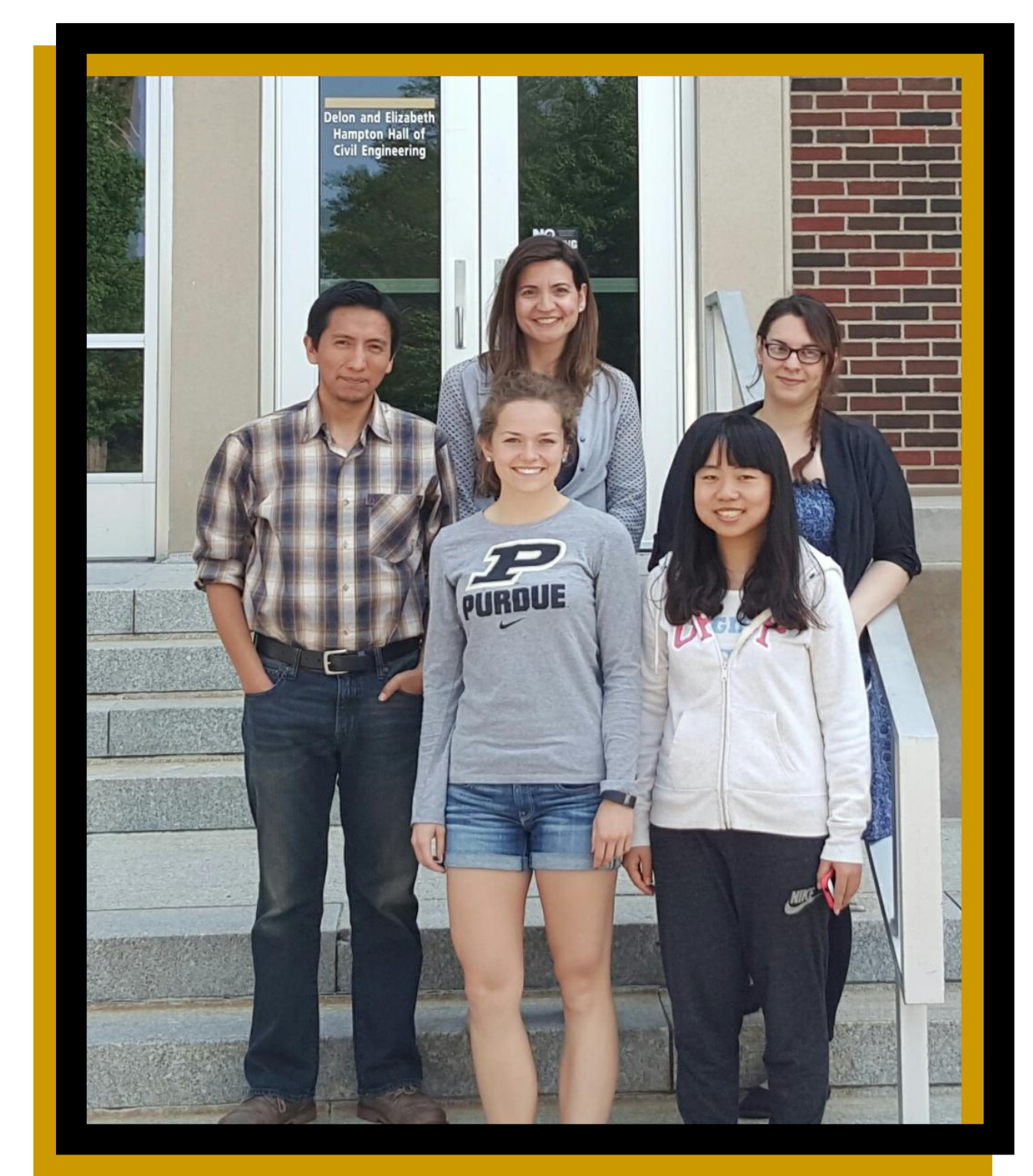


Konstantina Gkritza, Ph.D.; V. Dimitra Pyrialakou, Ph.D. Candidate; Davis Chacon Hurtado, Ph.D. Student; Christos Gkartzonikas, Ph.D. Student; Ruiman Yang, MSCE Student.



