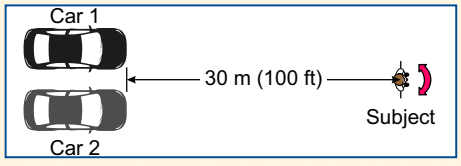
Visual Benefits of Dynamic Automotive Turn Signals

This front turn signal, when activated, gradually illuminates from the vehicle's center outward, providing additional cues about the intended turn direction.

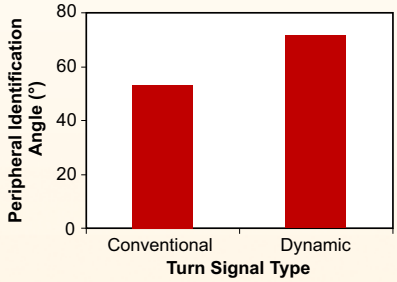
Previously published studies suggest that there are benefits to dynamic turn signal indications that "sweep" in the intended direction of a vehicle's impending turn, but these primarily have been laboratory studies conducted indoors, where ambient lighting conditions differ substantially from those outdoors, especially during the daytime. At present, vehicle lighting regulations in the U.S. do not permit the use of dynamic automotive turn signals.

To address the need for information about the potential benefits of dynamic turn signals under realistic conditions, and to help inform the regulatory process, the LRC conducted an outdoor field experiment using a vehicle equipped with dynamic turn signals.

Participants in the study viewed both conventional and dynamic turn indications. Initially they faced away from the turn signals and then slowly turned toward the signals, so that the signals first appeared in their far peripheral vision. The largest angle at which participants could properly identify the turn indication direction was measured for each indication type. Dynamic turn signals were identified at substantially larger off-axis angles than conventional signals, suggesting an important safety-related advantage.



Study participants stood 30 m from the parked vehicles and initially looked away from them. They slowly turned toward their left or right until they could identify the turn signal's direction.



The conventional turn signals could be identified from a peripheral angle of about 50°, but dynamic signals were able to be identified about 20° further in the periphery.

The difference in peripheral identification angles corresponds to a lateral distance equal to about three lanes of traffic from a distance of 100 feet from the turn signal.

The results from this study were presented in October 2016 at the Vehicle and Infrastructure Safety Improvement in Adverse Conditions and Night Driving (VISION) Congress.

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