

Center for Safety Equity in Transportation

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

August 2019

CSET Research Showcase

Development of UAF Traffic, a Traffic Counting App

Counting traffic at intersections is a valuable tool for communities to enable data-driven improvements. Yet the commercial offerings of counting hardware or software do not address the rich variety of vehicles often seen in rural Alaska. The project designed UAF Traffic, an app easily installed on an Apple iPad to enable anyone to collect traffic data. The project combined gamification and hardware design principles with audio and visual feedback to aide a user in recording data. The potentials for this include offering the software for use in rural communities as part of a potential STEM project.

If you live in a large enough community, it is not uncommon to see traffic counting recorders used on the streets. They often use pneumatic road tubes and record measurements such as speed and traffic volume. However, these devices are expensive and do not account for non-traditional traffic such as all-terrain vehicles, or snow machines, perhaps even dog sleds, commonly found at different times of the year in northern rural communities. Low-cost tablet computers enable the design of such tools combined with the power of the Internet.

The project created an application using Apple's Xcode software to create an iOS

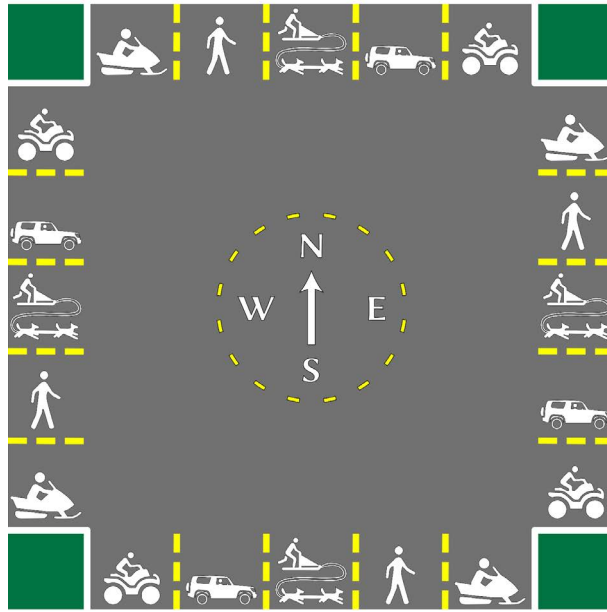
application and a prototype for a backend data management service that can process uploads of data. Otherwise, the app relies on the Comma Separated Values (CSV) format for enabling the user to process the data in their spreadsheet of choice. The user is able to choose up to five kinds of traffic types from pedestrians to ATVs or even dog sleds. They can also enter additional information like street names or geographical position. The application is able to handle two-, three-, and four- way intersections.

UAF Traffic is not a video game, but the project wanted to embrace gamification, incorporating elements from game design in non-game contexts. The user interface offers audio and visual feedback when moving vehicles towards their intended destination. Adding these components retains its professional polish while offering important feedback to the user. For example, the app flashes a turn sign graphic on and off to indicate what data point just recorded. This allows the user to undo a mistake and helps them know whether their data saved. Using these design fundamentals enable us to broaden the user base that can use the software.

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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.



Total Counted: 0

UAF Traffic Application with icons enabled for counting snowmobiles, pedestrians, dog sleds, cars and ATVs.

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.



An ATV and a truck share the road in Fort Yukon, Alaska.

Nationally, 20% of ATV riders frequently operate their vehicles on paved roads. 62% of ATV-related deaths between 1985 to 2009 resulted from on-road crashes. 77% of injuries suffered while operating an ATV happen to drivers under the age of 35. 94% of ATV users ride with more than one person despite being on vehicles only designed for one user.

Statistics from Belz, N. 2019. Safety Evaluation of Statewide Off-Highway Vehicle Use in Alaska, PacTrans Final Project Report.

https://digital.lib.washington.edu/researchworks/bitstream/handle/1773/43585/Belz_OHV_Use%20in%20Alaska%20Final_Report.pdf?sequence=1&isAllowed=y

ATV Safety

Alaska has one of the highest per capita ATV fatality rates in the nation at 13.6 deaths per million people over 3-years. Only West Virginia and Montana have higher. Idaho ranks right behind Alaska at 12.4. Washington and Hawaii have significantly lower rates at 1.4 and 0.7 respectively.

Basic ATV safety concepts save lives:

- 1) Be predictable. Follow the rules of the road.
- 2) Wear a helmet.
- 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 another 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 driving; they impair your abilities and your judgement.
- 7) Don't carry more passengers than your vehicles is designed to support.

Traffic App (continued from page 1)

The normal audience for traffic counting might be a traffic engineer or city planning personnel, but we think that it could be used to introduce high school students to civil engineering and computer science. Our vision is to see how we can incorporate this app as part of a STEM curriculum to teach rural communities how to understand or improve traffic patterns. In particular, we want to show how to use recording, analyzing, and reporting data to make informed decisions on transportation issues. The App should be available through the Apple App Store by the end of 2019.

<http://cset.uaf.edu/research/year-2-projects/enabling-data-driven-transportation-safety-improvements-in-rural-alaska/>

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.



Jonathan Metzgar, principle investigator for the UAF Traffic App.



Joseph Wolf, student programmer, works on the UAF Traffic App.