

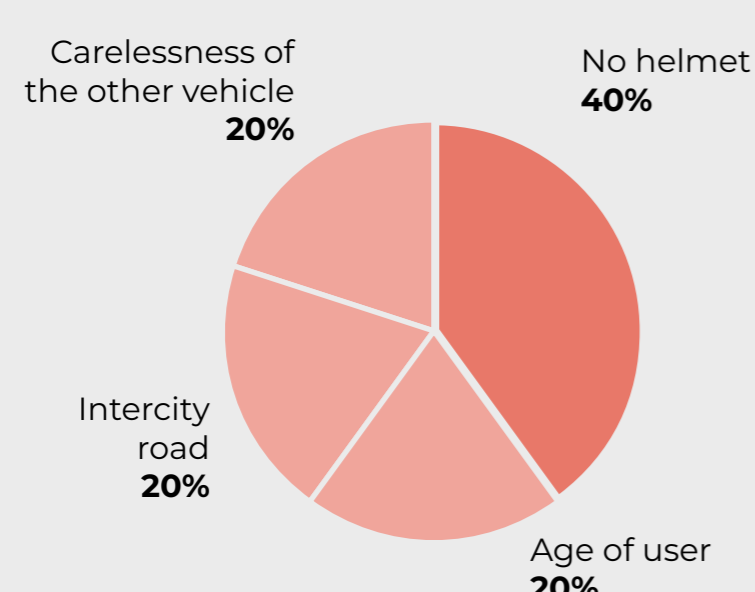


# Electric scooter: safety on two wheels

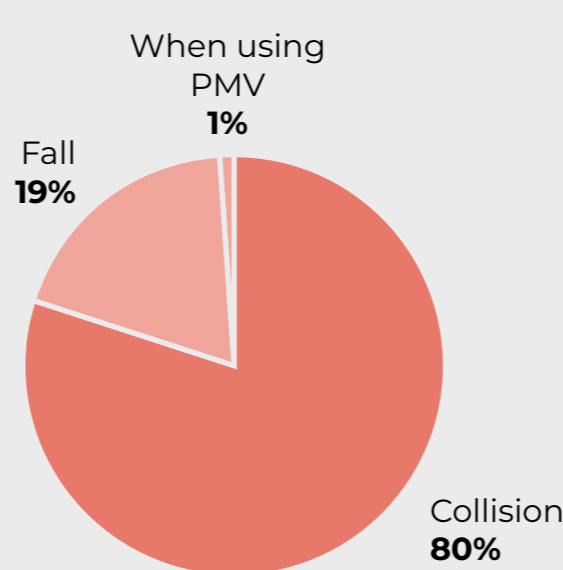
## ANALYSIS OF ACCIDENTS INVOLVING PERSONAL MOBILITY VEHICLES (PMVS) IN SPAIN

CESVIMAP has