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7. Author(s) Sivak, M., Schoettle, B., Minoda, T., and Flannagan, M.J.				8. Performing Organization Report No. UMTRI-2005-34	
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16. Abstract <p>This study examined the effects of proportional increases in light output throughout the entire headlamp beam pattern on visibility. The baseline beam pattern was a median market-weighted U.S. tungsten-halogen low-beam pattern. Ten derived beam patterns were obtained by multiplying each point in the baseline beam pattern by a constant that ranged from 1.1 to 2.0, in increments of 0.1. Finally, for comparison, we also used the median market-weighted U.S. high-beam pattern. Visibility changes were estimated by calculating the reach of a 3-lux line 0.25 m above the road surface, for both straight and curved roadways.</p> <p>The results indicate that substantial gains in visibility on straight roadways require an increase of about 50% in the overall light output of low beams. On curves, obtaining a substantial gain in visibility in several lateral positions would require significantly greater increase in light output. These results provide an enhanced baseline against which to compare other potential improvements in low-beam visibility, including more localized changes in static beam patterns and adaptive headlighting systems.</p>					
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