

Blind Spot Technology - Lane Watch -

Honda R&D Asia Pacific Co., Ltd.



HONDA
The Power of Dreams

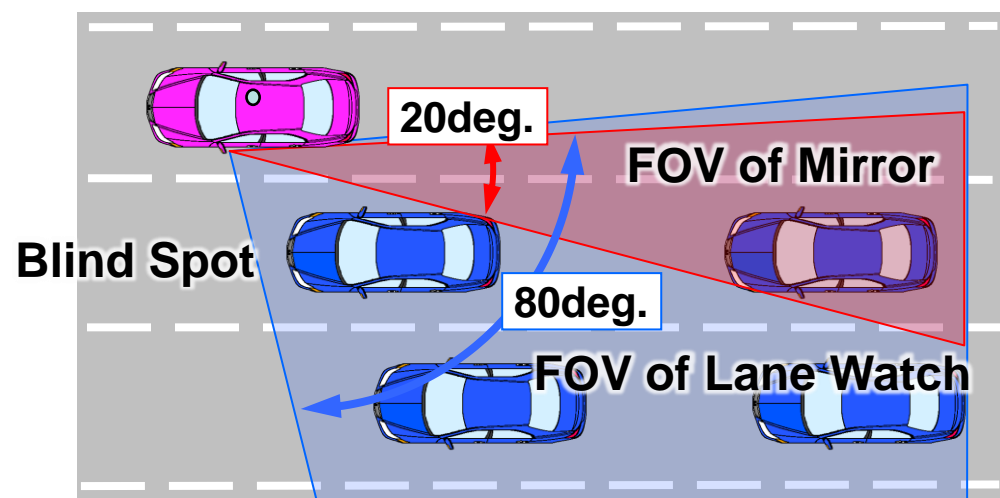
What is the Lane Watch ?



Camera



Display



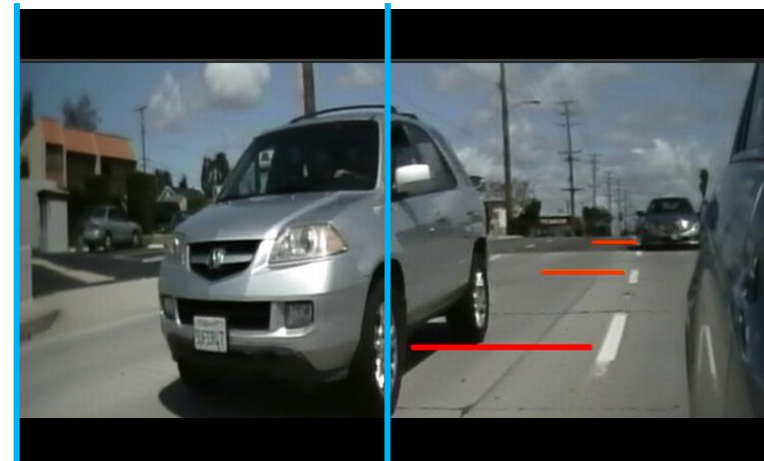
- Camera is installed below the passenger-side door mirror and display the actual view on the center display screen.
- FOV of the Lane Watch(80 deg.) wider than that of the passenger-side door mirror(20deg.).

What is the Lane Watch ?

