10 RISK FACTORS FOR MOTOR VEHICLE CRASHES INVOLVING CIVILIAN DRIVERS AND EMERGENCY VEHICLES IN USE

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Background Transportation-related events are the leading cause of death among emergency medical services personnel. Previous research has focused, primarily, on factors associated with emergency vehicle (EV) drivers; however, factors associated with civilian drivers involved in EV-related crashes have not been examined adequately.

Aims/Objectives/Purpose Identify internal (driver-specific) and external (environmental-related) risk factors associated with civilian drivers involved in crashes with an EV in use.

Methods Using 2002–2010 data from the US National Automotive Sampling System, multivariate logistic regression enabled identification of potential risk factors, based on internal and external

exposures of interest for EV- versus non-EV civilian-related crashes. Potential confounders were selected using directed acyclic graphs.

Results/Outcomes Respective ORs and 95% CIs for internal factors identified increased risks for civilian drivers who were distracted (1.9, 1.6 to 2.3) and under the influence of substances (4.6, 1.9 to 11.3). For external factors, risks increased for drivers when: their vision was obscured by buildings, billboards or other structures (36.4, 18.4 to 71.9), parked vehicles (3.4, 2.2 to 5.2), and trees, crops and vegetation (4.5, 1.7 to 12.0); traffic control devices were controlled by persons (eg, flagmen) (6.7, 3.1 to 14.2), and automatic traffic signals (2.5, 2.1 to 2.9); driving straight through an intersection (3.1, 1.3 to 7.0), and one that contains four or more points (2.1, 1.3 to 3.4). Consequences for civilian drivers in EV- versus non-EV crashes included increased risks for sustaining an injury (1.8, 1.4 to 2.3) and receiving violations for failing to yield the right-of-way (3.0, 2.5 to 3.6).

Significance/Contribution to the Field Results suggest areas in which interventions can be targeted to reduce motor vehicle crashes with emergency vehicles.