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# A Statewide Evaluation of Potentially Under-triaged Trauma Patients in the Prehospital Setting


*AUTHORS*

**Daisy Banta[1], Jessica Rosner[1], Cam Crittenden[1], Remle P. Crowe[2], J. Brent Myers[2], Antonio R. Fernandez[2]**

**1.Office of Emergency Medical Services, Virginia Department of Health, Glen Allen, Virginia, USA 2. ESO, Austin, Texas**


## INTRODUCTION

**Over 4.4 million people die from trauma annually, comprising 8% of deaths globally (WHO, 2019).**

**Emergency medical services (EMS) clinicians often initiate trauma care and make critical choices about patient transport based on prehospital triage protocols.**

**Barriers to appropriate field triage exist, with under-triage associated with increased patient mortality (Morris et al., 2021).**

### OBJECTIVE

**The objective of this study was to describe under-triage of prehospital trauma patients in Virginia.**

## METHODS

### STUDY DESIGN

**This was a retrospective observational study.**

### POPULATION & DATA SOURCE

**All EMS events occurring between January 1, 2021 and June 30, 2023 that were submitted to the Virginia EMS State Data Repository, provided by ESO (Austin, TX), were evaluated.**

**Inclusion criteria were:**

1) **9-1-1 response,**
2) **successful passage of state data validation,**
3) **a disposition consistent with patient treatment and transport,**
4) **a provider's primary impression consistent with a traumatic injury, and**
5) **vital signs and/or trauma triage criteria consistent with a step 1, 2, or 3 injury per the Virginia Field Trauma Triage Decision Scheme, adapted from the Centers for Disease Control and Prevention's (CDC) Guidelines for Field Triage of Injured Patients step classifications (Sasser et al., 2012)**

**Mass casualty incidents were excluded.**

### MEASURES

**Trauma patients were categorized as potentially under-triaged based on destination hospital trauma level and the Virginia Field Trauma Triage Decision Scheme. Per the Virginia Field Trauma Triage Decision Scheme, potentially under-triaged status is defined as a Step 1 or 2 patient transported to a Level III or non-trauma center or a Step 3 patient transported to a non-trauma center.**

**Triage status was compared by incident land usage, the CDC Social Vulnerability Index (SVI), body region and mechanism of injury, level of care of the responding unit, and patient demographics.**

### ANALYSIS

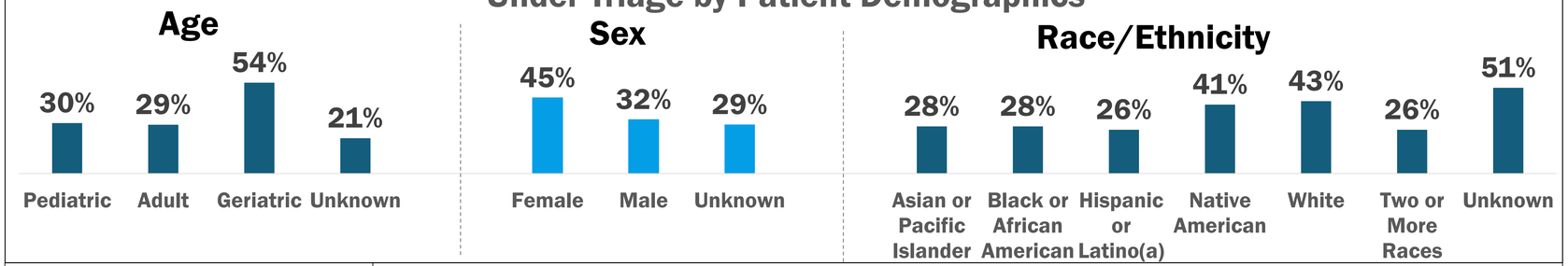
**Descriptive statistics, univariate odds ratios (ORs), 95% confidence intervals (95% CI), chi-square tests of independence, and Wilcoxon Rank Sum tests were calculated**

## RESULTS

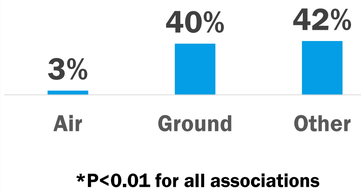
**There were 26,600 9-1-1 responses that met all inclusion criteria and no exclusion criteria during the study period. Of those, a total of 9,845 (37.0%) potentially under-triaged trauma patients were identified.**

### Under-Triage by Patient Demographics*

***P<0.01 for all associations**

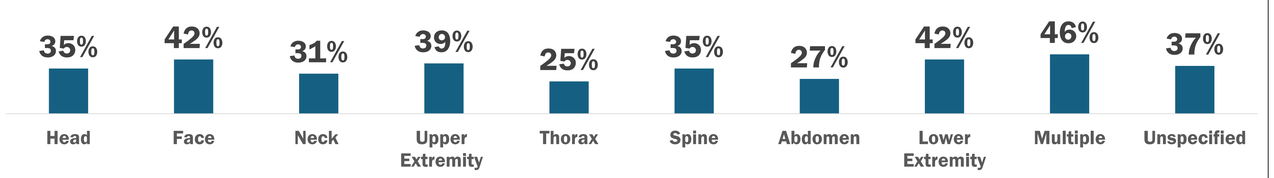



### Under-Triage by Transport Type*



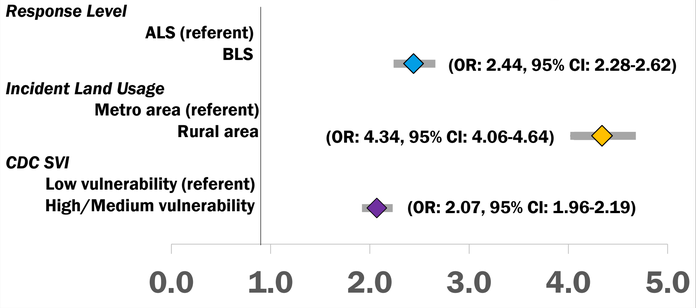

***P<0.01 for all associations**

### Under-Triage by Body Region

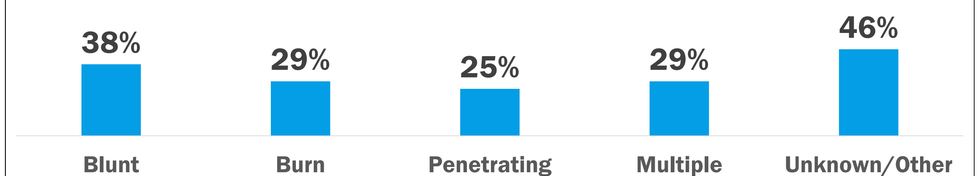



***P<0.01 for all associations**

### Odds Ratios for Under-Triage




### Under-Triage by Mechanism of Injury*




***P<0.01 for all associations**

## CONCLUSION

**These analyses can inform resource distribution and education to improve trauma triage decision-making in the Virginia prehospital setting, particularly as a point of comparison as EMS agencies transition from the CDC's 2011 Guidelines for Field Triage of Injured Patients to the updated 2021 American College of Surgeons National Guidelines for the Field Triage of Injured Patients. Additional analyses should be conducted to further elucidate the relationships and patterns between risk factors and triage status. Future studies should link these data to hospital records to better evaluate long-term patient outcomes.**


Reference

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