

Engineering Grad Students Win Research Paper Competition | College of Engineering

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Feb. 1, 2021 — USU graduate students Rafiur Rahman and Sailesh Acharya took first and second place, respectively, in a statewide student paper competition. The event is organized by the Utah chapter of the Institute of Transportation Engineers, known as UTite.



Graduate students Rafiur Rahman and Sailesh Acharya took first and second place in a statewide student paper competition organized by the Utah chapter of the Institute of Transportation Engineers. Illustration by @mckinsey_design

Each year, student members submit original research relating to ground transportation, independent of a thesis or dissertation. The three finalists win a cash prize and present their research to the entire chapter. This year, the first- and second-place winners took on the greenest form of ground transportation: bicycles.

Rahman, a master's student in civil and environmental engineering, analyzed bicycle crashes in Utah over the past 10 years to determine what traffic conditions and road characteristics were more dangerous for cyclists. His research is useful to cyclists and to city planners and engineers. "If there is more bicycle traffic in high-speed and high-traffic roadways, we might want to create a bike lane there," said Rahman. "Or if it's not possible to create a bike lane, we may want to create a bike network around that high-traffic street so that cyclists can feel free to use those other streets but get to the same destination in a low-stress ride."



While curves, slopes and slippery roads posed greater danger to cyclists, Rahman found that inclement weather correlated with decreased odds of injury. He also found that a vehicle hitting a bike going straight often causes greater injury than when a vehicle hits a bike while turning or maneuvering to park, likely because drivers are more aware of their surroundings in those situations.

Acharya is a second-year PhD student in civil and environmental engineering, with an emphasis in transportation engineering. He examined how poor air quality affects non-motorized travel such as biking and walking. He found that while poor air quality led to less non-motorized travel in commuting areas, the same could not be said of recreational areas. "It seems that people travel a little more than usual, even on days of poor air quality," he said. "People aren't considering the quality of air while making the decision about travel, especially during the weekends."



To mitigate the health effects of poor air quality, Acharya recommends adapting policy to the type of travel. For commuting, cities should offer increased transit services during days with poor air quality; for recreation, he recommends "hard" policy measures, such as closures of or increased fees to enter recreational areas.

Rahman and Acharya are mentored by professors Patrick Singleton and Michelle Mekker, respectively. Both are assistant professors in the Department of Civil and Environmental Engineering's transportation division.

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