ABSTRACT

Pyrialakou, Vasiliki Dimitra. Ph.D., Purdue University, May 2016. Assessing Public Transportation Options for Intercity Travel in U.S. Rural and Small Urban Areas: A Multimodal, Multiobjective, and People-Oriented Evaluation. Major Professor: Konstantina Gkritza.

The literature recognizes that transportation infrastructure and services are unevenly distributed in space and, thus, that different areas inevitably have different accessibility levels. As a result, individuals experience different mobility levels depending on where they live, work, and travel. However, there is agreement that disadvantaged individuals (whether physically, financially, or socially) typically suffer the impacts of an automobile-oriented community unevenly, and tend to share higher transportation costs and enjoy fewer benefits.

Specifically for rural and small urban areas, the transportation needs and available resources are expected to differ from those of urban areas. The accessibility and connectivity of such areas rely heavily on the highway system and, subsequently, on personal automobile use. At the same time, the development of a nationwide commuter and high-speed rail (HSR) network has been suggested as a promising passenger transport solution for generating regional economic benefits and promoting energy independence, transportation safety, and livable communities with improved accessibility and inter-connectivity.

This dissertation work stemmed from an increasing need for public transportation research, especially in rural and small urban areas, which are at a disadvantage because of the lack of a nationwide public transportation network. Specifically, this dissertation focuses on assessing public transportation options for intercity travel in U.S. rural and small urban areas and has attempted to address three questions:

1. Is investment in public transportation in U.S. rural and small urban communities crucial to reaching the communities' long- and short-term goals, and is it a viable option in light of key issues relevant to the community?
2. Is passenger rail and/or HSR the most advantageous public transportation mode in such areas?
3. What are the conditions that should be fostered and how can those conditions be encouraged to promote the development and use of passenger rail/HSR?

To achieve these three objectives, a three-part research framework was developed that involves assessing transport disadvantage in an area, evaluating the existing transportation modes, and investigating the potential for a ridership increase that can further support the improvement and expansion of public transportation systems. To illustrate this framework, the case study of Indiana and the Hoosier

State train, which is a short-distance corridor operating four days per week between Indianapolis, Indiana, and Chicago, Illinois, with four intermediate stops, was used.

The developed research framework was found to be especially suited to evaluating short-distance rail corridors (less than 750 miles), and competing modes along the line, that connect medium-sized/small urban and/or rural communities. However, the principles may be applicable to the evaluation of a broader system. Other methodological contributions of this study include the design of a comprehensive approach to assess transportation disadvantage in U.S. rural and small urban areas and the development and testing of a theoretical model to explore public attitudes towards passenger rail.

In terms of practical implications, this dissertation provides a well-documented, practice-ready, and easy-to-use framework that can support both planning and policy decisions at the community or state level and the transportation supply decisions of transportation providers, while contributing to the evaluation of passenger rail systems proposed in the U.S. Furthermore, the framework is easily replicable and accounts for the availability of data and resources.

Turning to the empirical contribution of this dissertation, the recent developments regarding the Hoosier State train provided an excellent opportunity to address a timely topic for Indiana, the Midwest, and the U.S. This dissertation's findings can assist the stakeholders involved with shaping the future of the Hoosier State train and Indiana's passenger rail system. In addition, the findings of this dissertation can contribute to the evaluation of the passenger rail and HSR systems that have been proposed, informing future plans for the development of those systems in Indiana and the Midwest.