

Pedestrian protection for small city cars

What is a small city car?

Small city cars include both superminis (such as the Smart car) and bodied quadricycles (such as the Reva G-Wiz). Superminis have to pass pedestrian impact legislation that is the same for all passenger cars, even though pedestrian impacts differ depending on the vehicle shape. Quadricycles are an exception, and do not have to pass pedestrian impact legislation.



Smart fortwo

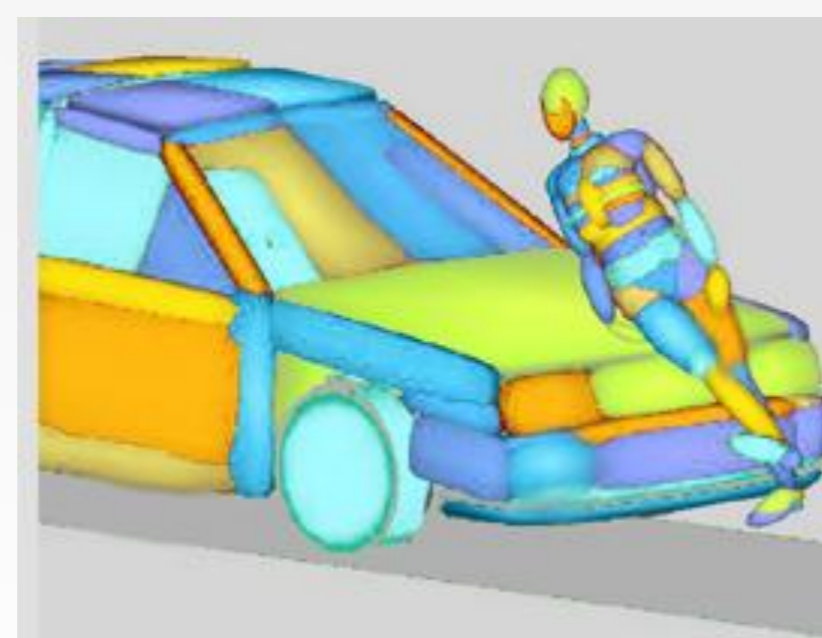
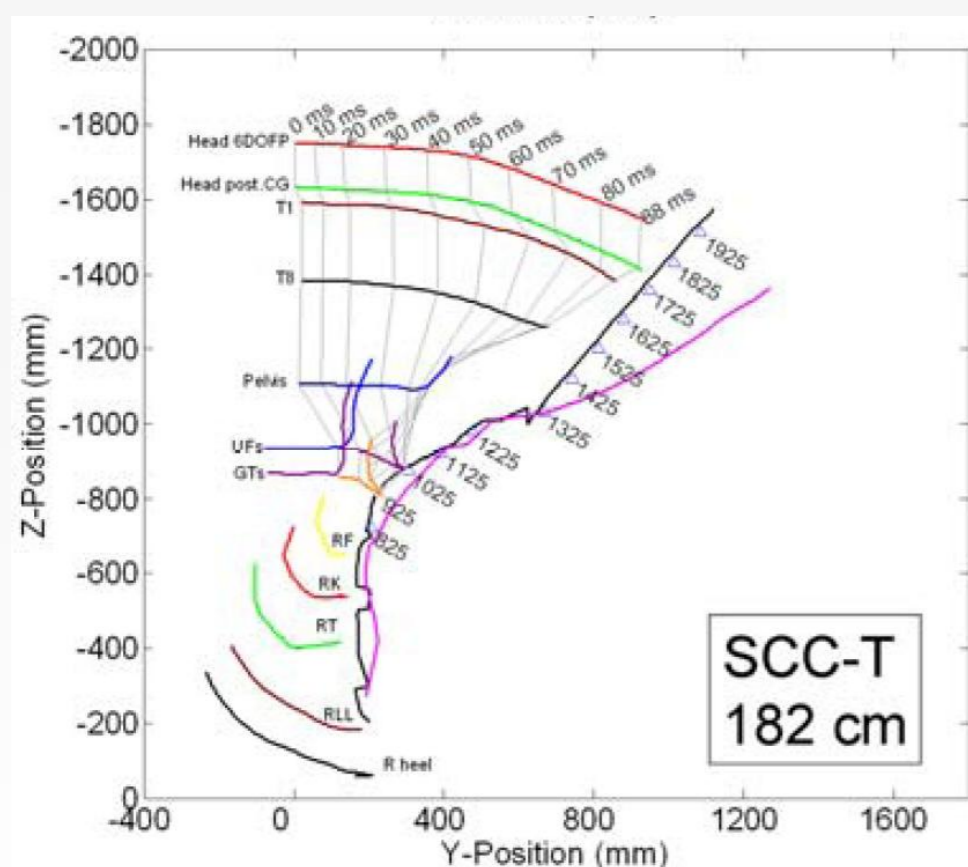


Reva G-Wiz

Pedestrian accidents with small city cars

In Great Britain from 2003-2007 an average of approximately 130 pedestrians were killed in impacts with minis/superminis, and 1,800 were seriously injured. Over this time period, the average number of minis/superminis registered in Great Britain was 9.1 million. The number of quadricycles on the road is far fewer but is likely to increase, especially as the use of electric vehicles in urban areas is encouraged.

Pedestrian kinematics



Pedestrian kinematics from cadaver testing and MADYMO simulation

The kinematics of a pedestrian impact in a collision with a small city car have been rarely studied in great detail (particularly not for impacts with quadricycles). This study will determine the kinematics of pedestrians hit by these vehicles, primarily using the numerical simulation software MADYMO.

Impact countermeasures



Example of A-pillar airbags combined with a pop-up bonnet

Impact countermeasures have been developed for passenger cars for many years, including pop-up bonnets and A-pillar airbags. However, because of the kinematics of pedestrian impacts with small city cars, it is likely that new countermeasures need to be developed, or existing ones altered, to provide the pedestrian with effective protection.

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