Passenger-side door mirror

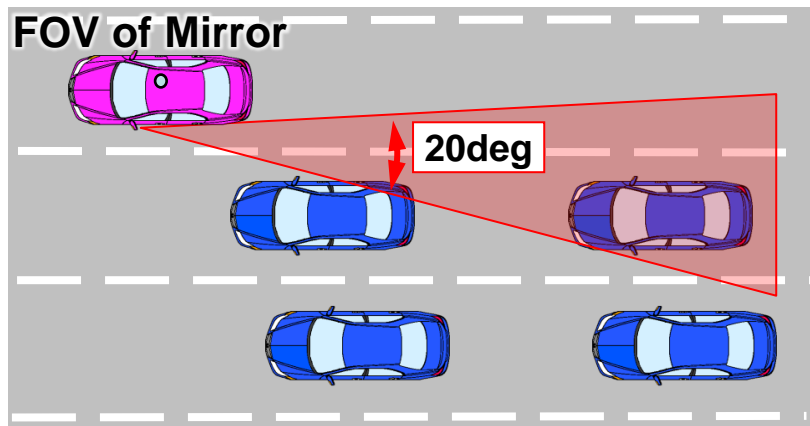


Lane Watch

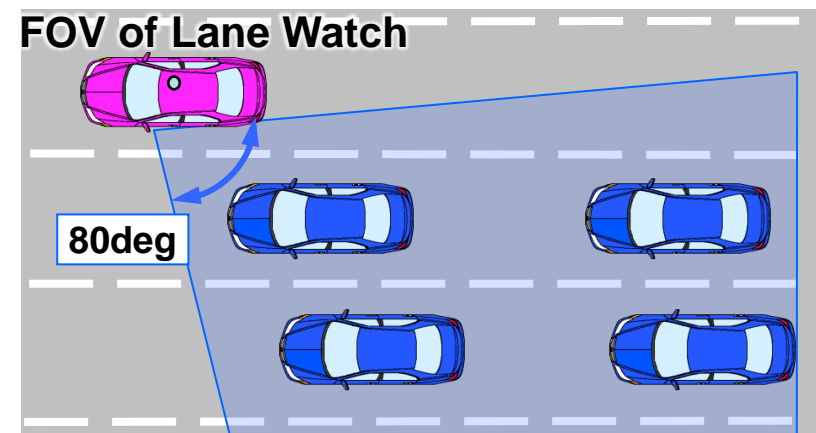


Blind Spot of passenger-side door mirror

FOV of Mirror



FOV of Lane Watch



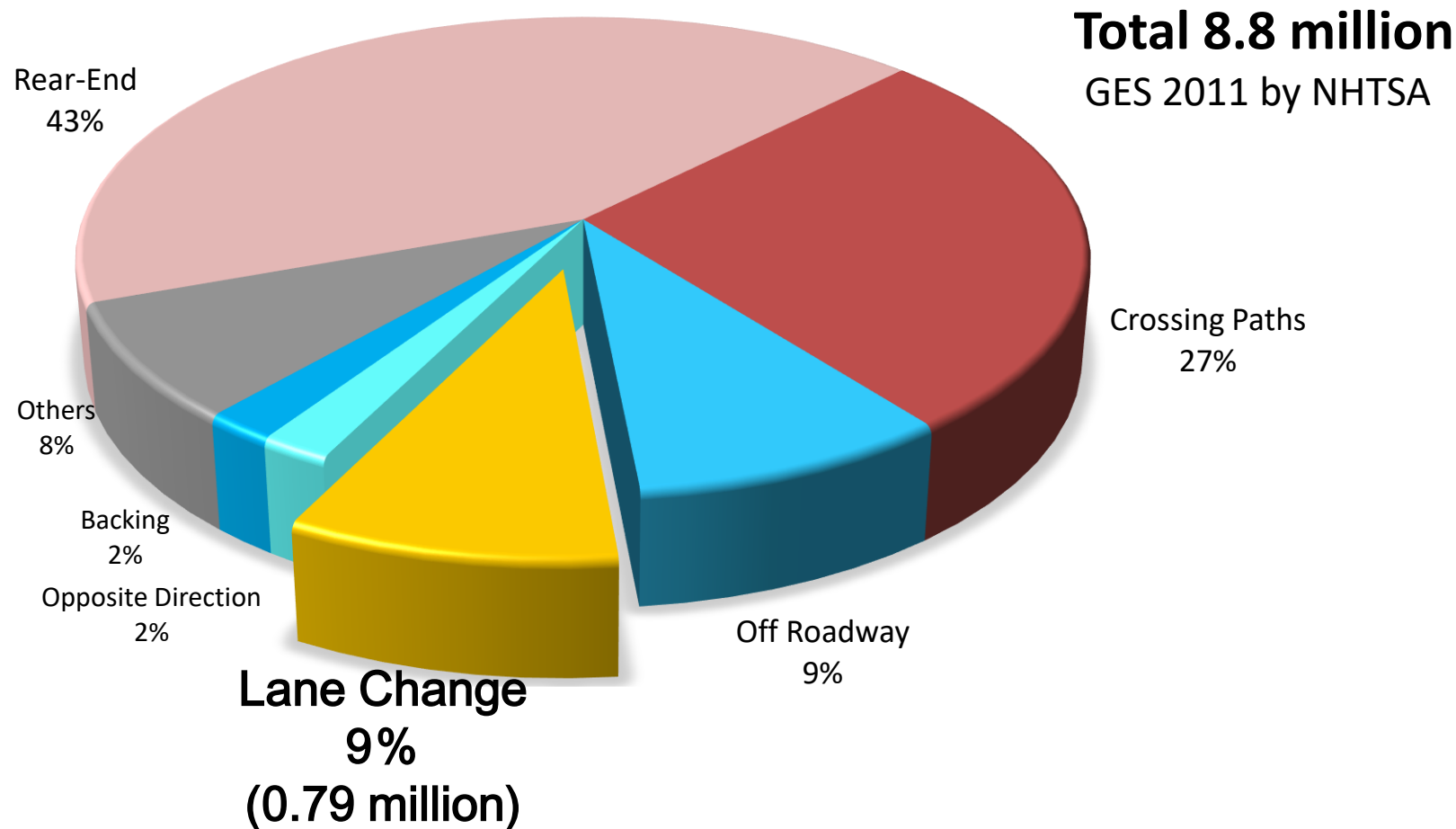
- Using Lane Watch, vehicles in the blind spot become visible, reducing the risk of oversight in lane changing and left turn.
- Lane Watch has three reference lines to support judging relative distance.

