

Vehicle-related crash deaths: A continuing challenge

Howard R. Champion, FRCS (Edin, Eng), FACS
and Louis Vincent Lombardo, BS, LLC, Annapolis, Maryland

In 2016, we published data, which showed decrease in vehicle-related deaths between 1978 and 2013, possibly related to introduction of trauma centers and an increased focus on trauma systems.¹ There have been over 1.5 million vehicle-related fatalities since the early 1980s, with a consistent approximate 50% prehospital (Fig. 1 and Fig. 2).

The most recent data show that the death rates remains unabated over several years and that the percentage of prehospital deaths is identical in the face of increasing traffic deaths (Table 1).

The source of these data is The Fatality Analysis Reporting System (FARS) managed by the Department of Transportation National Highway Traffic Safety Administration, which is arguably the most complete injury database for vehicle-related deaths in the world. It is close to census of US vehicle-related crash deaths and is meticulously maintained.

Good and comprehensive data on the cause of death prehospital are rare and are required to focus strategies and tactics on reducing scene, en route triage, and early in hospital mortality.

Persons killed in motor vehicle traffic crashes provide a useful metric of emergency trauma care and traffic safety. The Fatality Analysis Reporting System provides a close to census data set of both prehospital and in hospital vehicle-related deaths by state and nationally, allowing for valid comparisons to be made between states, regions, nationally, and over time. As expected, the number of patients who died at the scene or en route (prehospital) varies from state to state based on geography and access to care. There are clearly targeted interventions, which require some details of the anatomic pathology and physiology associated with these early deaths. In the latter case, the database has some shortcomings, but some individual states have excellent capabilities for such studies.

The past two decades of warfare have advanced the capabilities of prehospital care to include technologies, such as resuscitative endovascular balloon occlusion of the aorta,² which might be of value in the prehospital setting when appropriate training and performance metrics are developed. Meanwhile, it should be noted that the challenges of reducing prehospital deaths both in numbers and as a percentage of early trauma deaths related to automobile crashes remains unassailed in the past several years.³

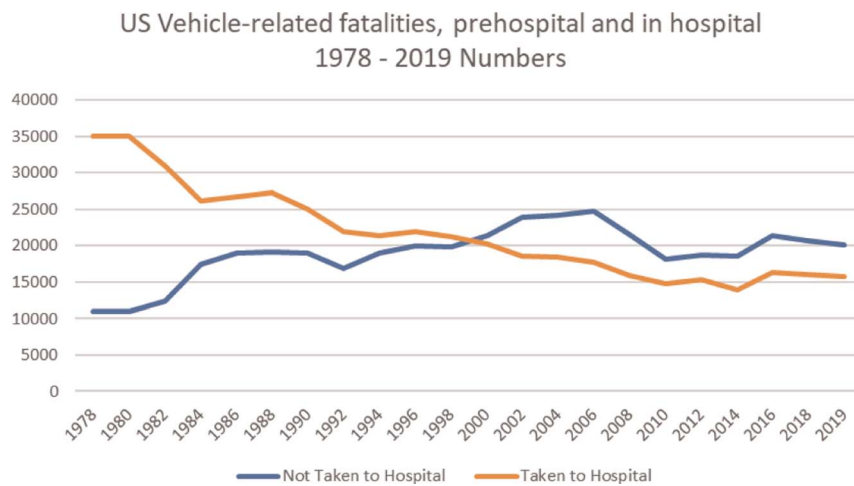


Figure 1. US vehicle-related fatalities, prehospital and in hospital 1978–2019 numbers.

Submitted: March 3, 2021, Revised: June 21, 2021, Accepted: June 24, 2021, Published online: July 6, 2021.

From the Uniformed Services University of the Health Sciences (H.R.C.); LLC (L.V.L.), Bethesda, MD.

Address for reprints: Howard R. Champion, MD, FRCS (Edin, Eng), FACS, 954 Melvin Rd, Annapolis, MD 21403; email: hrchampion@aol.com; Louis V. Lombardo, BS, LLC,

#203, 4523 Sangamore Rd, Bethesda, MD 20816; email: louis.v.lombardo@gmail.com.

DOI: 10.1097/TA.0000000000003332

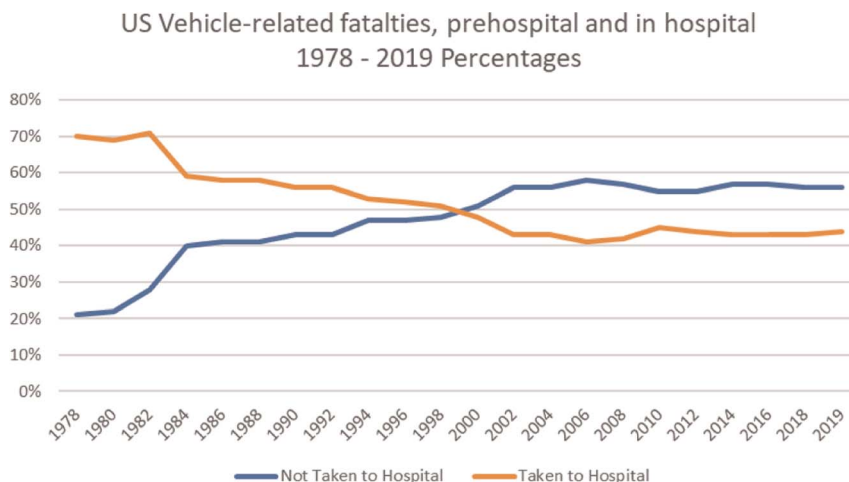


Figure 2. US vehicle-related fatalities, prehospital and in hospital 1978–2019 percentages.

TABLE 1. Difference Between National Crash Fatalities 2013 and 2019

	Total Deaths	% Prehospital Deaths
2013	32,719	56%
2019	36,096	56%

AUTHORSHIP

H.R.C. wrote this article and L.L. read, reviewed and approved the work.

DISCLOSURES

Conflict of Interest: The authors declare no conflicts of interest.

REFERENCES

1. Champion HR, Lombardo LV, Wade CE, Kalin EJ, Lawnick MM, Holcomb JB. Time and place of death from automobile crashes: research end-point implications. *J Trauma Acute Care Surg.* 2016;81(3):420–426.
2. Ordonez CA, Rodriguez F, Parra M, et al. Resuscitative endovascular balloon of the aorta is feasible in penetrating chest trauma with major hemorrhage: Proposal of a new institutional deployment algorithm. *J Trauma Acute Care Surg.* 2020;89(2):311–319.
3. Candefjord S, Muhammad AS, Bangalore P, Buendia R. On scene injury severity prediction (OSISP) machine learning algorithms for motor vehicle crash occupants in US. *J Transport & Health.* 2021;22:101124. Available at: <https://doi.org/10.1016/j.jth.2021.101124>. Accessed July 29, 2021.