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Safety effects of wet-weather pavement markings

Study summary

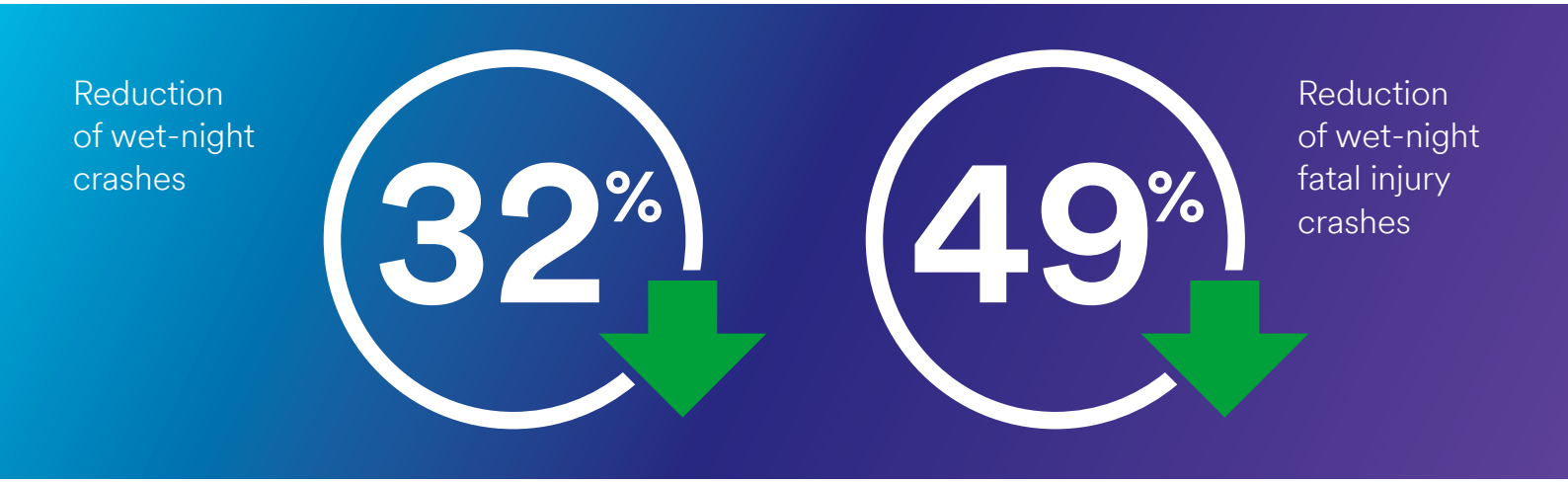
Safety effects of wet-weather pavement markings

It's well known that pavement markings with standard 1.5 or 1.9 refractive index optics lose most of their visibility in wet nighttime conditions. To counteract the effects of rain and water on pavement marking visibility, wet-weather pavement markings with specialized 2.4 refractive index optics were developed. As interest in wet-weather pavement markings grew, the Texas A&M Transportation Institute (TTI) discovered that there was a lack of research evaluating the safety effectiveness of these pavement markings in actual rainy, nighttime conditions.

To start developing this body of research, TTI studied crash counts in 131 segments (729.7 miles) of roads in the Atlanta District of the Texas Department of Transportation (TxDOT) where wet weather pavement markings were installed between 2011 and 2017. The researchers employed both an Empirical Bayes (EB) before-after analysis and the more powerful Full Bayes (FB) method before-after analysis with comparison groups to ensure robust, statistically valid results.

Key Findings

- The results from both evaluation methods suggest that wet-weather pavement markings have positive safety benefits in all conditions – wet, dry, day and night.
- The crash reduction data for wet-weather pavement markings is statistically significant for wet-night crashes, wet-night fatal injury crashes, and wet-night run off road crashes.
- The study shows that wet weather pavement markings reduce wet-night crashes by 32 % and wet-night fatal injury crashes by approximately 49 % (Full Bayes Methodology).



Park, ES., Carlson, P., Pike, A., "Safety Effects of Wet-Weather Pavement Markings." Transportation Research Board 2019 Annual Meeting: Available from: https://trid.trb.org/view/1572259

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