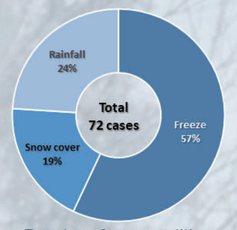
Construction of a simulation to experience slip accidents

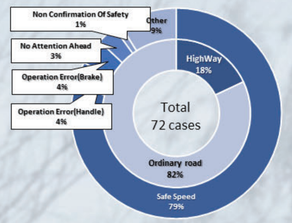
FORUM8®
10th CPWC
Safe and Secure

Background and Objective

Slip accidents occur more frequently when road conditions are bad. Accidents caused by failure to observe safe speeds are the most common, followed by accidents caused by improper operation.
Review driving awareness using a simulation of experience for slip accidents and prevent these accidents.



Road surface condition



Violation of the law

Fatal and serious injury slip accidents in cold weather (2016~2020)

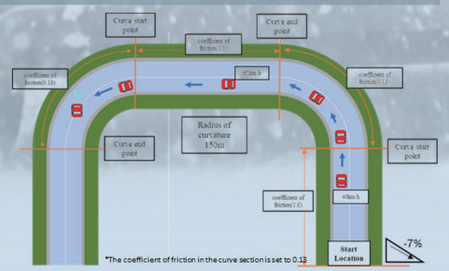
Modeling Methods - Five slip accident scenes -

Scene Number	Road Surface Condition	Accident Scene
①	Rainfall	When going around a downhill road with left curve, the vehicle can be driven safely at 40 km/h or less, but at 60 km/h or more it will slip and lane departure.
②	Snow cover	When going around a downhill road with left curve, the vehicle can be driven safely at 30 km/h or less, but at 50 km/h or more it will slip and lane departure.
③	Freeze	When going around a downhill road with left curve, the vehicle can be driven safely at 20 km/h or less, but at 40 km/h or more it will slip and lane departure.
④	Snow cover	When braking to avoid an obstacle on a straight steep downhill road, the driver can stop at 20 km/h or less, but will collide at 40 km/h or more.
⑤	Rainfall	When overtaking a bus in the driving lane on a highway and avoiding obstacles in the overtaking lane, the vehicle can travel safely at speeds of 80 km/h or less, but becomes inoperable at speeds of 100 km/h or more.

Create models that allow users to experience a sequence of dangerous and appropriate driving. Using the models, firstly we drive at a safe speed and then at a dangerous speed to experience the difference.

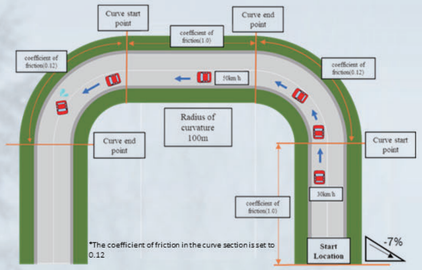
Slip on Left Downhill Curve (Rainfall)

Learning points
They tend to drive at normal speed in the rain, but it is necessary to drive carefully around curves.
Assessment scenario
When it is rainfall on the road surface, they drive safely at 40 km/h when turning the first corner and experience the danger of slipping at 60 km/h in the second corner.



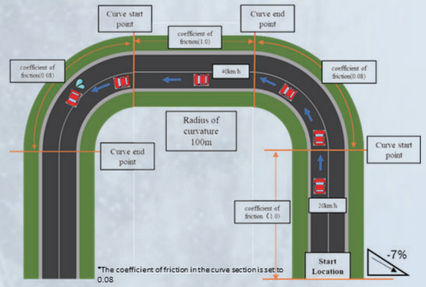
Slip on Left Downhill Curve (Snow cover)

Learning points
On snow-covered surfaces, the vehicle is more likely to slip than in rainfall, so it is necessary to drive at a slower speed.
Assessment scenario
When the road surface is snow covered, they drive safely at 30 km/h when turning the first corner and experience the danger of slipping at 50 km/h in the second corner.



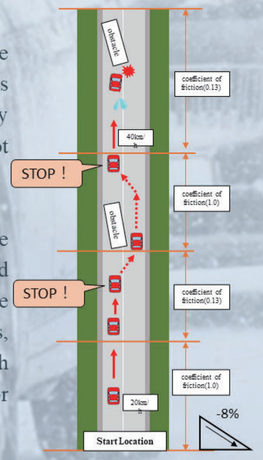
Slip on Left Downhill Curve (Freeze)

Learning points
When it is below freezing, they drive on the assumption that there are freeze road surfaces and take care not to overspeed and steer too fast.
Assessment scenario
When it is freeze on the road surface, they drive safely at 20 km/h when turning the first corner and experience the danger of slipping at 40 km/h in the second corner.



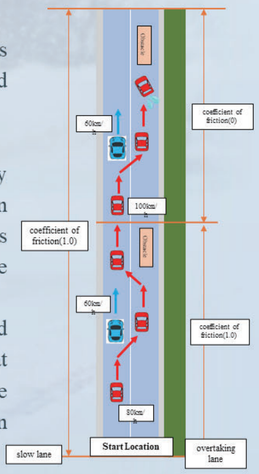
Braking to avoid stopped vehicles

Learning points
On steep downhill slopes where there is snow on the ground, it is necessary to slow down sufficiently considering that the brakes may not work.
Assessment scenario
When braking to avoid an obstacle on a straight steep downhill road with snow, they stop safely before the first obstacle at 20 km/h or less, and experience the collision with the second obstacle at 40 km/h or more.



Highway Hydroplaning Phenomenon

Learning points
On a highway with rainfall, it is necessary to drive carefully and avoid driving too fast.
Assessment scenario
On a highway with rainfall, they overtake the first slow vehicle in the driving lane at 80 km/h or less and then avoid an obstacle in the overtaking lane.
Next, they overtake the second slow vehicle in the driving lane at 100km/h or more and experience inoperable situation before an obstacle in the overtaking lane.



Conclusion

1. Five scenes that are prone to slip accidents were constructed to create a highly realistic simulation of the experience.
2. We can contribute to a safe automotive society through this experiential simulation.