What is the Lane Watch ?



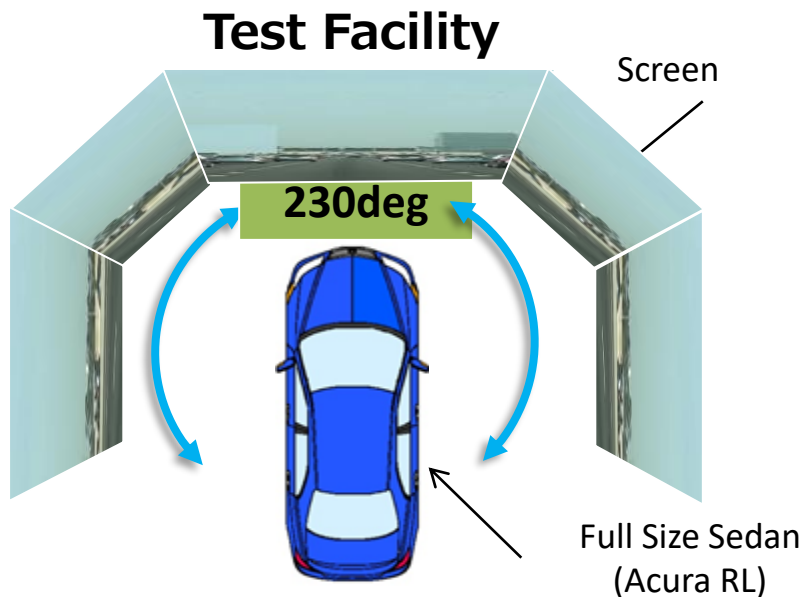
The Effectiveness of the Use of the Lane Watch in Reducing Accidents when Changing Lanes at US.

Share of Crashes by Type for Light Vehicles at US

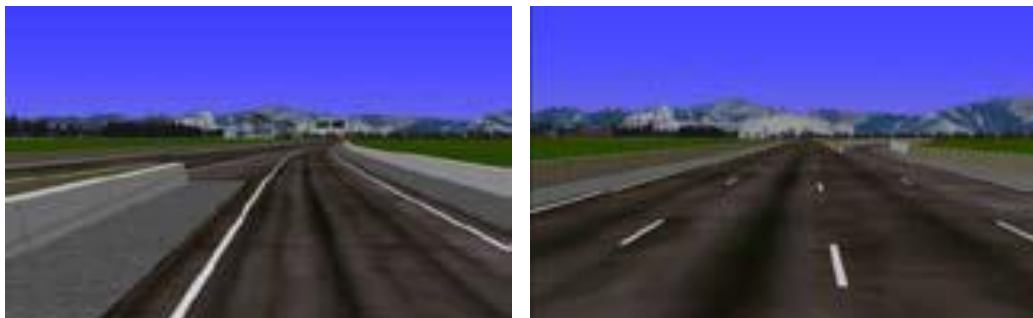


- This figure shows the Share of Crashes estimated by NHTSA, The total number of light vehicle crashes which would happen in the US is 8.8 million in 2011. And about 9 percent of the crashes would happen when changing lanes.

