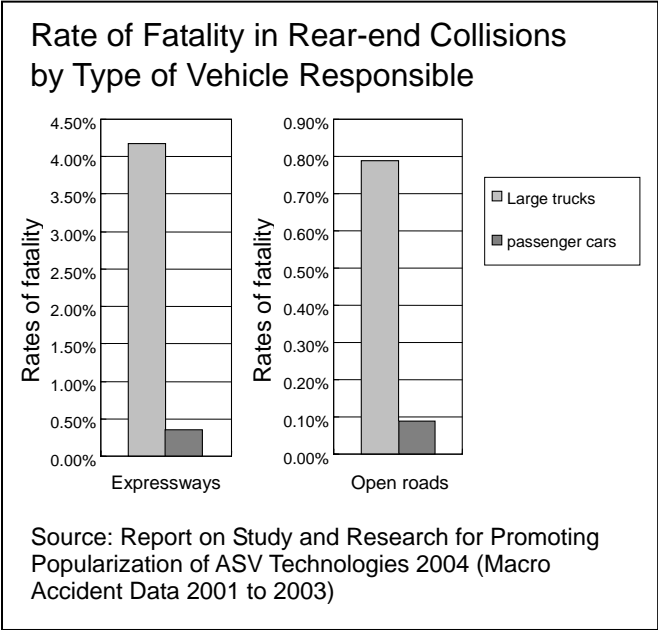
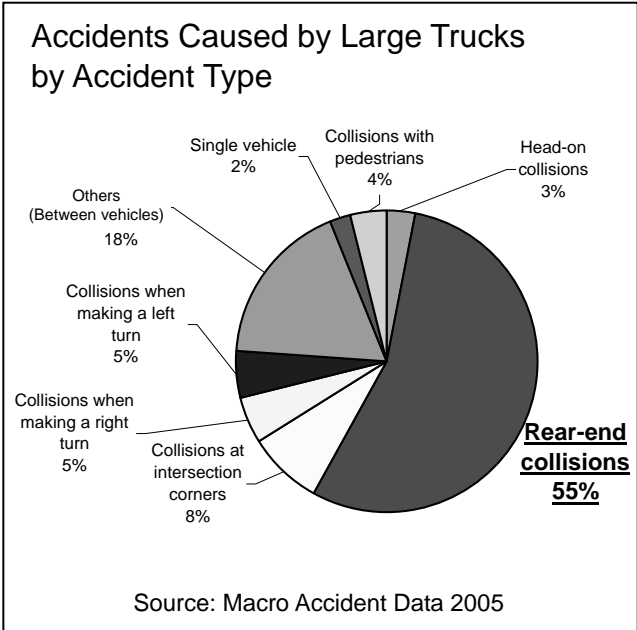


### Rear-end Collisions Caused by Large Trucks (Statistics in Japan)

Once large truck causes an accident, it often cause serious loss in human lives and properties and this, for the significance and scale of its impact, is becoming a serious social issue in Japan. In particular, rear-end collisions caused by large trucks account for more than half of the accidents caused by these vehicles. Further, on expressways, the rate of fatality in rear-end collisions caused by large trucks of eight tons or more of gross vehicle weight (GVW) are about 12 times higher than that of passenger cars. All this makes it urgent that effective measures be taken to prevent rear-end collisions caused by large trucks.

It should be also noted that, among rear-end collisions caused by large trucks of a GVW of eight tons or more, those caused by large trucks whose GVW exceeds 20 tons represent about 70 percent.

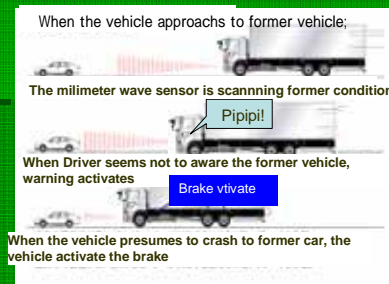


# Incentives

- Heavy duty vehicles equipped with collision damage mitigation brake (CDMB) are subsidized from April 2007.

Why collision damage mitigation brake on heavy duty vehicle was selected for incentives?

- Matured technologies
- Effectiveness
- Social necessity



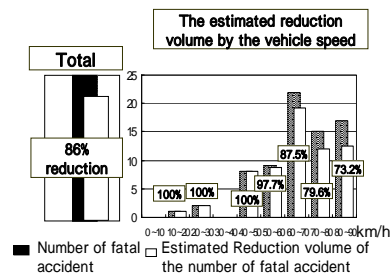
## Matured Technology

It depends on the manufacturer's philosophy.

Ex) Heavy duty vehicle equipped with the brake already become to be sold.

## Effectiveness

MLIT estimates that the number of fatal accidents related heavy duty vehicle can be reduced about 90% when collision mitigation braking system on the heavy duty vehicles reduce speed around 20 km/h.



## Social Necessity

More than 55% of accidents are rear end collision

Damage to other vehicles is 12 times more severe than collision with a passenger vehicle

# Outline of the Draft Technical Regulation on Collision Damage Mitigation Brake Systems

## **Scope of Application**

- ◇ Large Trucks, tractors, etc.

## **Major Requirements**

- ◇ The system shall be activated while the vehicle is running on a flat road. And the performance of the system shall be an average deceleration of  $3.3 \text{ m/s}^2$  after the collision judgment line, when the limit of avoidance by steering is smaller than the limit of avoidance by braking.
- ◇ Care shall be taken, for example by making it clear that the system is not one for avoiding collisions, so that the driver will not believe that he/she can always avoid the collision with this system.
- ◇ As informing and warning, sounds and easy-to-check displays shall be used. The informing shall be issued at least 0.8 second before the braking control based on collision judgment is activated, and the warning shall be given at least 0.8 second before the braking control is activated after the system judged that the vehicle is likely to collide with the obstacle.
- ◇ The brake lamps shall turn on when braking control is activated.
- ◇ The system may be equipped with a release when conforming to conditions, for example the driver can not easily operate it.
- ◇ The installation of an ABS is mandatory for the installation of the braking system. The braking system shall not be activated when the trailed vehicle is not equipped with an ABS.

## Notes:

Limit of avoidance by braking: physical limit necessary for avoidance by breaking of collision with the forward obstacle, expressed in estimated time to collision.

Limit of avoidance by steering: physical limit necessary for avoidance by steering of collision with the forward obstacle, expressed in estimated time to collision.

Collision judgment line: Physical limit of avoidance by braking (limit of avoidance by braking) or physical limit of avoidance by steering (limit of avoidance by steering), whichever is smaller in estimated time to collision.

## **Test Methods, Criteria, etc.**

- ◇ Submission of documents on braking performances, such as minimum braking distance.
- ◇ Test of activation on collision with an obstacle, test of activation on collision with an obstacle outside the lane (to confirm non-activation), test of activation of warning on system failure, test of activation of warning and informing buzzer, etc.