

Spatial variation in teens' crash rate reduction following the implementation of a graduated driver licensing program in Michigan

Accident Analysis & Prevention 2019 April; Volume 125. Pages 20-28.

Publication Brief

Purpose In this study, the authors investigated the reduction in teen crash rate following the implementation of a graduated driver licensing (GDL) program in Michigan, and how that reduction varied as a function of crash location. Through this work, researchers aimed to identify differential impacts of GDL laws in regards to different types of locations (e.g., alcohol outlets, movie theaters, schools, etc.) to inform future policy and implementation improvements for GDL programs.

Background Teen drivers are a high-risk driving group, contributing to 12.2% of all motor vehicle crashes and 8% of fatal crashes. Implemented in Michigan in 1997, GDL has been proven to be effective in reducing teen crashes, but little is known about whether the GDL program corresponds to a greater crash rate reduction in certain locales.

Methods The study was based on crash data and attributes collected through Michigan State Police reports, the 1990 and 2000 U.S. census data, and locational data for businesses and schools. Spatial regression identified locational correlates of teen crash, and whether crash reduction varied as a function of location in the pre/post GDL crash rate difference.

Findings Consistent with prior literature, findings showed a reduction in teen injury crash rate following GDL implementation. The baseline crash reduction varied as a function of location, with the largest effect post-GDL in areas near increased alcohol outlet concentrations, a significant effect was found after dark near higher concentrations of movie theaters, and the smallest effect was found near areas with more schools.

Discussion While the Michigan graduated driver licensing (GDL) program implementation corresponded to a reduction in injury crash risk among teens overall, the magnitude of that reduction varied by location. Reductions were more pronounced in areas of higher population, and less pronounced in areas near higher concentrations of schools. Maximizing the already substantial gains from GDL programs requires understanding why it is more effective in certain locales. Strategies that incorporate that understanding may improve driver training. This indicates a need for GDL policy review and enhanced programs, driver training, practice scenarios, and parent involvement to address place-based variations in driving frequency, risk, and demographic or social characteristics.

Citation Goldstick J. E., Carter P. M., Almani F., Brines S. J., & Shope J. T. (2019). Spatial variation in teens' crash rate reduction following the implementation of a graduated driver licensing program in Michigan. *Accident Analysis & Prevention*, 125, 20-28.