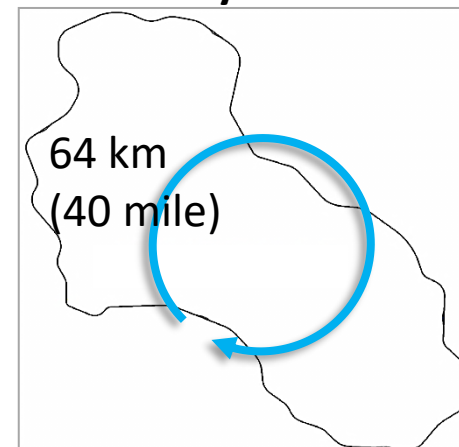
Driving Simulator Setup



Virtual Test Course



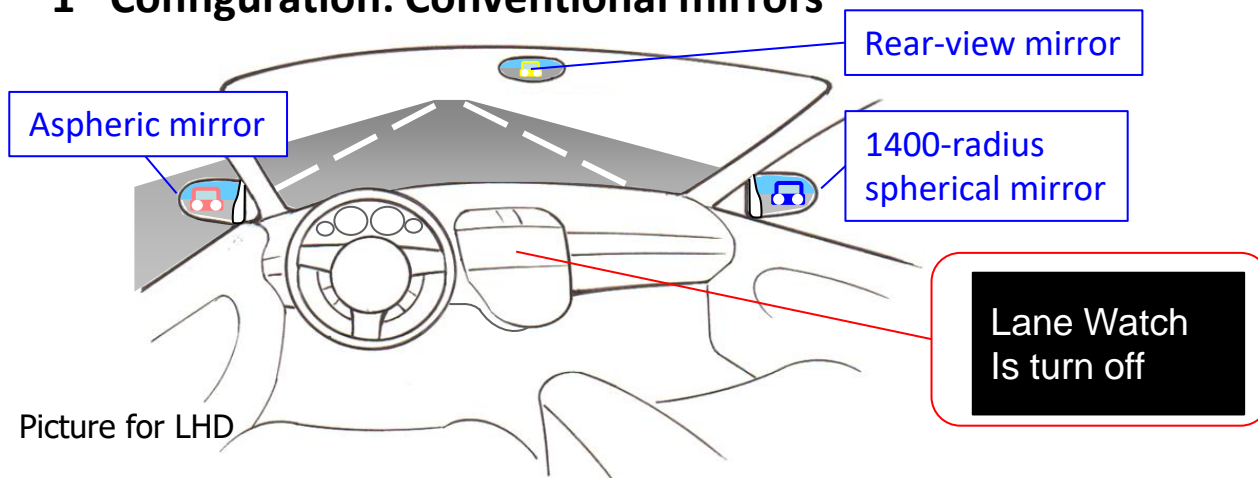
Course Layout



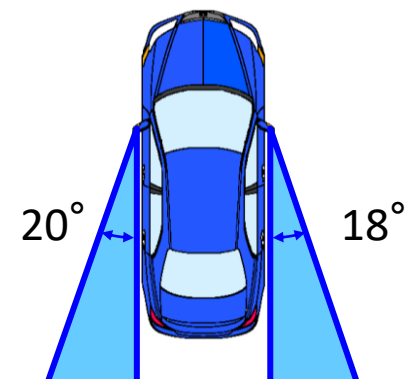
- To verify the effectiveness of Lane Watch in reducing lane-change accidents, we used a driving simulator which reproduce a common 4-lane US highway.

