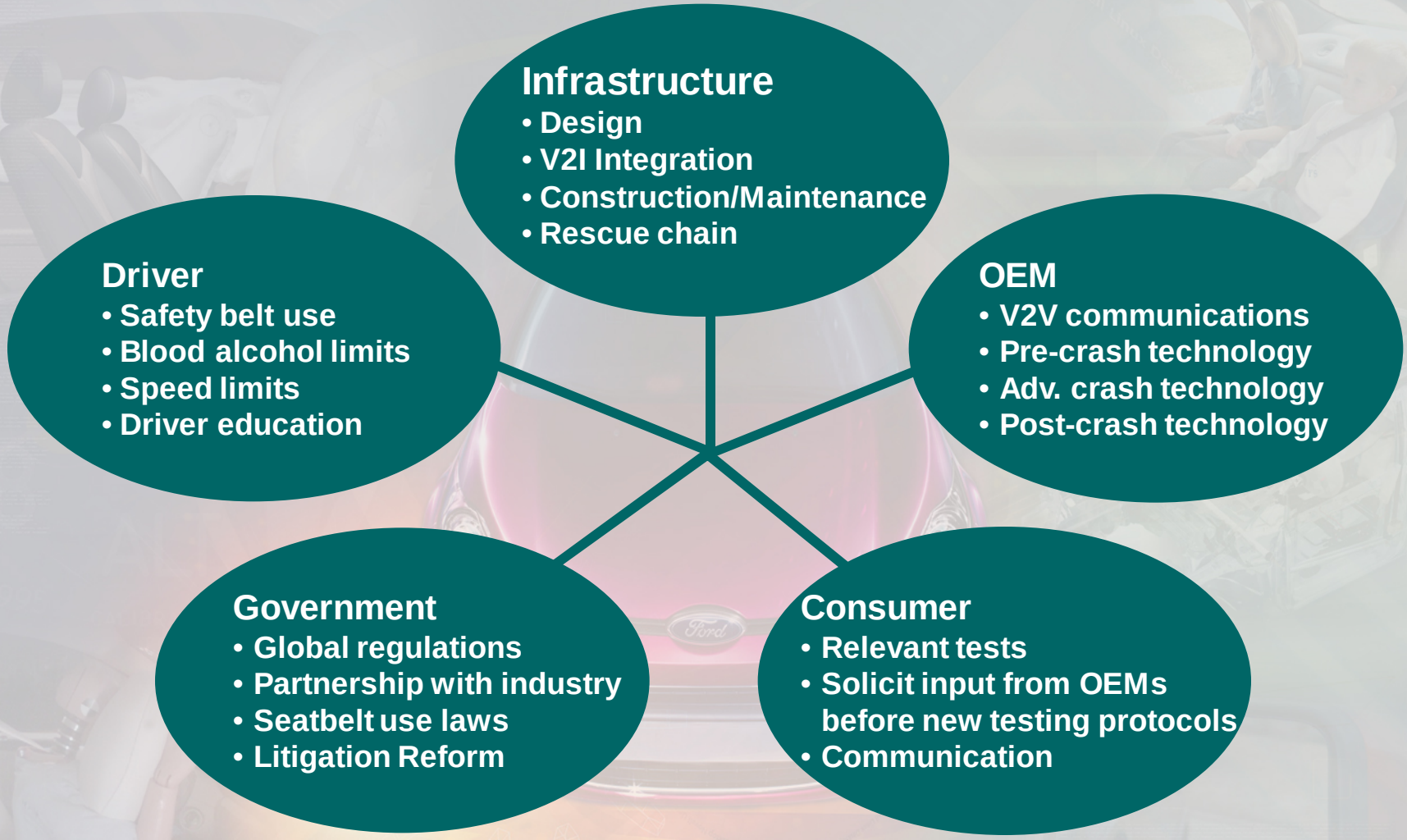
Safety Technologies Outlook



Ford Safety Technology Implementation – 2010 Taurus



Shared Responsibilities



Breakthroughs in safety will occur when all entities work together.

Outlook

- **Vehicle safety technologies will make a significant contribution to the improvement of road safety**
- **Technologies must address customer needs and be adapted to specific national situations**
- **Shared responsibilities exist for all stakeholders**