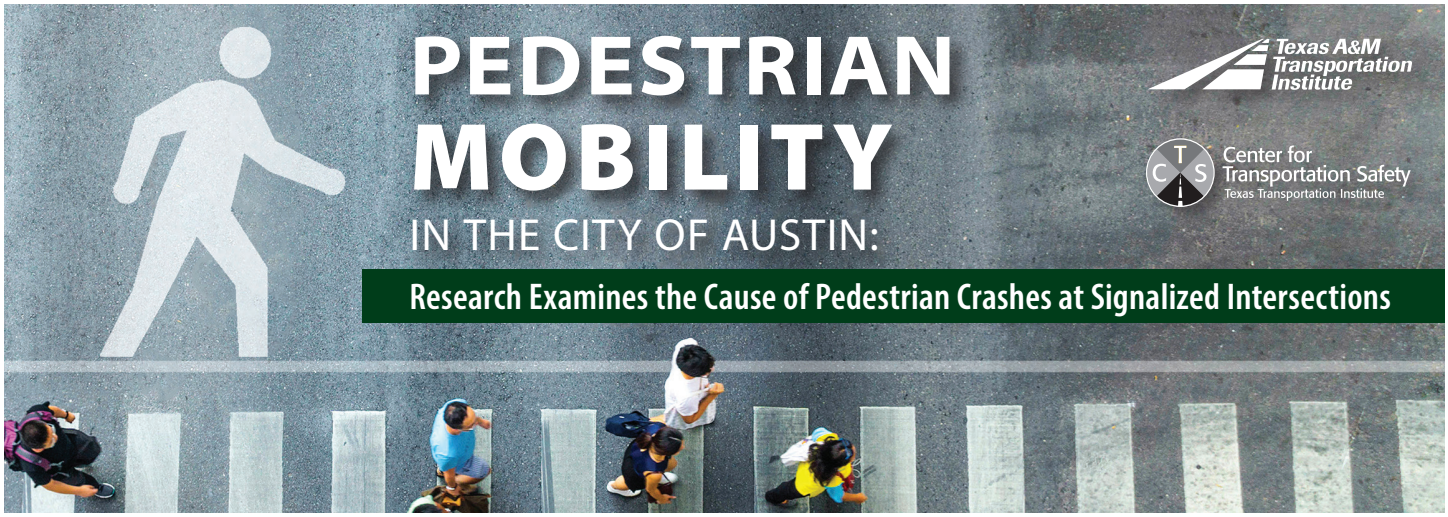


PEDESTRIAN MOBILITY

IN THE CITY OF AUSTIN:

Research Examines the Cause of Pedestrian Crashes at Signalized Intersections

Texas A&M Transportation Institute

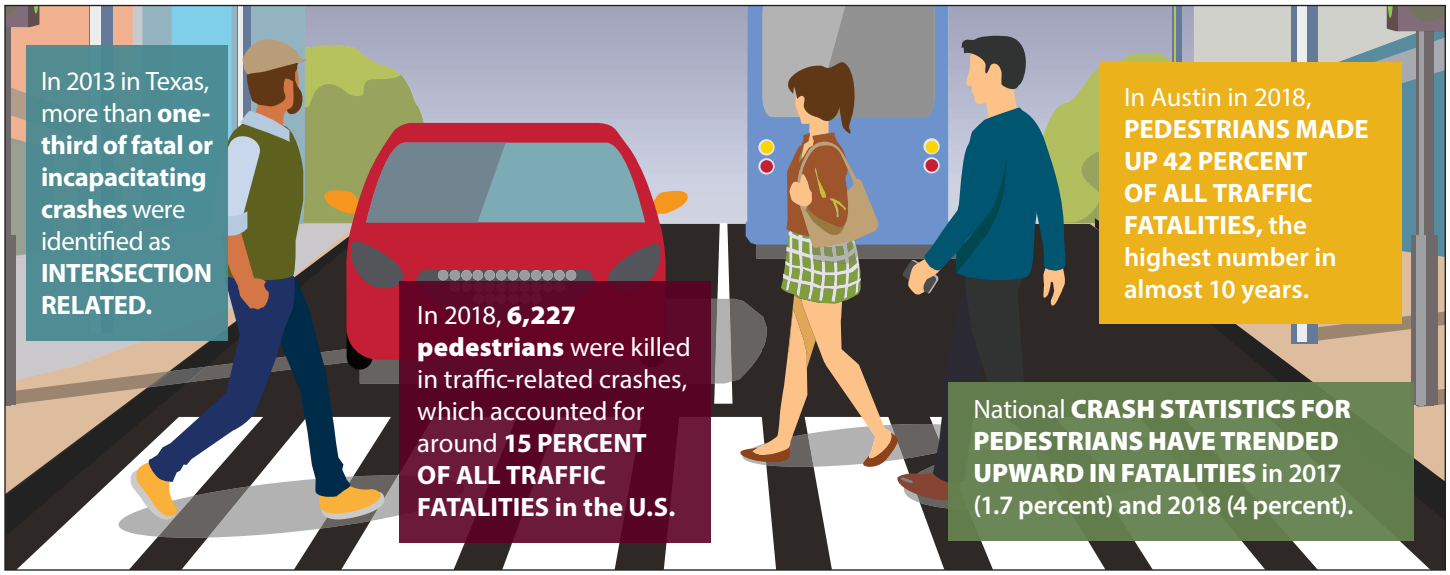
Center for Transportation Safety
Texas Transportation Institute

Though nonmotorized activities, such as walking and bicycling, account for a small percentage of transportation in the United States, they account for a disproportionate share of the total fatal and serious injury crashes.