Test Vehicle Configurations

1st Configuration: Conventional mirrors

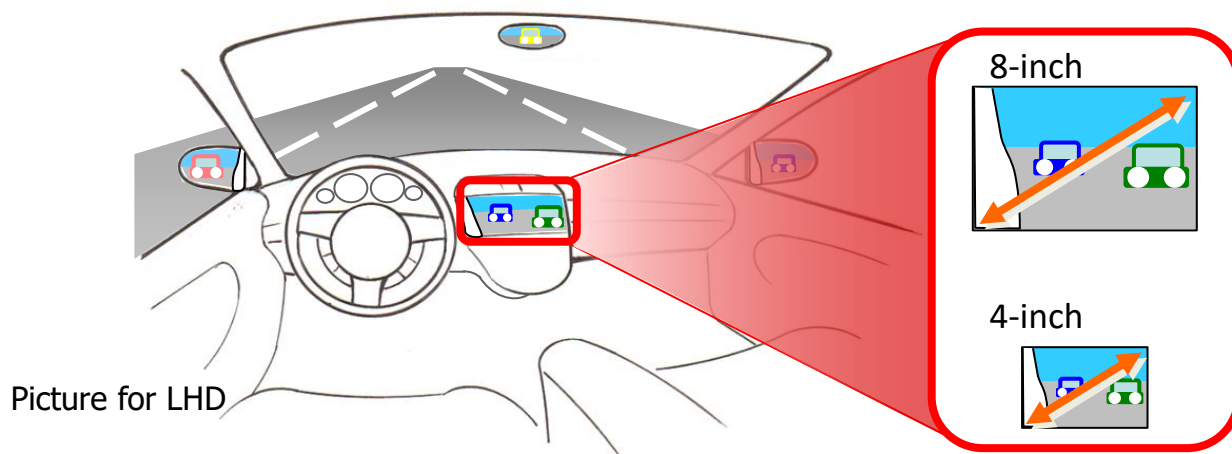


Mirrors' Field of view

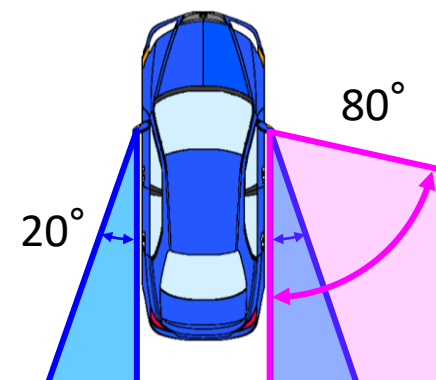


2nd Configuration: Mirrors + 8-inch Lane Watch

3rd Configuration: Mirrors + 4-inch Lane Watch

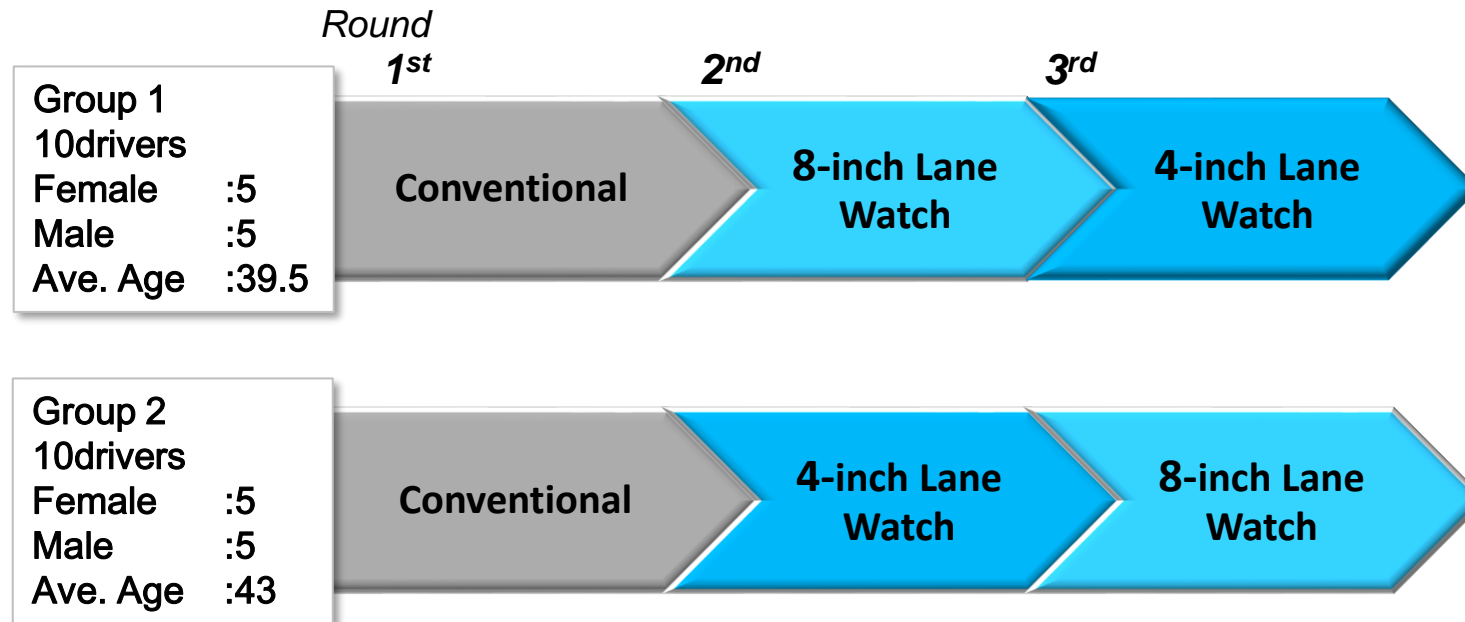


Lane Watch's Field of view



■ We tested 3 configurations of checking rear safety.