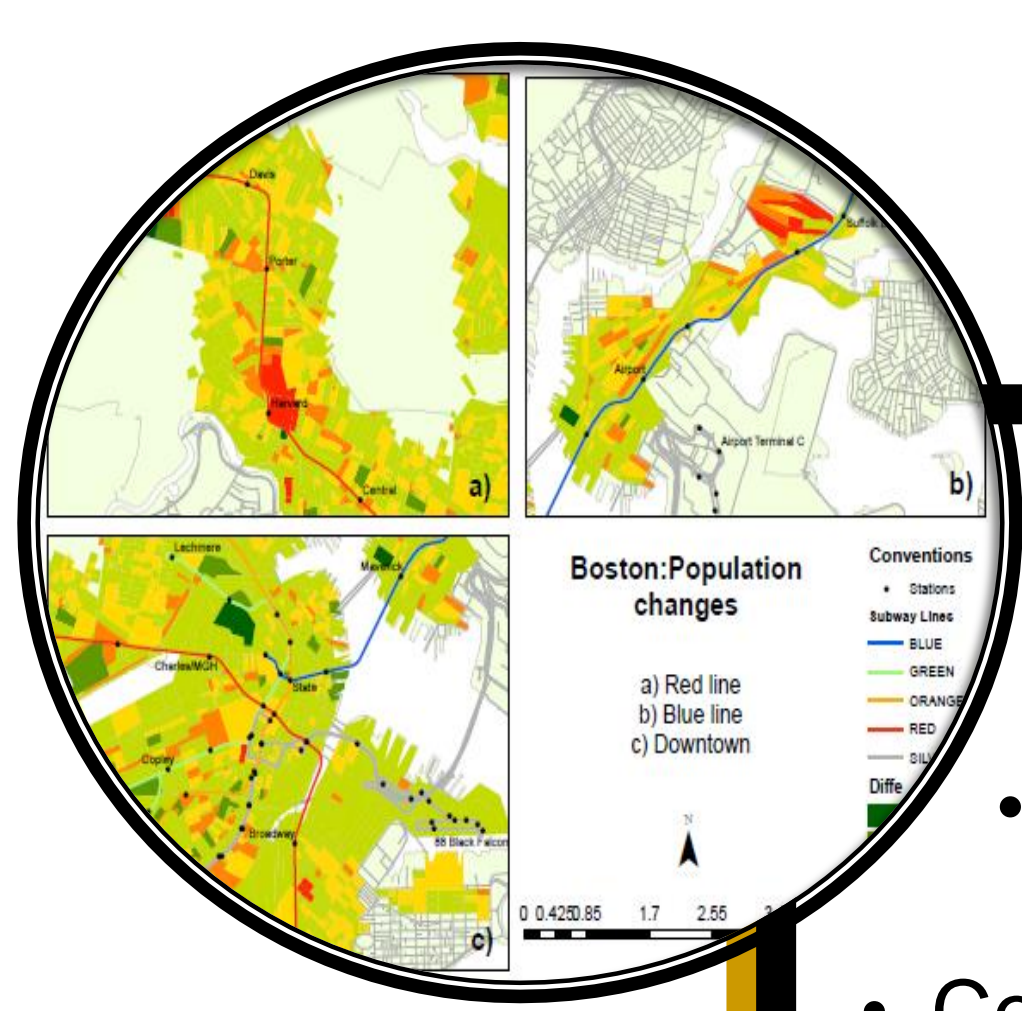
The Sustainable Transportation Systems Research (STSR) group aims to achieve **green, safe, efficient, and equitable transportation systems** by studying and modeling transportation externalities, using state of the art statistical, econometric, and economic analysis tools.

- Research areas of emphasis include—among others:
- Reducing energy use and carbon footprint of transportation systems
 - Direct and indirect impact assessment of proposed transportation solutions, as:
 - bio-based and other alternative fuels
 - wind power and other alternative energy technologies
 - transportation electrification
 - transportation investments and policies
 - intelligent transportation systems, connected and automated vehicles.



