

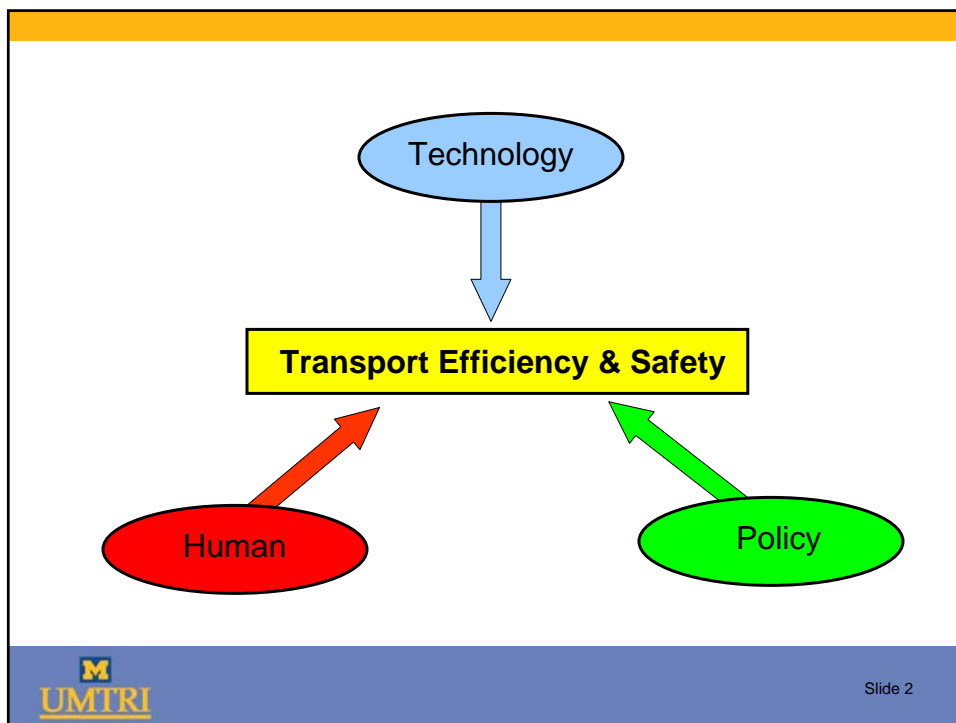


## Perspectives on Vehicle Stability and Safety Performance

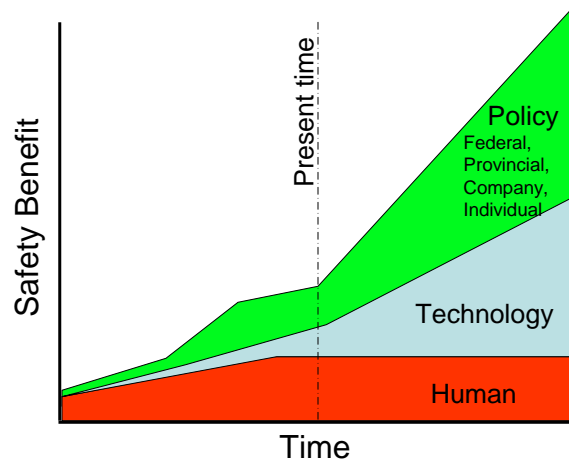
Presented to  
Task Force on Vehicle Weights and Dimensions Policy  
Government/Industry Meeting

John Woodroffe  
November 21, 2010

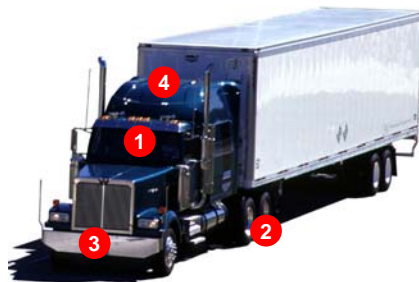
UNIVERSITY OF MICHIGAN  
TRANSPORTATION RESEARCH INSTITUTE



## Contribution to Safety



## Vehicle Technologies



- 1 Lane departure warning systems
- 2 Roll stability systems and electronic stability systems
- 3 Collision mitigation braking systems with adaptive cruise control
- 4 Vehicle diagnostic and location systems

