PURDUE ENGINEERING

ENVIRONMENTAL AND ECOLOGICAL ENGINEERING

EEE Research Seminar
DATE: Friday, June 29, 2018
TIME: 11:00 A.M.
LOCATION: Fu Room POTR 234

Dr. Don MacKenzie, Assistant Professor
Leads Sustainable Transportation Lab
Civil & Environmental Engineering, Univ. of Washington

Environment, Economy, and Equity: Evidence on the Sustainability of Emerging Transportation Technologies

Abstract

In this talk I will draw on several studies by the University of Washington's Sustainable Transportation Lab to examine the effects of emerging transportation technologies on the "Three E's" of sustainability (environment, economy, and equity). The advent of automated vehicles promises to make car travel safer, cheaper, and more convenient, which brings the risk of increased urban sprawl, travel demand, and emissions. Automation may also make mobility services more affordable, and replacing private car ownership with services may mitigate the environmental risks and maximize the benefits of automation. At present, however, the sustainability impacts of mobility services are mixed. We have found that free-float carsharing both complements and competes with (lower emitting) transit in Seattle, and that Uber's HOP commuter service drew riders primarily from transit despite a stated goal of reducing drive-alone trips. The entry of new mobility services also raises questions about equity of access for different groups. Although sharing public transit stops with corporate shuttles has generated intense opposition in some areas, we found a negligible the effect on actual transit performance. Finally, I will share results of two studies measuring racial discrimination by Uber and Lyft drivers, one a spatial analysis of data scraped from Uber's API, and the other based on field experiments in Boston and Seattle.

Bio

Don MacKenzie leads the Sustainable Transportation Lab at the University of Washington, where he is an Assistant Professor of Civil & Environmental Engineering. With sponsorship from the automotive industry and federal, state, and local governments, the Lab develops and evaluates technical and policy solutions for making our transportation system more economically vibrant and environmentally benign, while providing access to opportunities for all. His current research includes charging behavior and infrastructure design for electric vehicles, the effects of vehicle automation on travel and energy demand, and the impacts of emerging mobility services. Professor MacKenzie holds a PhD in Engineering Systems and SM in Technology and Policy, both from the Massachusetts Institute of Technology, and a BASc in Chemical & Biological Engineering from the University of British Columbia. He previously worked on fuel cell and alternative fuels research, and as an analyst for the Union of Concerned Scientists. He is a member of the Transportation Research Board's Standing Committee on Transportation Energy, and chairs its Subcommittee on Energy and Demand Implications of Connected and Automated Vehicles.

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