

Technical Report Documentation Page

1. Report No. UMTRI-2015-34		2. Government Accession No.		3. Recipient's Catalog No.	
4. Title and Subtitle A Preliminary Analysis of Real-World Crashes Involving Self-Driving Vehicles				5. Report Date October 2015	
				6. Performing Organization Code 383818	
7. Author(s) Brandon Schoettle and Michael Sivak				8. Performing Organization Report No. UMTRI-2015-34	
9. Performing Organization Name and Address The University of Michigan Transportation Research Institute 2901 Baxter Road Ann Arbor, Michigan 48109-2150 U.S.A.				10. Work Unit no. (TRAIS)	
				11. Contract or Grant No.	
12. Sponsoring Agency Name and Address The University of Michigan Sustainable Worldwide Transportation				13. Type of Report and Period Covered	
				14. Sponsoring Agency Code	
15. Supplementary Notes Information about Sustainable Worldwide Transportation is available at http://www.umich.edu/~umtriswt .					
16. Abstract <p>This study performed a preliminary analysis of the cumulative on-road safety record of self-driving vehicles for three of the ten companies that are currently approved for such vehicle testing in California (Google, Delphi, and Audi). The analysis compared the safety record of these vehicles with the safety record of all conventional vehicles in the U.S. for 2013 (adjusted for underreporting of crashes that do not involve a fatality).</p> <p>Two important caveats should be considered when interpreting the findings. First, the distance accumulated by self-driving vehicles is still relatively low (about 1.2 million miles, compared with about 3 trillion annual miles in the U.S. by conventional vehicles). Second, self-driving vehicles were thus far driven only in limited (and generally less demanding) conditions (e.g., avoiding snowy areas). Therefore, their exposure has not yet been representative of the exposure for conventional vehicles.</p> <p>With these caveats in mind, there were four main findings. First, the current best estimate is that self-driving vehicles have a higher crash rate per million miles traveled than conventional vehicles, and similar patterns were evident for injuries per million miles traveled and for injuries per crash. Second, the corresponding 95% confidence intervals overlap. Therefore, we currently cannot rule out, with a reasonable level of confidence, the possibility that the actual rates for self-driving vehicles are lower than for conventional vehicles. Third, self-driving vehicles were not at fault in any crashes they were involved in. Fourth, the overall severity of crash-related injuries involving self-driving vehicles has been lower than for conventional vehicles.</p>					
17. Key Words self-driving vehicles, autonomous vehicles, automated vehicles, crash analysis, FARS, GES, conventional vehicles				18. Distribution Statement Unlimited	
19. Security Classification (of this report) None		20. Security Classification (of this page) None		21. No. of Pages 22	22. Price