### LTCCS Rollover Case for Simulation

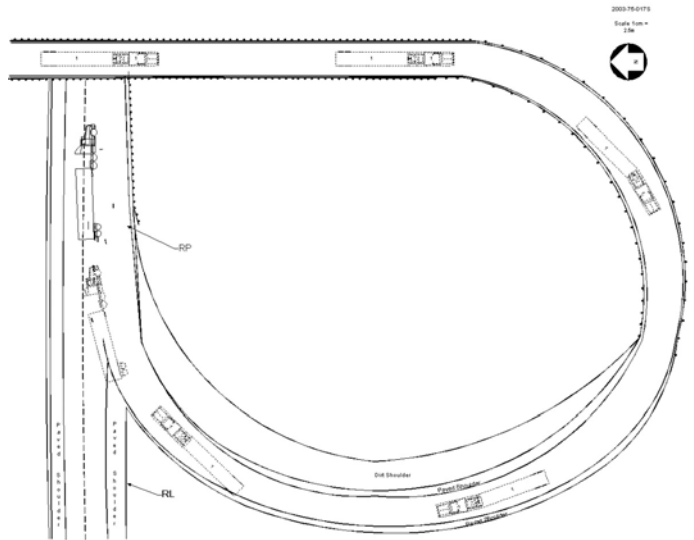
- Road curved
- Dry surface
- Cargo: loaded

3-axle tractor pulling bottom dump.

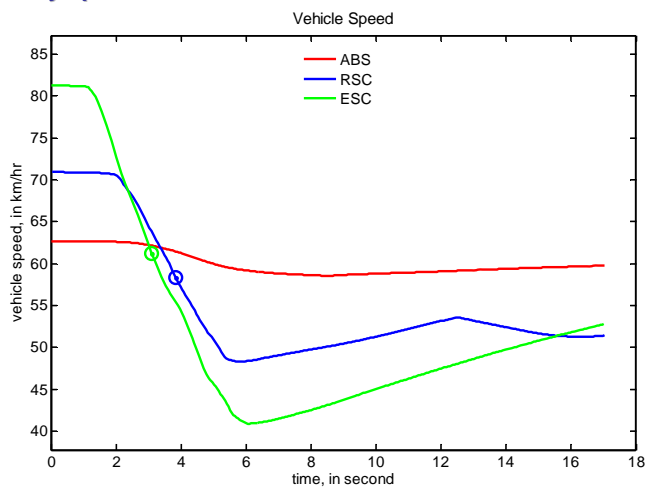
31,000 lbs cargo (dirt)

61,800 gross weight

Est. 40 mph



### Vehicle speed time history for ABS, RSC and ESC technologies Vehicle mass 36,400 kg, Trailer C of G 2.0m, maneuver M9 at 68m radius Curve entry speed is the maximum achievable for each technology



## Fitting the technologies to all tractor semitrailers

### Estimated RSC

#### benefits

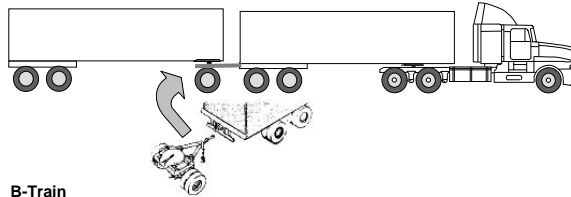
- 3,489 crashes, 106 fatalities, and 4,384 injuries
- \$1.456U.S. billion/yr