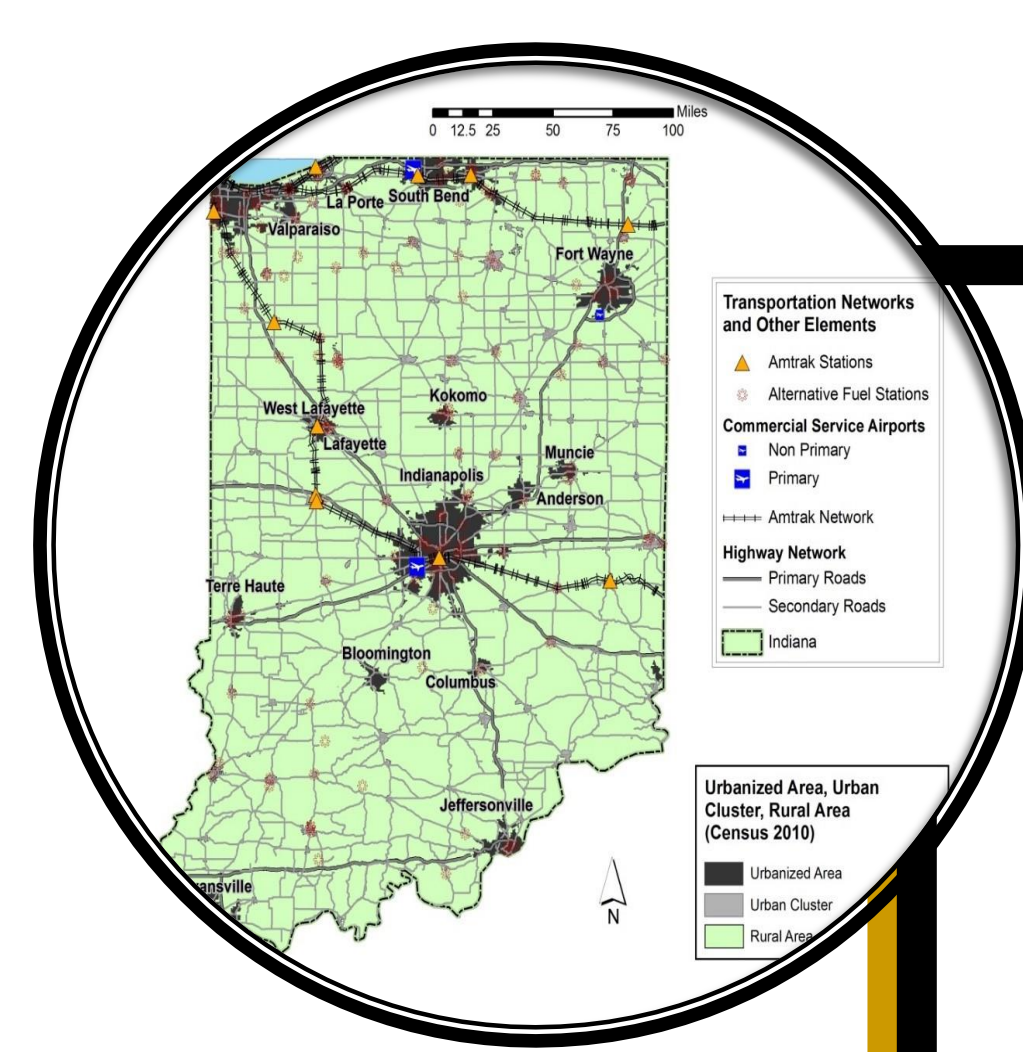
Completed Research

Ongoing and Future Research



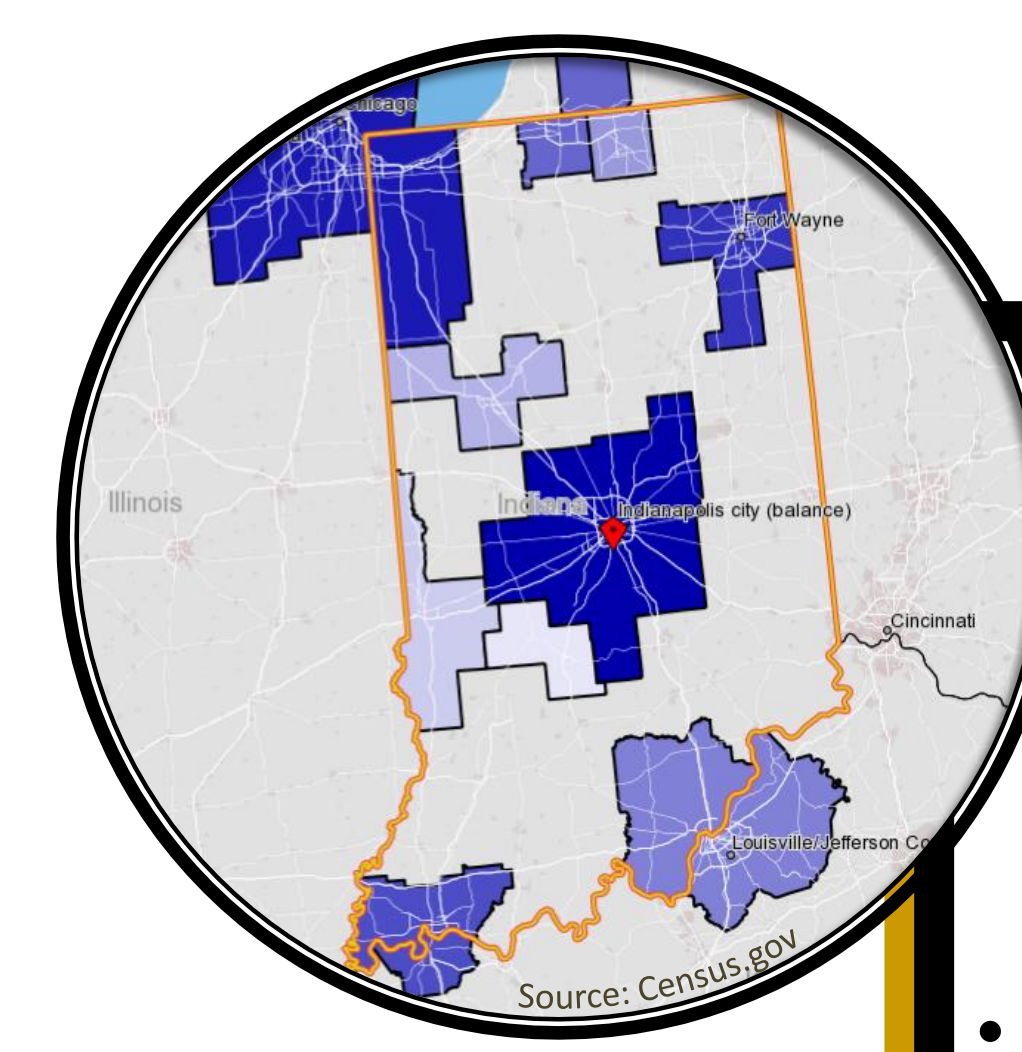
A Study to the Influence of the Implementation of a Mass Transport System on Land Use

- Assessed the influence of mass transport and non-motorized transportation systems on land use.
- Compared case studies of metro system implementation in Boston, Washington D.C. and Atlanta with the existing metro system in Bogota, Colombia and the planned metro system in Medellin, Colombia.
- Conducted spatial analysis to assess how Medellin will change in terms of land use.
- Offered recommendations for policies to foster these changes.



