

**Effects of Roadway Delineator Spacing, Size, and Height on Drivers'
Perception and Behavior**

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ABSTRACT

Despite the fact that automobile manufacturers have progressively made vehicles safer, roll-over and run off the road accidents continue to cause thousands of deaths and tens of thousands of casualties annually. These accidents are often attributable to excess speed in curves, due to drivers' misperception of roadway curvature.

Prior research has shown that perceptually based novel delineation techniques (such as altered delineation height, distance from the road's edge, and specialized paint markings) can increase drivers' perception of roadway curve sharpness. On the basis of prior research as well as theories of visual perception, this research formulated and tested the hypotheses that size and position of conventional roadway delineation signage can be manipulated to increase drivers' perceptions of roadway curvature and encourage safer driver behavior (e.g., to reduce speeds when approaching and traversing curves).

A driving experiment and image-based sharpness surveys were performed to determine drivers' perception of curvature and behavior. Position of delineators did not produce any measurable effect on driver sharpness rating or behavior. The size of the delineation signs was found to have a significant effect on perceived sharpness, but not on driver behavior. Although no modification resulted in statistically significant changes in driver behavior, perceived sharpness was found to be significantly correlated with maximum approach speed, minimum in-curve speed, total speed reduction, and in-curve speed reduction.

It was also found that in the image-based sharpness study the apparent vertical distance from the visible edge of the pavement and the bottom of the furthest visible delineation signs was significantly correlated with perceived sharpness. Although the size modification appeared to provide small but measurable effects on sharpness perception, the relative sign height probably has a stronger effect on sharpness perception than size modification, and warrants further study.