

## (Abstract)

Alcohol use is a risk factor for severe injury in pedestrians struck by motor vehicles. Our objective was to investigate alcohol use by bicyclists and its effects on riding behaviors, medical management, injury severity, and mortality within a congested urban setting. A hospital-based, observational study of injured bicyclists presenting to a Level I regional trauma center in New York City was conducted. Data were collected prospectively from 2012 to 2014 by interviewing all bicyclists presenting within 24 h of injury and supplemented with medical record review. Variables included demographic characteristics, scene-related data, Glasgow Coma Scale (GCS), computed tomography (CT) scans, and clinical outcomes. Alcohol use at the time of injury was determined by history or blood alcohol level (BAL)  $>0.01$  g/dL. Of 689 bicyclists, 585 (84.9%) were male with a mean age of 35.2. One hundred four (15.1%) bicyclists had consumed alcohol prior to injury.

Alcohol use was inversely associated with helmet use (16.5% [9.9e25.1] vs. 43.2% [39.1e47.3]). Alcohol-consuming bicyclists were more likely to fall from their bicycles (42.0% [32.2e52.3] vs. 24.2% [20.8e27.9]) and less likely to be injured by collision with a motor vehicle (52.0% [41.7e62.1] vs. 67.5% [63.5e71.3]). 80% of alcohol-consuming bicyclists underwent CT imaging at presentation compared with 51.5% of non-users. Mortality was higher among injured bicyclists who had used alcohol (2.9% [0.6e8.2] vs. 0.0% [0.0e0.6]). Adjusted multivariable analysis revealed that alcohol use was independently associated with more severe injury (Adjusted Odds Ratio 2.27,  $p < 0.001$ , 95% Confidence Interval 1.40e3.68).

Within a dense urban environment, alcohol use by bicyclists was associated with more severe injury, greater hospital resource use, and higher mortality. As bicycling continues to increase in popularity internationally, it is important to heighten awareness about the risks and consequences of bicycling while under the influence of alcohol.