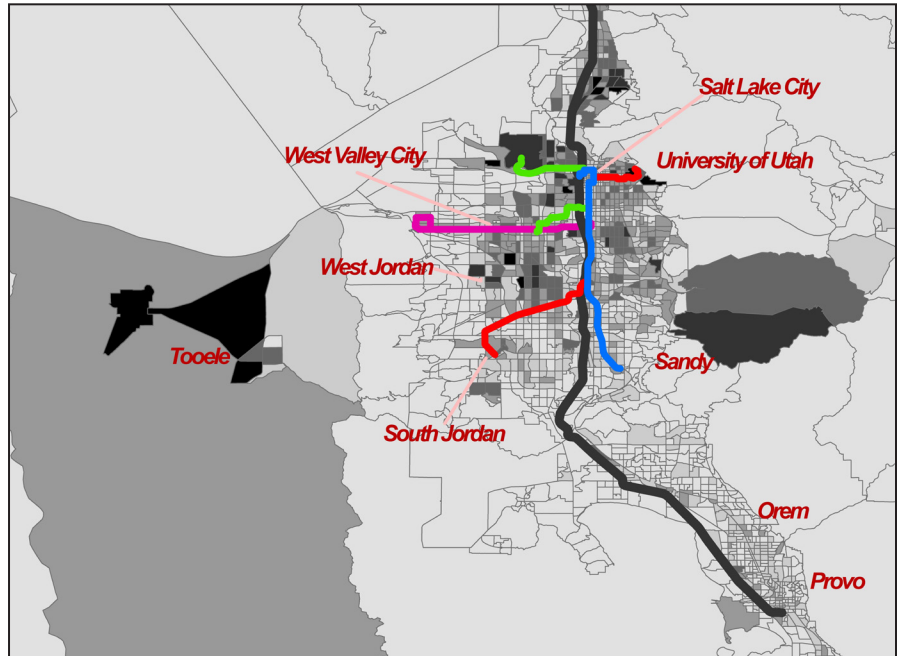


MOUNTAIN-PLAINS CONSORTIUM

RESEARCH BRIEF | MPC 18-347 (project 466) | May 2018

First and Last Mile Assessment for Transit Systems



the ISSUE

Applied to public transit, First Mile Last Mile (FMLM) describes the challenges faced by potential users and actual users of public transit according to cost, efficiency, logistics, and comfort to decide whether to use public transit or not. FMLM generally refers to the first and last leg of a user's trip. Thus, the FMLM problem directly contributes to the accessibility of a transit system. Public Transit Accessibility (PTA), a key indicator of transit service quality, plays an important role in users' mode choices. There are two main causes leading to poor PTA: inefficient transit services, and geographical disadvantages. There is, therefore, a critical need for PTA analysis to reflect both causes and distinguish between the two to avoid making poor investments in the wrong sets of solutions. There is a need for effective indicators that provide a fuller exploration of PTA variation and transit gap causes to guide future transit investments to address FMLM challenges.

the RESEARCH

The primary objective of this research project is to rank areas based on their need for transit improvement to further inform FMLM investment decisions. This is achieved by developing a concept called Public Transit Accessibility Gap (PTAG) to identify regions with transit mismatches by comparing transit service quality to the Need for Public Transit Services (NPTS). We showcase the analytical framework using a transit network in the State of Utah operated by the Utah Transit Authority (UTA). The analysis is based solely on publicly-available open datasets, which makes it generally adaptable to other transit networks.



A University Transportation Center sponsored by the U.S. Department of Transportation serving the Mountain-Plains Region. Consortium members:

Colorado State University
North Dakota State University
South Dakota State University

University of Colorado Denver
University of Denver
University of Utah

Utah State University
University of Wyoming



Lead Investigator(s)

Xiaoyue Cathy Liu
cathy.liu@utah.edu
University of Utah

Co-Investigator(s)

Richard J. Porter
Milan Zlatkovic
University of Utah

Project Title

First and Last Mile
Assessment for Transit
Systems

Research Assistant(s)

Kiavash Fayyay, GRA, PhD
Jeffrey Taylor, GRA, PhD
Mingde Lin, Undergraduate

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the **RESULTS** cont.

A secondary objective of this research project is to develop a sketch-planning tool estimate the health and environmental effects of physical activity associated with transit use. Health effects are estimated using a simplified version of a Health Impact Assessment (HIA). HIA is a generalized framework for estimating the potential health effects of a policy, program, or project, similar to environmental impact assessments applied in transportation planning and design. Environmental effects are estimated using average per-mile emission rates and estimated changes in vehicle-miles traveled (VMT).

the **FINDINGS**

The analysis on UTA's network shows the positive impact of fast transit services such as commuter rail, us rapid transit, and light rail, on improving the transit accessibility. The spatial inconvenience can also significantly jeopardize PTA of the study area. As an example, Provo and Orem, cities located approximately 45 miles away from downtown Salt Lake City, have large transit accessibility gaps (high PTAG), yet good transit service is provided within the area. Further improving transit service (e.g. frequent and larger coverage) will only provide marginal benefits to the area and might not be a cost-effective investment.

the **IMPACT**

The major contribution of this project is the development of the concept of Public Transit Accessibility Gap (PTAG) to identify regions with transit mismatches by comparing WATT to the Need for Public Transit Services (NPTS). The results rank areas based on their need for transit improvement to further inform transit investment decisions. The secondary contribution is the creation of the sketch planning tool to allow agencies/public/researchers to estimate the health and environmental effects of physical activity associated with transit use.

For more information on this project, download the entire report at <http://www.ugpti.org/resources/reports/details.php?id=906>

For more information or additional copies, visit the Web site at www.mountain-plains.org, call (701) 231-7767 or write to Mountain-Plains Consortium, Upper Great Plains Transportation Institute, North Dakota State University, Dept. 2880, PO Box 6050, Fargo, ND 58108-6050.



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