

### Δ Socioeconomic Status and Trauma Center Care: An Analysis of a Custom NTDB Dataset

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**Purpose:** While trauma centers (TCs) confer a mortality benefit for patients with traumatic injury, the degree to which socioeconomic status (SES) modifies this relationship is unknown. We hypothesized that subjects with higher SES would experience a greater mortality benefit of being treated at a TC compared to subjects with lower SES.

**Methods:** A custom dataset from the National Trauma Data Bank (NTDB) was obtained for years 2008-2012 that linked the subject's home zip code to the median household income (MHI) reported by the US Census for that corresponding zip code, which was used as a marker of SES. The MHI was broken into deciles. Subjects between 18-65 years of age with ISS >15 were included. Only subjects with blunt or penetrating injuries were included while subjects with burns were excluded. Subjects who were transferred into or out of a facility were also excluded. TCs were defined as Level I or II TCs while non-trauma centers (NTCs) were defined as Level III, IV, or lower. Statistical analyses were performed to evaluate how MHI modified the relationship between mortality following trauma using stratified univariate analyses as well as multivariate logistic regression techniques using propensity score analysis. The propensity score controlled for a subject's probability of being triaged to a TC based on age, gender, injury severity, need for mechanical ventilation, total Glasgow Coma Score, systolic blood pressure <90 mmHg, insurance status, race/ethnicity, and blunt/penetrating injury. Inverse probability weighting using the propensity score was used to adjust for confounding, while an interaction term between TC and MHI was included to evaluate potential effect modification between the variables. A  $P < 0.20$  of the interaction term was considered significant.

**Results:** 227,245 subjects were included in the univariate analysis. Stratifying subjects by MHI revealed that subjects from lower SES were more likely to be younger, male, have Medicare/Medicaid, have a systolic blood pressure <90 mmHg, require a ventilator, experience a penetrating injury, and have a Glasgow Coma Score <8. Subjects from a lower MHI were also more likely to be treated at an NTC and die. The unadjusted analysis revealed that patients treated at a TC had 0.90 (95% CI 0.89-0.92) times the odds of mortality compared to NTC. There was a linear trend of a decreasing probability of death with an increasing MHI (Figure, left). While this trend persisted in the multivariate, propensity score model, there was no difference observed in mortality between TC and NTC (Figure, right).

**Conclusion:** Subjects from lower SES experience higher mortality following trauma compared to subjects from higher SES. While the unadjusted analysis suggested subjects from lower SES experienced a greater mortality benefit of TC compared to NTC, this association did not persist in multivariate models, suggesting that the association between mortality and TC is not modified by SES in those models. Subjects from low SES have higher mortality after trauma compared to those from high SES. Univariate analysis suggests low SES

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subjects experience a greater mortality benefit of TC care. The types of injuries, level of care, and outcomes subjects experienced was associated with SES.