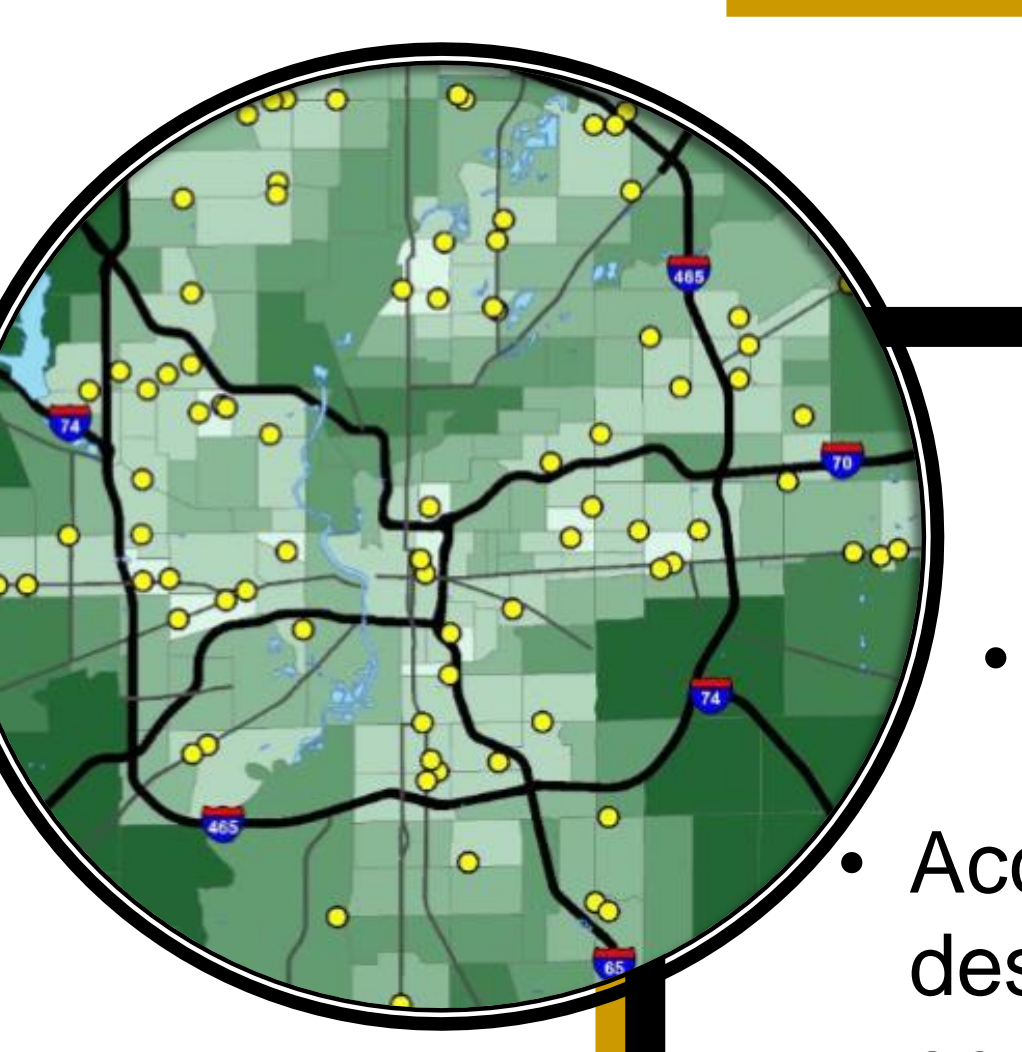
A Comprehensive Assessment of Public Transportation in U.S. Rural and Small Urban Areas

- Aims to contribute to the establishment of an accessibility-based, multi-objective, multimodal, and people-oriented systems evaluation.
- See poster "Passenger Rail in Indiana: A Case Study of the Hoosier State Line".



Evaluating the Effect of Transportation Infrastructure on the Location, Diversification, and Productivity of Businesses in Indiana

- The urban and economic structure of cities are highly influenced by the provision of transportation systems. Infrastructure investments can generate benefits from agglomeration economies, spatial spillovers, "thickening" of labor market, among others.
- However, the mechanisms in which these benefits occur are not fully understood yet. More importantly, how they can be accounted for in project appraisals remains a topic for further development.
- Evaluating the links between businesses' productivity and transportation infrastructure can help practitioners in making more efficient decisions.



Low Income, Supermarket Accessibility and the Transportation Network

- USDA estimates that 23.5 mil. people live in food deserts - over half are low-income residents.
- Accurate definition of a food desert is crucial, designated areas can be benefited from grant opportunities and funding priority.
- Aimed to determine the average travel cost to the nearest supermarket for each mode in Indianapolis using spatial analysis techniques.
- Areas of disadvantage by mode were compared to the USDA-defined food deserts.
- Some areas had a different level of disadvantage than defined by the USDA. The transit results were quite different from the walking and driving results.



