



## 2024 NEW YORK REGIONAL SOCIETY OF PLASTIC SURGEONS ANNUAL RESIDENTS' NIGHT RESEARCH COMPETITION

MONDAY, MARCH 11, 2024  
NEW YORK ACADEMY OF MEDICINE

**ABSTRACT SUBMISSION TITLE:** *B3 - The Burden of Road Traffic Accidents on Facial Fractures:*

*National Trends, Injury Patterns, and Disparities*

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**Abstract Text:**

**PURPOSE:**

Road traffic accidents (RTAs) are the second leading cause of unintentional injury deaths in the United States<sup>1,2</sup> and represent a common cause of facial fractures.<sup>3</sup> The present study utilized a large, national database to investigate national trends, injury patterns and disparities in facial fractures secondary to RTAs.

**METHODS:**

A cross-sectional study was conducted of patients with primary facial fractures secondary to RTAs in 2019 using the Healthcare Cost and Utilization Project (HCUP) National Inpatient Sample (NIS). All patients with a primary diagnosis of a facial fracture and an ICD-10-CM External Cause of Morbidity code associated with a road traffic accident were included in the study. Demographic information, hospital characteristics, and costs were extracted from the database.

## RESULTS:

Of all primary facial fractures in the NIS database (n = 40,225), 16% (n = 6230) were associated with RTAs. Of these facial fractures, 41% (n = 2525) were isolated while 59% (n = 3705) occurred in combination with other facial fractures. Traffic-related facial fractures most affected car occupants (45%), followed by motorcycle riders (12%), pedestrians (10%), and bicycle riders (9%). The most common isolated fracture types were frontal (24%), nasal (23%), and mandibular fractures (16%). Mandibular (26%), zygomatic (13%), and orbital fractures (13%) were most likely to occur with other facial fractures. Compared to the national population, patients with primary facial fractures secondary to RTAs were more frequently male (72% vs 49%,  $P < 0.01$ ), black (18% vs 12%,  $P < 0.01$ ), enrolled in Medicaid (24% vs 17%,  $P < 0.01$ ), and had median household income in the bottom 25th percentile quartile (37%). The average admission charges across all traffic accident types totaled \$121,251, and the highest cost was associated with pedestrian traffic accidents (\$176,044,  $P < 0.01$ ). Most patients were routinely discharged (78%), though pedestrians had the highest mortality rate during their hospital admission (4.3%). Pedestrians experienced the highest percentage of frontal fractures of all groups (38%) (Figure 1). Frontal fractures were estimated to have incurred \$156 million in cumulative hospital charges during the study period, representing the highest financial burden of all isolated fracture types.

## CONCLUSIONS:

Traffic-related facial fractures are preventable injuries that pose a substantial health and economic burden. Young, male, black, and financially disadvantaged groups are disproportionately affected, highlighting potential disparities in traffic infrastructure or road safety policy in these communities. Pedestrians are associated with the highest cost and mortality rate, potentially due to their relative vulnerability on roads and high proportion of frontal fractures. The present findings provide valuable insights for plastic surgeons, informing resource allocation and advocacy for their facial fracture patients.

## References

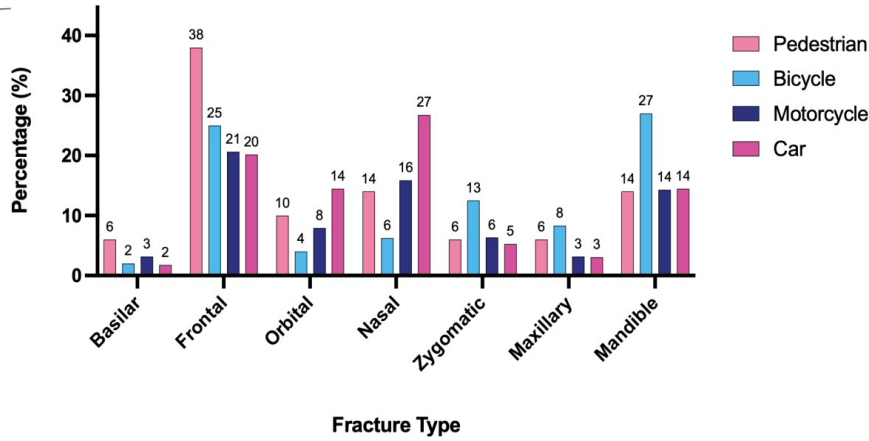
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*Figures for reference (not included in abstract per PSTM guidelines)*

Figure 1: Facial fracture rates by type of road traffic accident. Facial fracture types with less than 5% incidence across all groups were excluded from the graph.



Facial Fractures by Transportation Type



Bars 2nd option - Fracture Type by RTA Type (%)

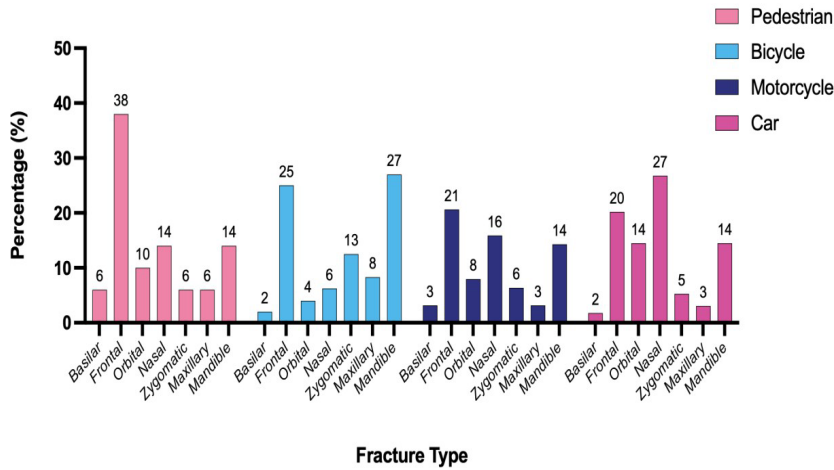


Figure 2: Mean total hospital charges in isolated vs non-isolated RTA-related facial fractures, by fracture type. Sample size is reported above each bar.

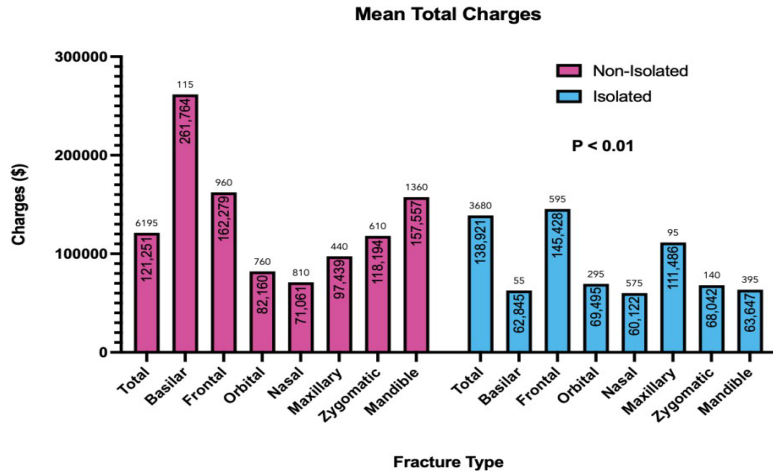


Figure 3: Cumulative total charges in isolated vs non-isolated RTA-related facial fractures (mean total charge multiplied by sample size).