been researching accidents involving electric scooters since 2018

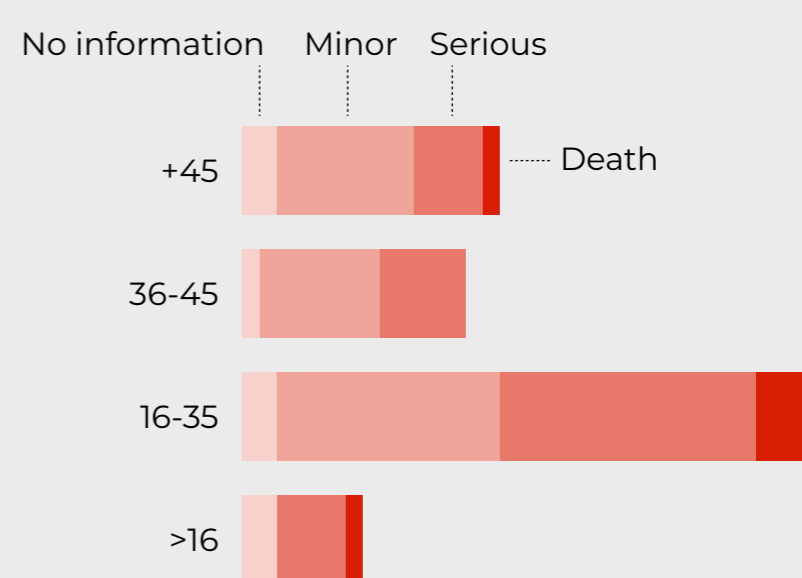
### Main factors in fatal accidents



### Accident type



### Persons affected, severity and age ranges

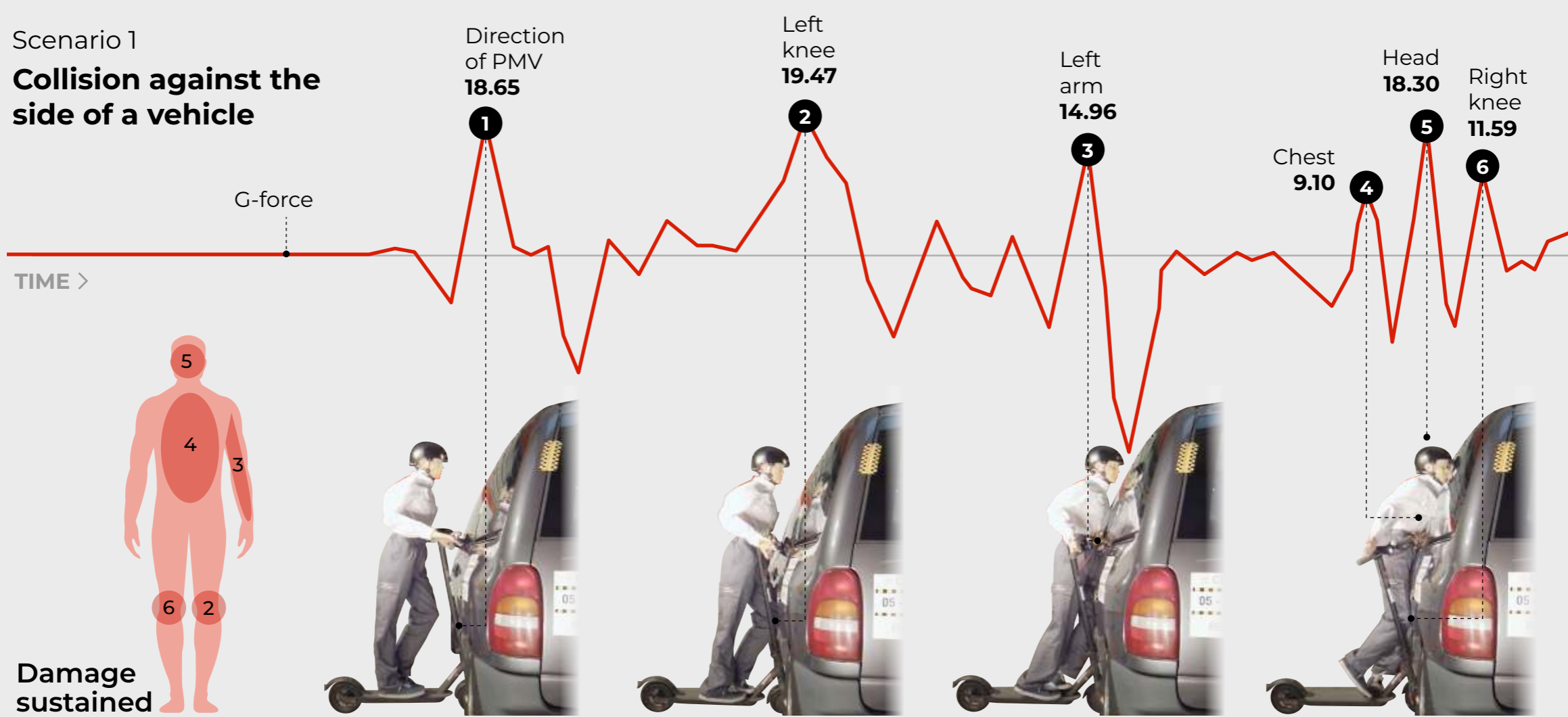


