

Center for Safety Equity in Transportation

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

August 2021

CSET Research Showcase

Development of Grass-Roots Data Collection Methods in Rural, Isolated, and Tribal Communities

Transportation agencies rely on good data for planning, design, operations, and maintenance activities. While extensive procedures have been developed for the collection and dissemination of motor vehicle volumes and speeds, these same procedures cannot always be used to collect pedestrian data, given the comparably unpredictable behavior of pedestrians and their smaller physical size. As system-level pedestrian data is frequently limited, the ability of an agency to make an informed decision as to where needs are greatest is constrained. In rural, isolated, tribal, and indigenous (RITI) communities, these needs are further magnified as data may be entirely or almost completely non-existent. For these reasons, there is significant value to developing lower cost, lower intrusion methods of collecting pedestrian travel data, and these collection efforts are needed at the local or “grass-roots” level.

In 2014, the National Cooperative Highway Research Program (NCHRP) released Report 797, entitled “Guidebook on Pedestrian and Bicycle Volume Data Collection”, and identified fourteen different data collection methods ranging from manual in-field counts to automated and manual counts from video, and from laser scanners to

magnetometers. While NCHRP Report 797 provided a comprehensive analysis of so many different data collection options, one additional option that was not included at the time, but has become a more popular means of collecting transportation data, is the use of drones. Given its increasing popularity, this study examined the feasibility of using this newer technology to collect pedestrian data; in particular, a drone was used for a school travel mode case study.

The methods used to operate and fly a drone consisted of three steps: 1) pre-flight setup, 2) data collection, and 3) data processing. For this study, video data collected by a drone at three different elementary schools in Moscow, Idaho were analyzed. The three schools, namely McDonald Elementary, Lena Whitmore Elementary, and Russell Elementary, were selected since each had a significant student walking and bicycling population.

After obtaining the necessary permissions from both school district administration and the respective principals at each school, data collection was conducted on December 11th, 16th, and 18th, 2019. The drone video data collected at

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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.



Delineated Drone Flight Area at McDonald Elementary, one of the schools used to gather data on drone utility for collecting pedestrian data.



The DJI Mavic Pro Platinum quadcopter drone used for collecting video to analyze for pedestrian data at 3 schools in Moscow, Idaho.

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.

Summer Construction Season

Summer is road construction season around the country. The number of work zones increase and the work being done intensifies. Here are some basic tips for driving safely in road construction zones.

- 1) Expect the Unexpected in Construction Zones
- 2) Slow Down
- 3) Be Alert and Pay Attention to the Signs
- 4) Comply with the Direction Given By the Flagger
- 5) Be Patient
- 6) Turn Your Headlights On, Even if it Isn't Required by Law
- 7) Merge Into the Proper Lane Well Before a Lane Closure
- 8) Don't Tailgate
- 9) Drive Defensively
- 10) Expect Delays and Plan for Them



Grass-Roots Data (continued from page 1)

each school was subsequently processed in order to both quantify and classify student travel modes at each location.

This study concluded that while purchasing and owning a drone requires relatively minimal investment, the initial steps required to operate a drone, along with processing time required to analyze the data collected, represent up-front barriers that prevent widespread usage at this time. However, as the price point continues to decline and as local policies are established to allow for this type of device, it seems inevitable that the use of drones and the opportunities that it presents in the long-term will offer promising outcomes.



Drone controller in GPS mode during flight to collect data at an elementary school in Moscow, Idaho.

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.



Construction occurring on the shoulder at the intersection of Geist Road and Thompson Drive in Fairbanks, Alaska during August 2021. Thompson Drive is a primary access route to the University of Alaska Fairbanks.