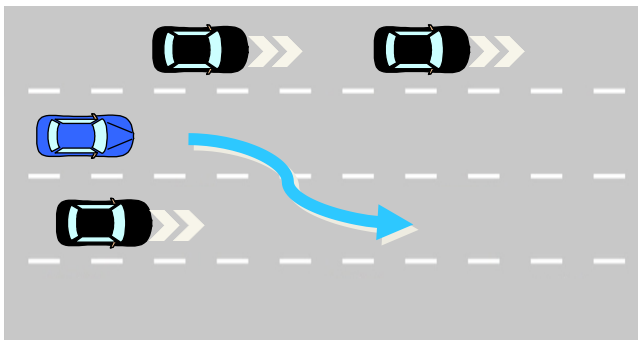
Participants and Experimental Procedure



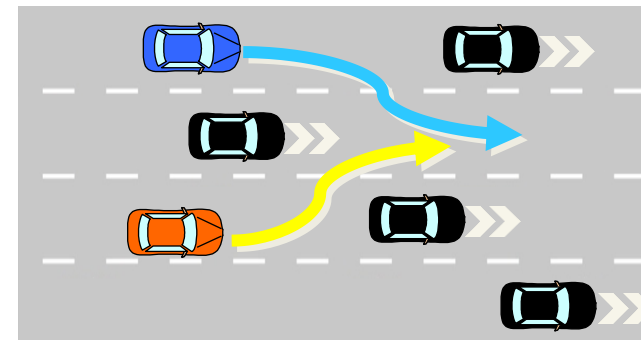
- Test subjects were recruited from the general public by open call; **total 20 American males and females from 21 to 63 years old** is participated.
- Subjects were randomly assigned to one of the two groups.
- Subjects belonging to group 1 tested first Conventional mirrors set up, second, 8-inch Lane Watch, and 3rd, 4-inch Lane Watch.
- Subjects in Group 2 tested also first, Conventional mirrors, second, 4-inch Lane Watch and 3rd, 8-inch Lane Watch.
- Before test driving, Subjects had short practice drives to get used to the steering of the simulator and the graphics of road.

Participants and Experimental Procedure

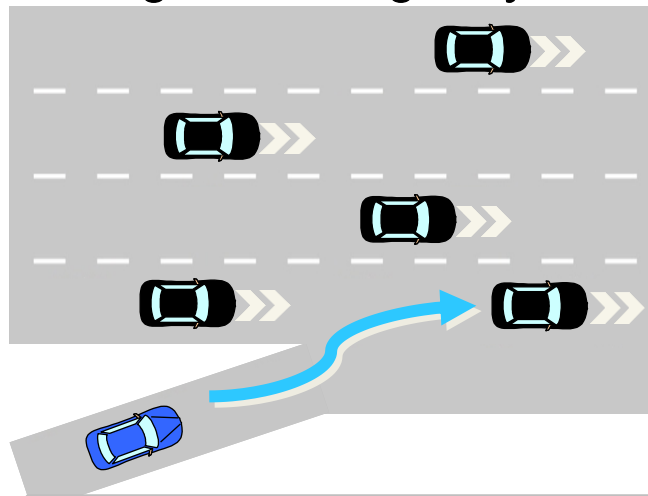
Lane change



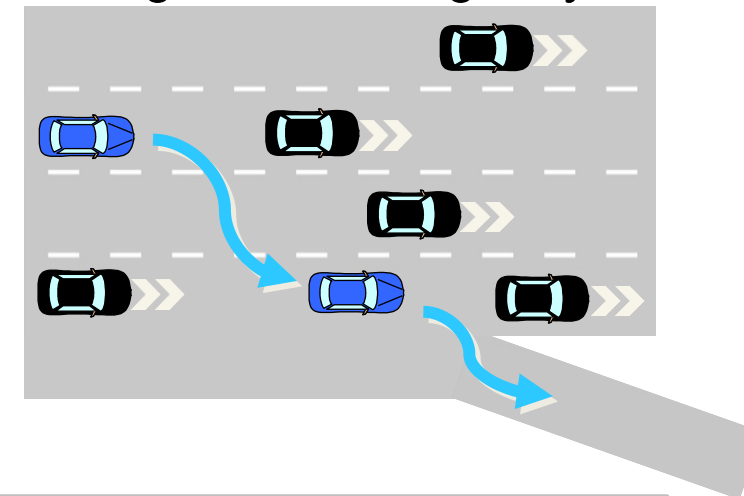
Lane merging



Pulling into the highway



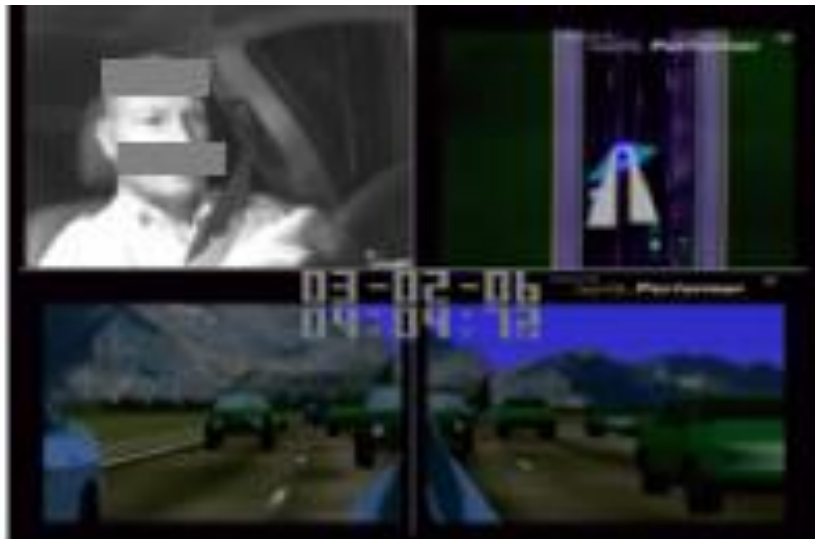
Pulling out off the highway



■ Total **47 lane change events** were given in each laps.
And among them, **21 events** were lane changing to the **passenger side**.

