

TECH NEWS

TECHNOLOGY NEWS

November-December 2004

Improving safety for older drivers

Maintain pavement marking retroreflectivity

Which helps older drivers more: the width of pavement markings or their brightness? Tom Schnell, associate professor of mechanical and industrial engineering and director of the Operator Performance Laboratory at the University of Iowa, decided to find out.

His study was conducted at the intersection of County Road G26 and Iowa Highway 1, a section of straight, two-lane rural road in Washington County. The test included several pavement sections, each separated by a 60-meter gap without any pavement markings.

To test whether the width of the lines helped older drivers, Schnell set up a test with 16 sections. Some of the sections used wider edgelines, delineators, or pavement markers. He also had four sections with the following pavement marking materials:

- normal paint and bead markings without vertical structure
- ceramic element polyurea-based markings
- enclosed lens wet-weather tape markings

The study asked participants to drive each of the one-mile sections and verbally indicate when they were quite sure that they could see the end of the pavement markings in the section they were driving. Schnell then conducted the same test at the same site a year later. This time, he studied how the drivers reacted to the worn markings.

Findings

Schnell found that in wet conditions, specially designed wet-weather tape worked best. Also, new polyurea material with ceramic elements worked much better than new paint and beads. However, after a year of wear, the polyurea markings were about the same as paint and bead markings in dry conditions and only slightly better in wet conditions.

Increasing the line width helped a little when the markings were new but not a year later when the lines weren't as bright.

Schnell's conclusions: To provide maximum visual assistance to older drivers, pavement marking improvement programs should focus on maintaining a high level of retroreflectivity rather than increasing line width.

For more information

For information about the retroreflectivity study, contact Tom Schnell, 319-631-4445, thomas-schnell@uiowa.edu.

Protect left turns

Left turns can be tricky, especially for older drivers. Research shows that as people age, they're more likely to be involved in left-turn crashes. In a 1998 study, left-turn crashes accounted for about seven percent of fatal intersection crashes for the 40

Editor's note

The two studies described on this page were funded by Iowa's Traffic Safety Improvement Program (TSIP).

For more information about TSIP, contact Tom Welch, safety engineer, Office of Traffic and Safety, Iowa DOT, 515-239-1267, tom.welch@dot.iowa.gov.

to 49 age group but about 40 percent of fatal intersection crashes for drivers 75 and older.

Some studies show that older drivers have difficulty judging the speed of oncoming traffic and may take longer to actually make the turn. Other studies show that older drivers may find the different turning situations confusing.

Recently Shauna Hallmark, assistant professor of civil engineering at ISU, studied the safety impacts on older drivers of different kinds of left turns at 101 urban intersections in Iowa.

Three kinds of left turns were studied:

- **Protected:** Drivers make left turns only with green arrows and always have the right of way.
- **Protected/permitted:** These two-phase (green arrow/green ball) intersections give drivers a green arrow, and the right of way, part of the time but require yielding other times.
- **Permitted:** Drivers must always yield to oncoming traffic.

And the winner is

Hallmark found that protected intersections are safest for older drivers, and protected/permitted are the most dangerous. See Table 1.

Table 1. Crashes per million entering vehicles

Age Group	Left-turn Intersections		
	Protected	Protected / Permitted	Permitted
14–24	0.027	0.164	0.211
25–64	0.007	0.087	0.075
65+	0.054	0.315	0.133

Permitted intersections are only slightly safer for older drivers than protected/permitted. (Interestingly, permitted intersections were the least safe for drivers age 14 to 24.)

For more information

For information about the left turn study, contact Shauna Hallmark, 515-294-5249, shallmar@iastate.edu.
