

Linking Crash and Post-Crash Data to Improve Injury Estimates and Explore Emergency Medical Service Response

This project sought to build on prior efforts to link California crash and emergency medical services (EMS) data in order to 1) provide a more accurate picture of traffic injuries by utilizing medical data to fill in where police crash reports may not capture a crash or may have limited information, and 2) to get a more accurate picture of EMS (or pre-hospital) response times in relation to crash location and other factors.

The study utilized the California Emergency Medical Services Information System (CEMSIS), a secure, consolidated data system that collects information about emergency medical service calls, patients treated at hospitals, and emergency medical service providers (CEMSIS, n.d.). These data included the zip code in which the incident occurred, the time at which an EMS unit was notified of the incident, the time at which the EMS unit was en route to the patient, the arrival and departure times to and from the scene, and the time when the EMS unit reached their hospital or trauma center destination. Demographic variables, such as patient gender and ethnicity, were requested but were not released due to privacy concerns. Only records that listed the cause of injury as a motor vehicle traffic accident were included.

The findings from the analysis showed substantial differences in response, scene, and transport times between collisions that occurred in urban and rural zip codes. Average transport time was more than twice as long in rural zip codes as in urban zip codes for all study years. There were also substantial differences in the response times, both in urban and rural areas, for crashes occurring on tribal reservation land in relation to other parts of the state (see figure).

Crash Location	State	Tribal
Urban	14.3	19.6
Rural	50.1	61.4

Average Time (in Minutes) from Crashes to Nearest Trauma Center in California.

Although the present study cannot analyze the effect of longer prehospital times on patient outcome, other research has found that longer prehospital times negatively impacted patient health.

This study resulted in several recommendations, aimed to support the state in improving EMS response and crash victim outcomes. These included recommendations for developing measures to evaluate patient offload times as an indicator of EMS performance, improving CEMSIS data coverage and quality, and improving the data records such that EMS data can be more readily linked to police datasets. As data system improvements are made, additional research can be conducted to account for more variables that may influence the relationship between prehospital time and patient outcome.

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