

# **A Comparison of Rural Versus Urban Traumatic Injury Mortality in Nova Scotia 2011-2020.**

*Allyson Evans, Nelofar Kureshi, Mete Erdogan, Reba McIver, Robert Green, Tyler Johnston*

## **Introduction**

Traumatic injury mortality rates have consistently been reported as higher in rural versus urban areas. The reasons for this are complex and not fully understood, with some jurisdictions reporting no difference in traumatic injury mortality rates between locales. It is incumbent on trauma systems to examine mortality differences between rural and urban areas as an initial step toward addressing this disparity.

## **Methods**

This retrospective cohort study compares mortality rates among adult patients who sustained blunt or penetrating traumas in rural versus urban Nova Scotia between January 1, 2011 and December 31, 2020. Overall mortality rates were compared grossly and adjusted via multivariate logistic regression for confounders (age, sex, Injury Severity Score (ISS), comorbidities). Comparisons of mortality rates were further stratified by injury mechanism.

## **Results**

The study population included 6794 patients (87.9% blunt trauma, 12.1% penetrating trauma), with mean age  $52.7 \pm 22.7$  years. The majority of patients were male (70.0%; 4753/6794). Rural patients were older than urban patients ( $54.4 \pm 22.4$  yrs vs.  $50.3 \pm 22.8$  yrs;  $p < 0.001$ ) and had higher mean ISS ( $20.1 \pm 14.3$  vs.  $15.4 \pm 13.1$ ;  $p < 0.001$ ). Crude mortality was higher among rural trauma patients (29.3% vs. 20.6%;  $p < 0.001$ ) and a greater proportion of rural deaths occurred at the scene (17.6% vs. 9.9%;  $p < 0.001$ ). In patients with blunt trauma, the crude mortality rate was higher in rural (25.9%) versus urban patients (18.7%;  $p < 0.001$ ). Similarly, crude mortality rates from penetrating trauma were higher in rural (61.1%) versus urban traumas (30.7%;  $p < 0.001$ ). After controlling for confounders, there was no significant association between rural trauma and adjusted mortality (OR 0.84, 95%CI 0.68-1.03,  $p = 0.10$ ). Adjusted mortality also did not differ between locales for patients experiencing blunt or penetrating trauma.

## **Conclusions**

Crude mortality rates were higher among rural traumas in Nova Scotia for overall trauma, and blunt/penetrating mechanisms. Nevertheless, there was no difference after adjusting for known confounders. Higher ISS scores and rates of scene death among rural traumas suggest injury prevention initiatives and efforts to decrease discovery times are possible targets for future research and mortality reduction.