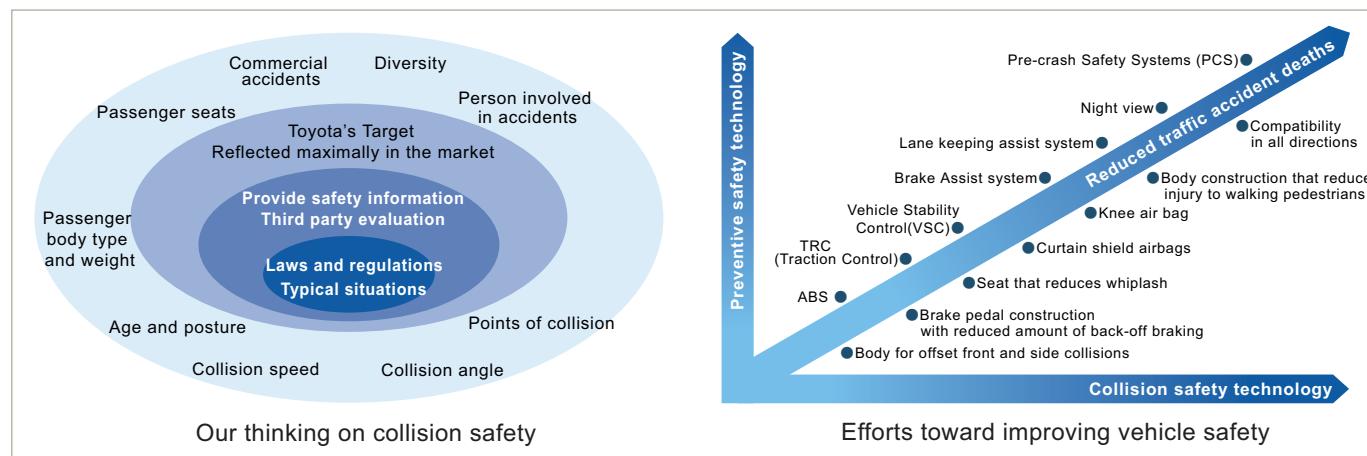


A Constant Focus on Humans in Manufacturing Safe Vehicles

“Safety” is thought to be the basis of vehicle manufacturing.

Based on this thinking, we are working to develop manufacturing of safe vehicle from the viewpoint of “preventive safety” and “collision safety.”



Improvements in Preventive Safety Performance

The basis for preventive safety technology is in a car's original functions of driving, turning, and stopping according to the intent of the driver. Along with these three functions, we at Toyota Auto Body are on the cutting edge in working to improve performance.

[Preventive Safety Functions]

- Pre-crash Safety System (Millimeter-wave radar type)
- AFS(Adaptive Front-lighting System)
- S-VSC(Steering-assisted Vehicle Stability Control)
- EBD (Electronic Brake Force Distribution) with ABS

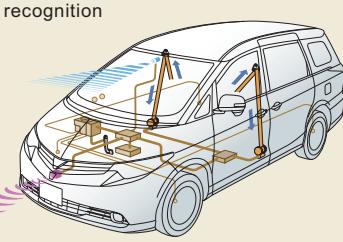
Pre-crash Safety System (Millimeter-wave radar type)

The pre-crash sensor warns the driver with a buzzer or other method when the pre-crash sensor judges if there is danger of a collision with opposing or leading vehicles, or some obstruction on the road. When braking, pre-crash brake assistance functions and increases braking control . Even when the brakes are not operated, the pre-crash safety system is activated to reduce collision speed, which also reduces collision injury and increases restraining performance to the occupants through early tightening of the pre-crash seatbelt.

- Camera for white line recognition
- Millimeter-wave radar
- Pre-crash seatbelt



Pre-crash seatbelt



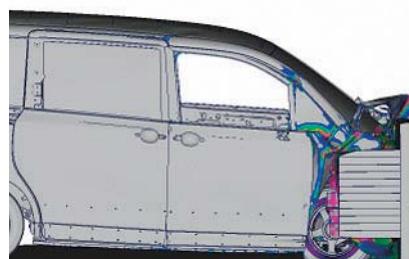
Improvements in Collision Safety Performance

We are developing a “collision safety body”(GOA: Global Outstanding Assessment) that achieves both a high-strength cabin and impact absorbent body in aiming to have survival space and occupant protection performance in full front, offset front, or side collisions.

By exploiting CAE analysis, we are aiming to develop a body that can ensure space in each room of the vehicle, and minimize cabin deformation even in front or side collisions, which are the most severe kinds of collisions.