Lane-change Instructions

Instruction Sample



Exiting Sign

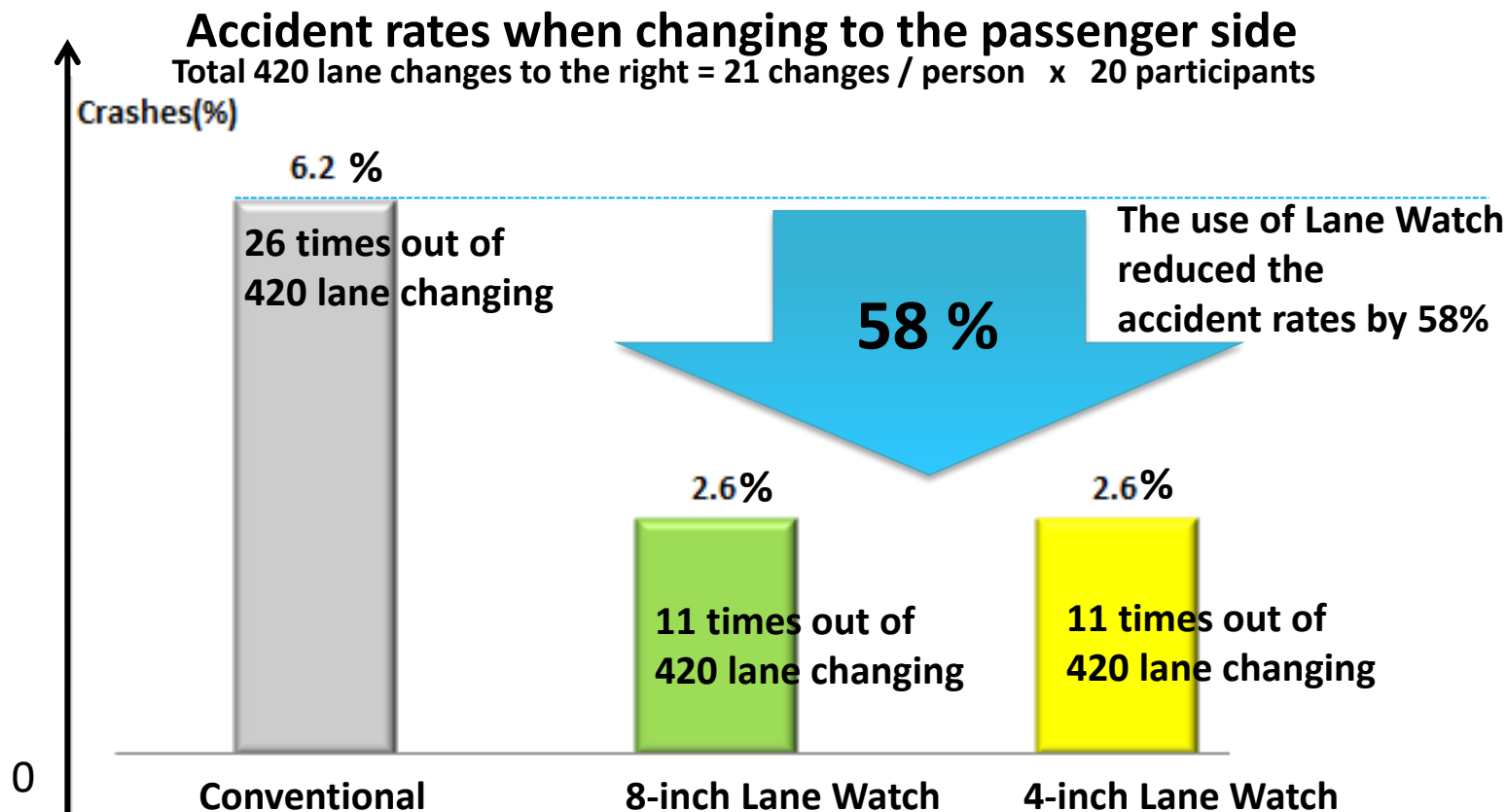


Audio instruction

"Get off at the next exit"

- The lane change instructions to the drivers were provided through pre-recorded audio instructions.
Drivers were introduced to **the audio instruction system during practice drives.**
- One of these Audio instructions were given when the subject's vehicle reached a certain spot on the course.
For exiting instruction, the sign was also given as the real traffic.
- We defined an accident that subject's vehicle contacts to other vehicles.
And We counted the number of accidents.
- The subject can keep driving after a crash because the simulator does not suspend and there is no crash Feedback.