Many larger cities in the United States, such as Austin, endeavor to develop and implement effective strategies to reduce pedestrian crashes, preferably to zero.

To adopt an overall holistic approach to traffic safety, a better understanding of the causes and consequences of pedestrian crashes is essential. Texas A&M Transportation Institute (TTI) researchers, through funding from TTI's Center for Transportation Safety, sought to provide the city with answers on how to better understand the causes of pedestrian crashes at signalized intersections in Austin.

Analyzing crashes at intersections is essential to obtaining deeper insights into the factors affecting safety conditions in order to facilitate sound policy decisions and project prioritization.



What We Did

Pedestrian crashes may occur anywhere along a roadway, for example, a driveway or midblock location. Since most crashes are observed near intersections, planners often focus on intersection-related crashes.

The research team performed the study in two parts:

- The team used available pedestrian count data from the City of Austin to develop a direct demand model for estimating pedestrian volume/exposure at the intersection (signalized) level.
- The study incorporated the exposure information to develop a Multivariate Bayesian Spatial model for jointly analyzing pedestrian crash frequency at 409 signalized intersections for three severity levels: fatal crash, incapacitating injury or suspected serious injury crash, and non-incapacitating injury crash.

DEMAND MODEL

Determinants of Pedestrian Volume are:

- **Number of COMMERCIAL ESTABLISHMENTS** (0.1 miles)
- **Paved and unpaved TRAIL LENGTH** (0.5 miles)
- **Total population UNDER 5 YEARS** (0.5 miles)
- **Population WORK AT HOME** (0.1 miles)
- **Number of TRANSIT STOPS** (1.0 miles)

The multivariate model performed better than the univariate model and could distinguish the difference in influence of multiple explanatory variables across the crash types.

CRASH MODEL

FATAL CRASH decreases with

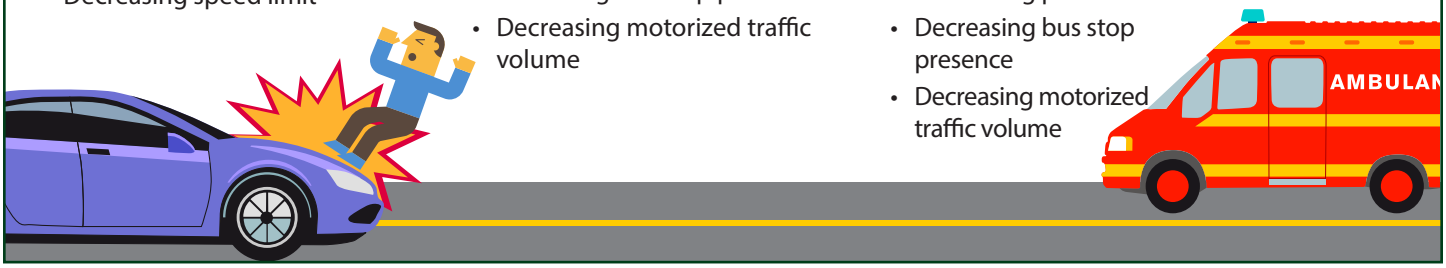
- Increasing pedestrian volume
- Decreasing speed limit

SUSPECTED SERIOUS INJURY CRASH decreases with

- Increasing bus stop presence
- Decreasing motorized traffic volume

NON-INCAPACITATING INJURY CRASH decreases with

- Decreasing pedestrian volume
- Decreasing bus stop presence
- Decreasing motorized traffic volume



What Can Be Done?

Evaluate High-Speed Roads

- Road safety audits
- Criteria to promote safe design speeds
- Educational campaigns

Enhance Safe Cohabitation of Motorists and Pedestrians

- Road diet
- Bike lanes to create buffer between sidewalk and traffic lanes

Engineer Safety at Bus Stops

- Increased pedestrian crossing time
- High-visibility crosswalk, refuge island
- Adequate lighting

Contact Information

Ipek Nese Sener, Ph.D.
Associate Research Scientist
Texas A&M Transportation Institute
Texas A&M University System
i-sener@tti.tamu.edu

Silvy Sirajum Munira
Graduate Research Assistant
Texas A&M Transportation Institute
Texas A&M University System
munira_silvy@tamu.edu