

## Center for Safety Equity in Transportation

*If you have a right to get there, you have a right to get there safely.*

May 2019

### CSET Research Showcase

#### Development of a Regional Multi-Source Database for Safety Data Management and Analysis in RITI communities in Washington State

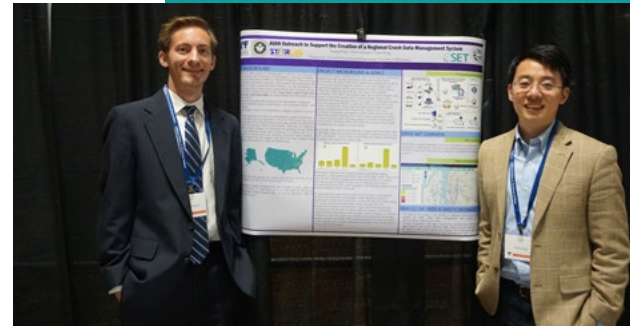
Rural, Isolated, Tribal, or Indigenous (RITI) communities across the United States are disadvantaged from a transportation safety perspective. RITI communities often do not have the capability and resources to solve roadway safety problems. Several challenges are encountered in addressing transportation safety issues in RITI communities, including: (1) Crashes are often randomly distributed on local and rural roads in RITI areas; (2) Strategies to address safety issues are diverse for different RITI communities and draw from several safety areas. For example, the Fatality Analysis Reporting System (FARS) data from 2002 through 2011 shows the traffic fatality rate for Native Americans is 3.9 times higher than for non-Native Americans in Washington State. Two-thirds of Native American pedestrian fatalities in Washington occurred in rural areas. Many communities have few or no sidewalks, marked crossings or street lights. Chronic underfunding of traffic safety initiatives and related programs plays a significant role in these disproportionately disadvantaged RITI areas. As a result, there is a critical need to realize equitably-augmented safety solutions that address the needs of the underserved RITI communities.

To address this gap, this project developed a regional multi-source database system for traffic safety data management and analysis of RITI communities in Washington State. Existing crash data sources in RITI communities in Washington were identified and documented. Crash data on rural routes was extracted from the raw data from Washington State Department of Transportation and integrated into the multi-source database system. The data included traffic flow characteristics, crash attributes and contribution factors, crash-related trauma data and medical records, weather conditions, and other information. The Colville tribe also provided the crash data in their tribal communities under a confidentiality agreement.

A multi-source database fusion and integration system architecture was designed, using Microsoft SQL Server 2012. The research team conducted a data quality control process to guarantee timeliness, accuracy, completeness and consistency in the data. A six-step data quality control method was employed to clean the data by wiping out the outliers from spatial and temporal aspects. The tribal continued on page 2

### Announcements

CSET has positions open for post-doctoral researchers, graduate and undergraduate students interested in RITI transportation equity and safety research. Please contact us at [cset.utc@alaska.edu](mailto:cset.utc@alaska.edu).



Chris Gottstacker and Ziqiang Zeng presenting the database development work at the Affiliated Tribes of Northwest Indians Conferences in 2018



Ziqiang Zeng, Theresa Sheldon of Tulalip, Chris Gottstacker, and Kris Hendrickson at the Affiliated Tribes of Northwest Indians Conferences in 2018.

CSET has been funded through the 2016 University Transportation Center Program by the US Department of Transportation as part of the FAST Act at approximately \$1.4 million in each of the next five years.

# Pedestrian Safety

There are multiple modes of transportation but at one time or another everyone is a pedestrian. On average, a pedestrian is killed every 88 minutes in traffic crashes. Basic pedestrian safety concepts apply to everyone:

- 1) Be predictable. Follow the rules of the road.
- 2) Walk on sidewalks whenever they are available. If there is no sidewalk, walk facing traffic and as far from traffic as possible.
- 3) Keep alert at all times; don't be distracted by electronic devices that take your eyes (and ears) off the road.
- 4) Never assume a driver sees you. Make eye contact with drivers to make sure you are seen.
- 5) Be visible at all times. Wear bright clothing during the day, and wear reflective materials at night.
- 6) Avoid alcohol and drugs when walking; they impair your abilities and your judgement.



Pedestrians in Unalakleet, Alaska walk in the shoulder of a road as no sidewalk or otherwise marked off area for pedestrians exists.

In 2017, 18% of total traffic fatalities in Alaska were pedestrians.

Pedestrians who died in single-vehicle crashes were most likely to be struck by the front of the vehicles.

National Center for Statistics and Analysis. (2019, March). Pedestrians: 2017 data. (Traffic Safety Facts. Report No. DOT HS 812 681). Washington, DC: National Highway Traffic Safety Administration.

## Database System (continued from page 1)

crash data were made accessible to authorized users so they can download the datasets by using password, while the WSDOT crash data was made available to the public. A safety analysis module was developed for visualizing the data in the regional multi-source database system. A safety performance index and a potential safety improvement index were also developed. By combining the two indices, one can easily identify crash hotspots and the key influencing factors to consider in an improvement package. <http://cset.uaf.edu/research/year-1-projects/develop-a-regional-multi-source-database-system-for-safety-data-management-and-analysis-in-rural-communities-in-washington-state/>

## UAF Come study with us!

The University of Alaska Fairbanks is actively seeking graduate students interested in research related to rural, isolated, tribal and indigenous transportation safety. Civil engineering is preferred, but also looking for interdisciplinary and Alaskan Native students. For more information contact Nathan Belz at [npbelz@alaska.edu](mailto:npbelz@alaska.edu).



In Kiwillingok, Alaska as in many rural communities, there are no designated areas or sidewalks for pedestrians. Walkers share cleared areas with other modes of transportation.



Two pedestrians pass one another on a sidewalk in winter. Photo credit: UAF photo by JR Ancheta 2014