Test Result

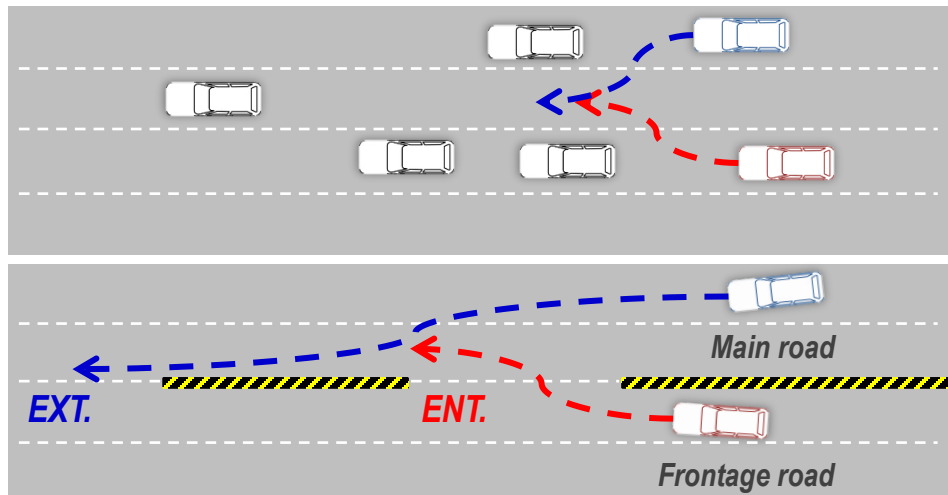


- 420 Lane changes to the passenger side were carried out by the 20 subjects in each test configurations. Using common safety check, the number of accidents were 26 out of 420 lane changes. (Accident rate; 6.2%)
- When 8-inch Lane Watch and 4-inch Lane Watch were used with the side-view mirrors for safety check, the number of accidents were 11 out of 420 lane changes. (Accident rate; 2.6%)
- Since this tests included many high-risk events in order to verify the effectiveness of Lane Watch in a short period, it is considered that the accident rate on the simulator was higher than the one on actual environment. However, the tests result indicated that the use of Lane Watch is effective in reducing the accident rate of lane changes.

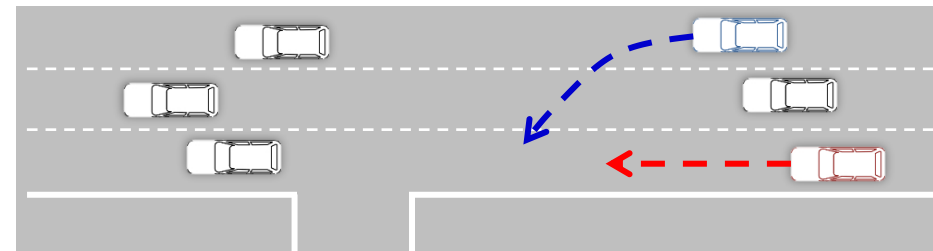
Why Lane Watch is a potential safety feature in ASEAN

Why Lane Watch is a potential safety feature in ASEAN

❑ Move accidentally to the same lane



❑ Move two-lane in a sudden time



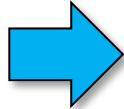
■ Lane Watch helps displaying blind spot not only the adjacent lanes but much wider indeed, there are some accidents which can be relieved by Lane Watch

Why Lane Watch is a potential safety feature in ASEAN

Rain condition



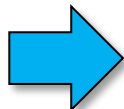
Door mirror



Lane Watch

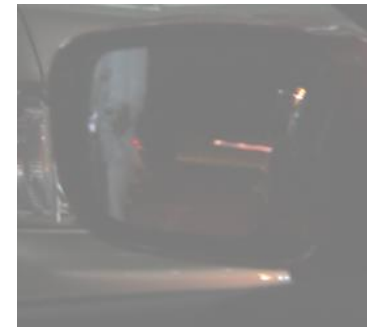


Door mirror

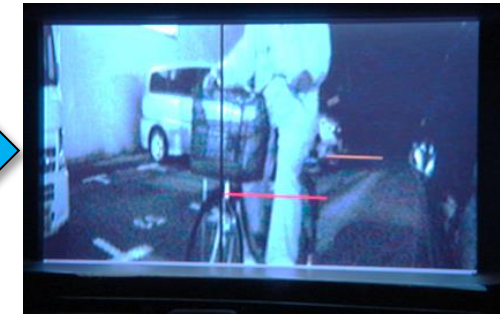
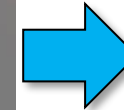


Lane Watch

Nighttime



Door mirror



Lane Watch



Lane Watch



Lane Watch

Safety for Everyone

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