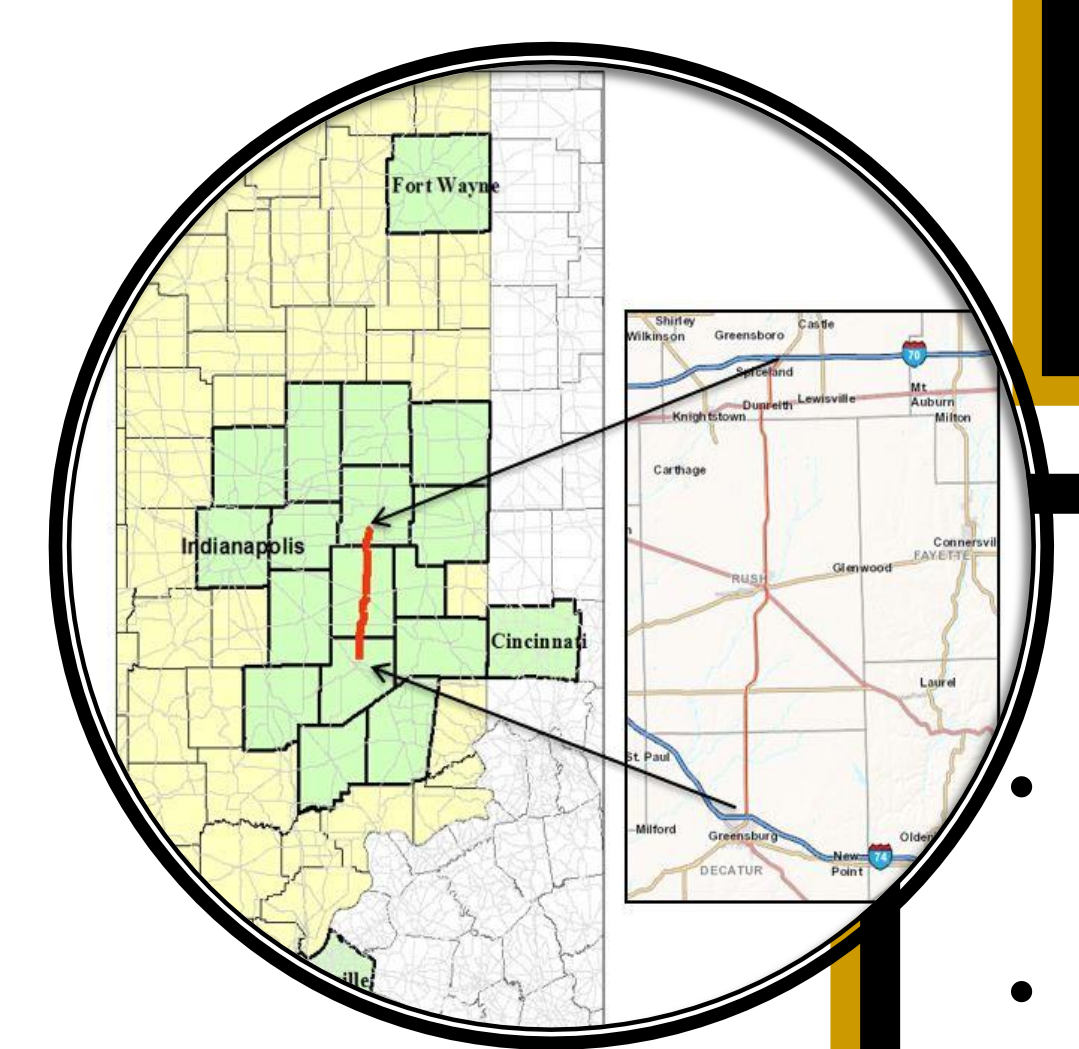
Economic Impact Assessment of Transportation System Management & Operations (TSM&O) Strategies

- TSM&Os often implemented to mitigate traffic congestion or improve safety.
- Limited studies have assessed the economic development impacts of TSM&O.
- Proposes a practical framework to evaluate the impact of TSM&O strategies on regional economic development.
- Assists decision-makers better understand the prioritization of such strategies using multi-criteria analysis.



