Research abstracts to be presented by

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Open Transit Data: State of the Practice and Experience from Participating Agencies in the United States

James Christopher Wong, Georgia Institute of Technology, presenter
Landon T Reed, Georgia Institute of Technology, presenter
Kari Edison Watkins, Georgia Institute of Technology, presenter
Regan Hammond, Atlanta Regional Commission, presenter

The availability of web and mobile applications and dynamic displays for transit traveler information has proliferated in the past few years with many new and emerging uses for transit data. Transit data about routes, stops and schedules in a machine-readable format is "open" when it is published and freely available to the public. The purpose of this study is to provide a state of the practice for open transit data: how web applications use open transit data, what benefits agencies gain by giving software developers access to the data and what the best practices are for agencies considering opening data they already have. This project is limited to static data and does not address privacy and legal issues surrounding real-time GPS location data. The research draws upon a literature review, interviews with industry experts and practitioners and primary experience coordinating a regional open transit data initiative in Atlanta, Georgia. Case study interviews conducted with five transit agencies about their experiences with open data revealed best practices and trends in customer benefits. Several key findings emerged from these agency interviews: (1) transit agencies of any size can pursue open data; (2) legal concerns about brand usage and liability can be overcome; (3) agencies should support the software development community; and (4) open data is an opportunity for positive marketing of an agency. These findings enable public agencies nationwide to embark on an open data initiative to deliver benefits for existing and potential riders at low deployment costs.

Benefits of Real-time Transit Information and Impacts of Data Accuracy on Rider Experiences

Aaron Gooze, Georgia Institute of Technology, presenter
Alan Borning, University of Washington, presenter
Kari Edison Watkins, Georgia Institute of Technology, presenter

When presented in a practical format, real-time transit information can improve sustainable travel methods by enhancing the transit experience. This paper identifies the positive shift realized by the continued development of the OneBusAway set of real-time transit information tools. In addition, the paper analyzes real-time prediction errors and their effects on the rider experience. Three years after the development of location-aware mobile applications, a survey of current OneBusAway users was conducted in 2012 in order to compare the results to the previous 2009 study. The results show significant positive shifts in satisfaction with transit, perceptions of safety and ridership frequency as a result of the increased use of real-time arrival information. However, this paper also provides a perspective of the margin of error riders come to expect and the negative effects resulting from inaccuracies with the real-time data. While riders on average will ride less when they have experienced errors, a robust issue-reporting system as well as the resolution of the error can mitigate

the initial negative effects. With this understanding, the paper provides transit agencies and developers with guidance to realize the full potential of real-time information and error-reporting systems.

Comparing Fixed-route and Demand-responsive Feeder Transit Systems in Real-world Settings
Derek Edwards, Georgia Institute of Technology, presenter
Kari Edison Watkins, Georgia Institute of Technology, presenter
This research presents a method of comparing fixed-route transportation systems and demand-responsive feeder transit systems using passenger survey data, published transit schedules, and optimal routing techniques. Demand-responsive transportation can be utilized to improve transit service levels in low demand areas. Since cities can vary significantly in demand across the region and time of day, it is imperative that an effective means of determining when demand-responsive services can out-perform fixed-route services and vice versa. This research builds upon existing comparison techniques, that are focused on gridded street systems, and expands the techniques to includes all types of street networks, transit schedules, and passenger demand levels. The generic techniques are presented and a case study is given for the city of Atlanta to determine where demand-responsive feeder systems might be implemented to improve customer satisfaction and reduce operating costs.

Speeding Behavior and Gasoline Prices Using Hourly Washington State Data
Kari Edison Watkins, Georgia Institute of Technology, presenter
Hendrik Wolff, University of Washington, presenter
Do drivers adjust speeds to save money when gasoline prices rise? Previous research produced mixed results of this energy saving hypothesis. In this paper, a more robust hourly dataset of Washington State highway speeds finds a modest but statistically significant decline in speeds due to increasing gasoline prices. A one dollar increase in gas prices reduces the average speed by 0.27 mph, changing the average highway speed from 70.82 to 70.55 mph, translating into $1.07 billion gas expenditure savings on all U.S. highways annually. In terms of heterogeneity, the research finds that the fastest drivers reduce speeds under-proportionately, potentially undermining the safety objective of a gasoline tax. Finally, the speed changes are mainly caused by the gasoline price that drivers pay at the pump. The high public media attention given to gas prices had relatively little effect on speeding behavior.