2020 data

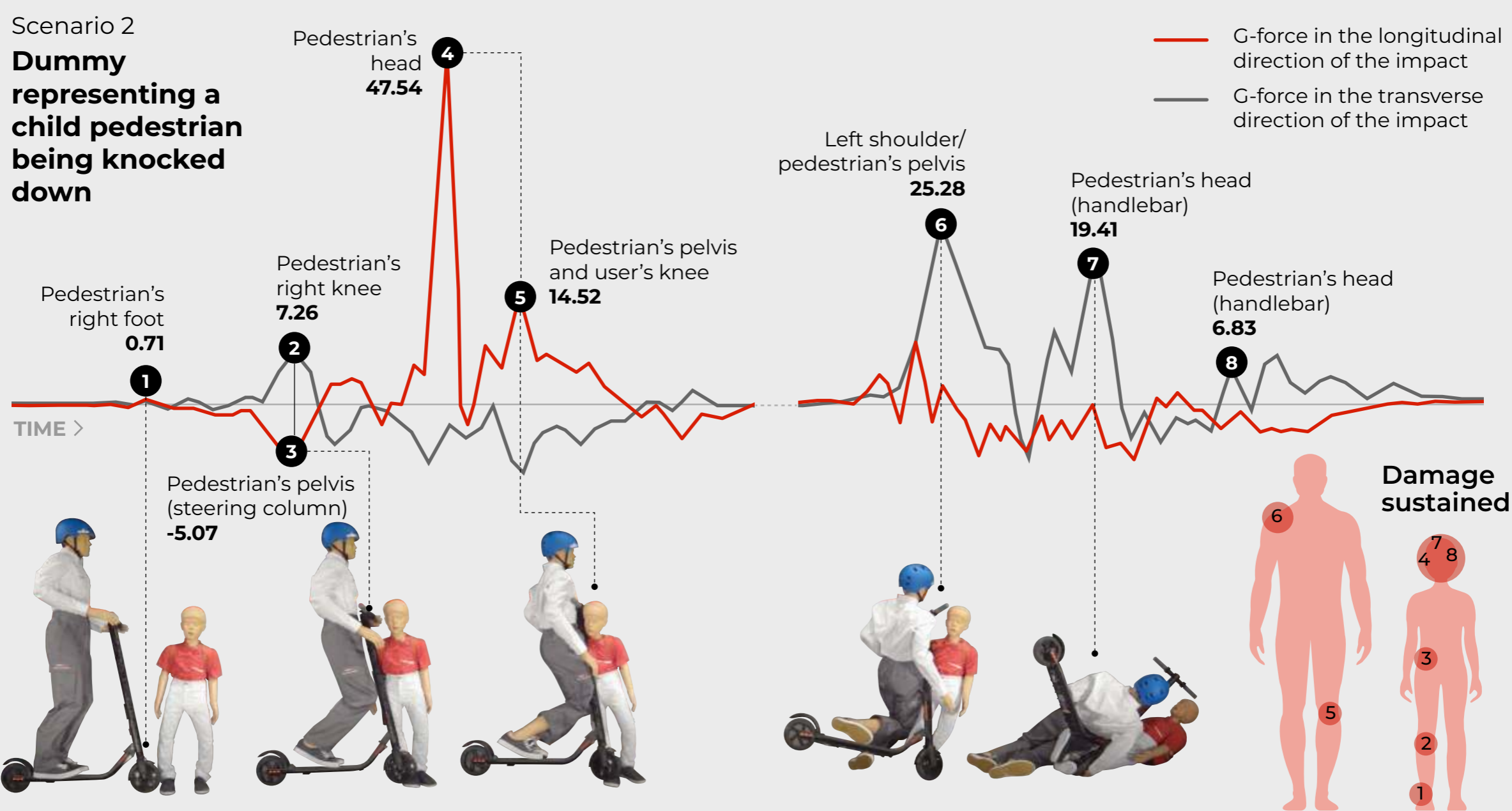
## WHAT HAPPENS IN AN ACCIDENT WHEN AN ELECTRIC SCOOTER IS INVOLVED?

Results of crash test with an electric scooter driving at 25km/h.