### Estimated ESC

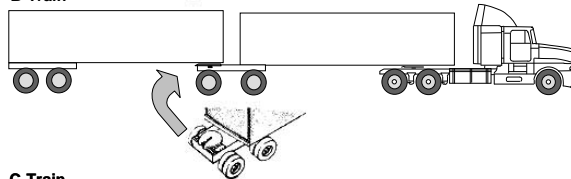
#### benefits

- 4,659 crashes, 126 fatalities, and 5,909 injuries
- \$1.738U.S. billion/yr

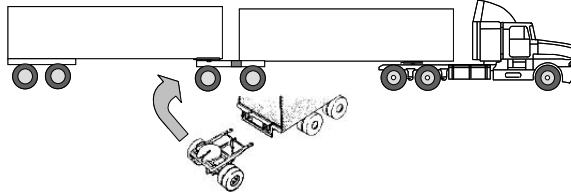
A-Train

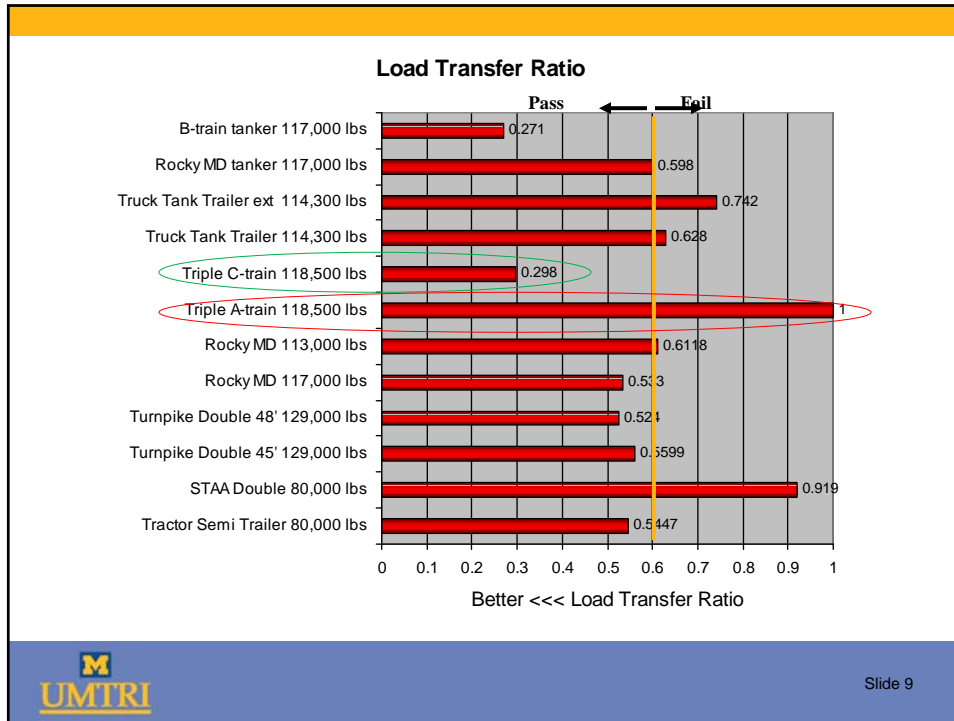


B-Train



C-Train





- ## Weights and Dimensions Study 1986
- A landmark study combining infrastructure, vehicle design, safety analysis and productivity to improve transport efficiency
  - Created the first vehicle performance measures - adopted by many countries
  - The net result is about 25% better transport efficiency than the U.S. (OECD – Moving Freight in Better Trucks)
  - Extremely safe, productive and green LCV operations are used in Canada
- UMTRI
- Slide 10

## Guided by Science

- Science based size and weight policy has been very good for Canada – more productive, safer and greener fleet
- U.S. policy is held hostage by the political process – truck innovation, productivity and transport efficiency has suffered (TRB)
- Some U.S. suppliers are not exposed to the CDN *science based* regulatory system – there is a commercial opportunity open to them provided they are innovative and progressive

## Hockey Analogy

- SRT – describes the player's size
- LTR – describes how well he / she plays

*Ultimately a hockey player's value is based on the quality of play – but size is important too*