Impacts of the Sharing Economy in Transportation
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Urban transportation is facing a crisis. The way in which we currently choose to move around cities causes congestion, pollution, inequities, accidents and arguably even a disconnected society. But is a slow, smelly bus ride after an unknown wait time a true option? Is a dangerous bike commute darting around cars while inhaling their fumes a better choice? Fortunately, recent improvements in access and use of information technology have begun to overcome the barriers to increased transit and bike usage. We are now looking toward a future where you can plan a transit trip on the fly using the real-time conditions on the network and you can learn the best bike route based on the collective knowledge of fellow cyclists. This talk focuses primarily on the current work of the Urban Transportation Information Lab (UTIL) to use shared data (open data and crowdsourcing) to create better traveler information tools, but also more broadly on the impacts that the sharing economy will have on transportation.

This talk begins with an explanation of the sharing economy, defined by Wikipedia as the "economic and social systems that enable shared access to goods, services, data and talent…(using) *information technology* to empower individuals, corporations, non-profits and government with information that enables distribution, sharing and reuse of *excess capacity* in goods and services."[1] Examples of the sharing economy will be given including the hotel industry and broadly in transportation to date, followed by two specific applications from our work at UTIL.

The first sharing economy example uses improved real-time information to impact the usability of public transportation, one form of shared transportation. Public transit provides mobility, including access to jobs, education and medical services, to those who cannot or prefer not to drive.[2] Transit reduces congestion, gasoline consumption, the nation's carbon footprint, and is critical to ensure our nation's economic competitiveness.[3] However, from a customer perspective, a mobility choice is only a choice if it is reliable. One inexpensive way to combat unreliability from the user perspective is real-time transit information. This talk describes the OneBusAway transit traveler information system, developed to provide real-time bus arrival information to riders in multiple regions and as a platform for research on the impacts of such information. Previous studies have shown that real-time can increase transit ridership, increase satisfaction with transit performance, improve perception of safety, and decrease perceived and actual wait time.[4] Ongoing studies hope to further quantify the impacts on transit ridership. In addition to the discussion of the impacts of real-time information, this talk will touch on the necessity of shared (ie "open") data and data standardization to power applications such as OneBusAway.

In the absence of available data, such as for the cycling mode, collecting and providing information becomes yet a different challenge. Cycle Atlanta is a smart phone application that allows cyclists to share information about their rides with the city and each other. Cyclists can record their trips, note locations that are an asset (water fountains, secret passage, public restroom, bike shops, bike parking) or an issue (bike lane issue, bike parking, enforcement,

[1] Wikipedia, http://en.wikipedia.org/wiki/Sharing_economy
[2] American Public Transit Association (2008), "Public Transportation Facts at a Glance".
[3] Davis and Hale (2007) "Public Transportation Contribution to US Greenhouse Gas Reduction
[4] Ferris, Watkins, and Borning (2011). "OneBusAway: Behavioral and Satisfaction Changes Resulting from Providing Real-Time Arrival Information for Public Transit." Proceedings of the 2011 Transportation Research Board Annual Meeting; Watkins, Ferris, Borning, Rutherford and Layton (2011). "Where Is My Bus? Impact of mobile real-time information on the perceived and actual wait time of transit riders." Transportation Research Part A, Volume 45. Pages 839–848.

traffic signal, pavement issues) and provide information about their demographics and the type of cyclist they are. Based on up-to-date data on where cyclists are moving through the city and issues they face, city planners can make infrastructure development decisions. By sharing route information and assets among cyclists, better maps can be created via crowdsourced data. The talk describes the results of the Cycle Atlanta program thus far.

Finally, the talk moves from these current examples to future impacts of the shared economy on transportation. The move toward autonomous vehicles is believed by many to be a solution for the safety problems and in part the capacity problems our transportation system faces. However, when the use of autonomous vehicles is combined with the sharing economy, the network can be re-envisioned as one that will truly function more efficiently and overcome congestion, pollution and even some societal issues.