### Scenario 1 Collision against the side of a vehicle

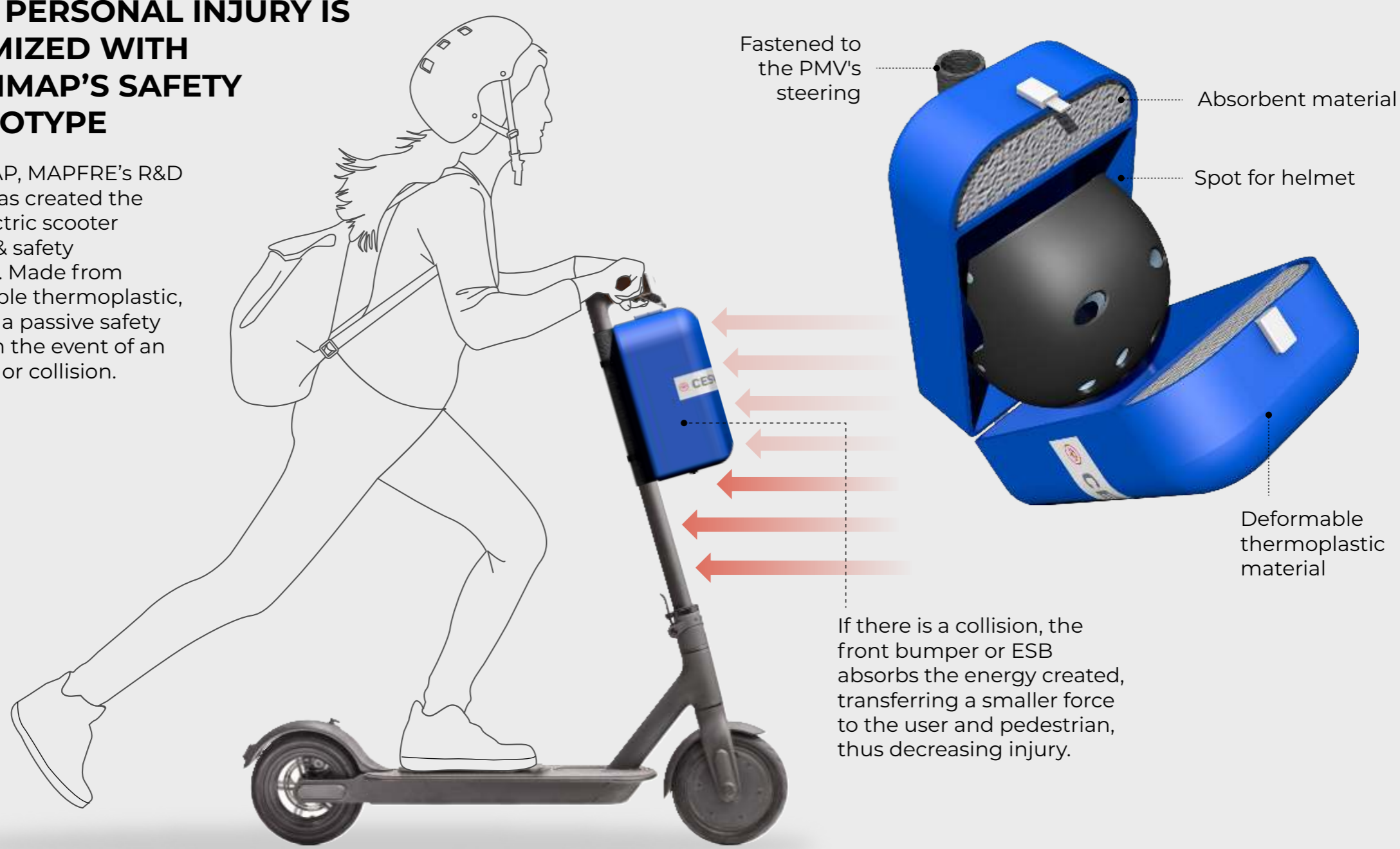


### Scenario 2 Dummy representing a child pedestrian being knocked down



## HOW PERSONAL INJURY IS MINIMIZED WITH CESVIMAP'S SAFETY PROTOTYPE

CESVIMAP, MAPFRE's R&D center, has created the ESB (electric scooter security & safety bumper). Made from deformable thermoplastic, it acts as a passive safety system in the event of an accident or collision.



TRIAL TYPES	Without ESB	With ESB	% change
CRASH TEST AGAINST VEHICLE (Impact on the user's head)	18.29 g	13.58 g	-26 %
COLLISION WITH PEDESTRIAN (Impact on the pedestrian's head)	47.54 g	7.06 g	-85%