Offset front collision test



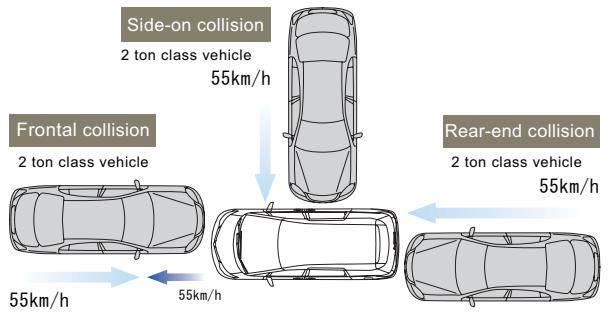
Offset front collision CAE analysis

"GOA" body construction for compatibility in all directions

Toyota Auto Body are pursuing collision safety performance that compares with other vehicles at the same level of the top class for emissions. "GOA" comprises a high-strength cabin with a collision absorbing body which has further evolved. The collision test incorporates Toyota's own concept of all-direction compatibility *1 in a collision for vehicles that differ by weight and height. Toyota Auto Body achieved an outstanding cabin structure which absorbs collision impact by dissipating the impact load throughout the entire vehicle body structure.

* 1. Consideration is given to the aim of safety in reducing damage from large vehicles, and assurance of collision safety for small vehicles.

All-directional Compatibility

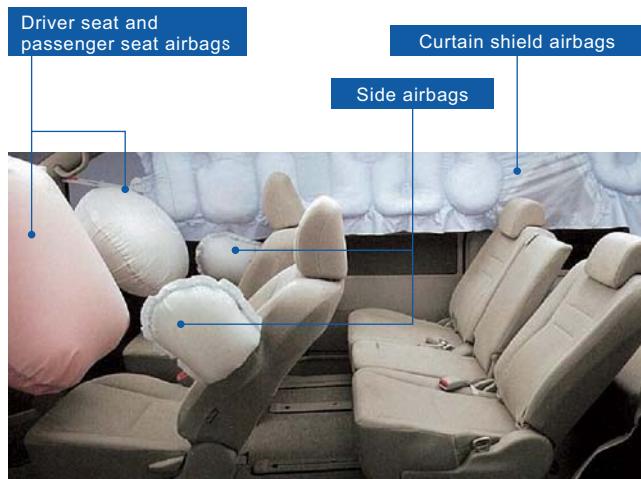


Front collision test

Airbags

SRS airbags operate if there is ever a strong impact to the front of the vehicle.

The airbags function in conjunction with seatbelts to inhibit impacts to the head and chest of occupants. SRS side airbags (front seat), which mitigate impacts from the side, expand as if to cover the sides of the heads of occupants, and the use of front and rear seat SRS curtain shield airbags have further improved safety performance.



Airbags

A Vehicle Body That Reduces Injury to Pedestrians

Use of a collision absorbing structure through exploiting CAE analysis for bumpers, cowl fenders, and hoods reduces chest and head injuries of pedestrians if they are hit by a vehicle.

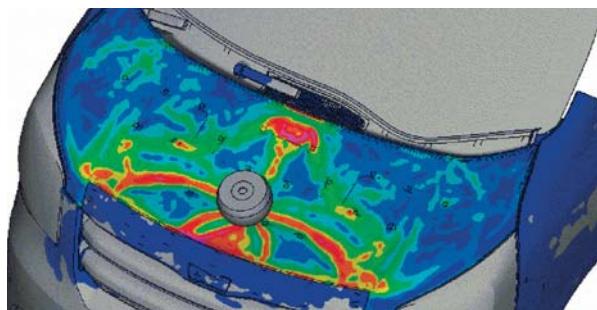
Vehicle Body That Reduces Injury to Pedestrians

Mitigated collision to the head

Use of collision impact structures in the hood, cowl, and fender

Mitigated collision to the femur

Use of bumper material below the bumper and radiator



CAE analysis

ESTIMA Receives a Vehicle Assessment Award in the First Grand Prix

The ESTIMA was chosen as the most outstanding vehicle in the "Vehicle Assessment Grand Prix 06/07" by FY2005 vehicle assessment evaluation of the National Automotive Safety Vehicle Association.

The high safety of the Estima's collision performance was recognized by receiving **the highest evaluation of six stars** for both the driver and passenger seats, as well as receiving **the highest evaluation level of a 5** for pedestrian head protection performance.



ESTIMA

Kouji Wakamatsu
(CAE Div. CAE Dept. NO.1)

Achieving both weight reduction and safety was a challenge during development. Having the results of this work being recognized in this way makes me very happy and I will strive to make even better vehicle manufacturing possible.