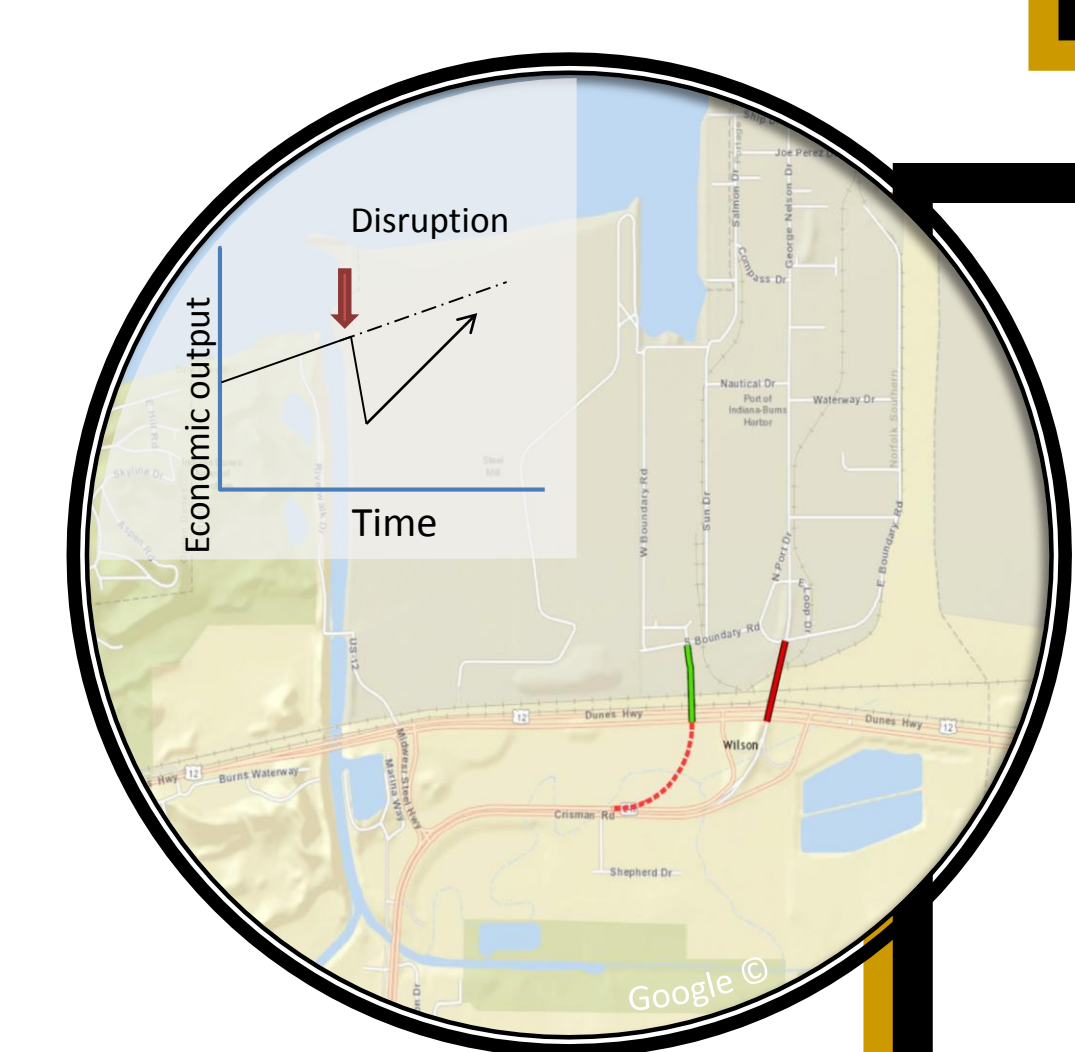
Travel Behavioral Changes and Impacts of Connected and Automated Vehicles' Implementation

- Study travel behavior changes and demand implications associated with Connected and Automated Vehicles (C/AV's)
- Evaluate the economic, energy and social impacts for different market penetrations of C/AV's
- Assist state transportation agencies to prepare for C/AV's



Wider Economic Impacts of Transportation Projects

- Aims to evaluate the non-traditional economic impacts of transportation improvement projects.
- Used the recently released SHRP2 C11 tools for assessing the wider economic benefits of three case studies of highway corridor improvements in Indiana.
- See poster "Wider Economic Impact Assessment of Transportation Projects at the Middle Stage Planning Level".



Developing Economic Resilience Indicators for Transportation Project Appraisals in Indiana

- Economic resilience is determined by the ability of a region to maintain certain economic output after a disturbance occurs and by the speed in which the economy is reverted back to an equilibrium state.
- Some factors that make communities vulnerable include their location, socioeconomic characteristics, undiversified economic structure, lack of robust infrastructure, among others. However, there is no standard indicator of economic resilience.
- How does transportation infrastructure contribute to regional economic resilience? And can it be incorporated in the project appraisals?