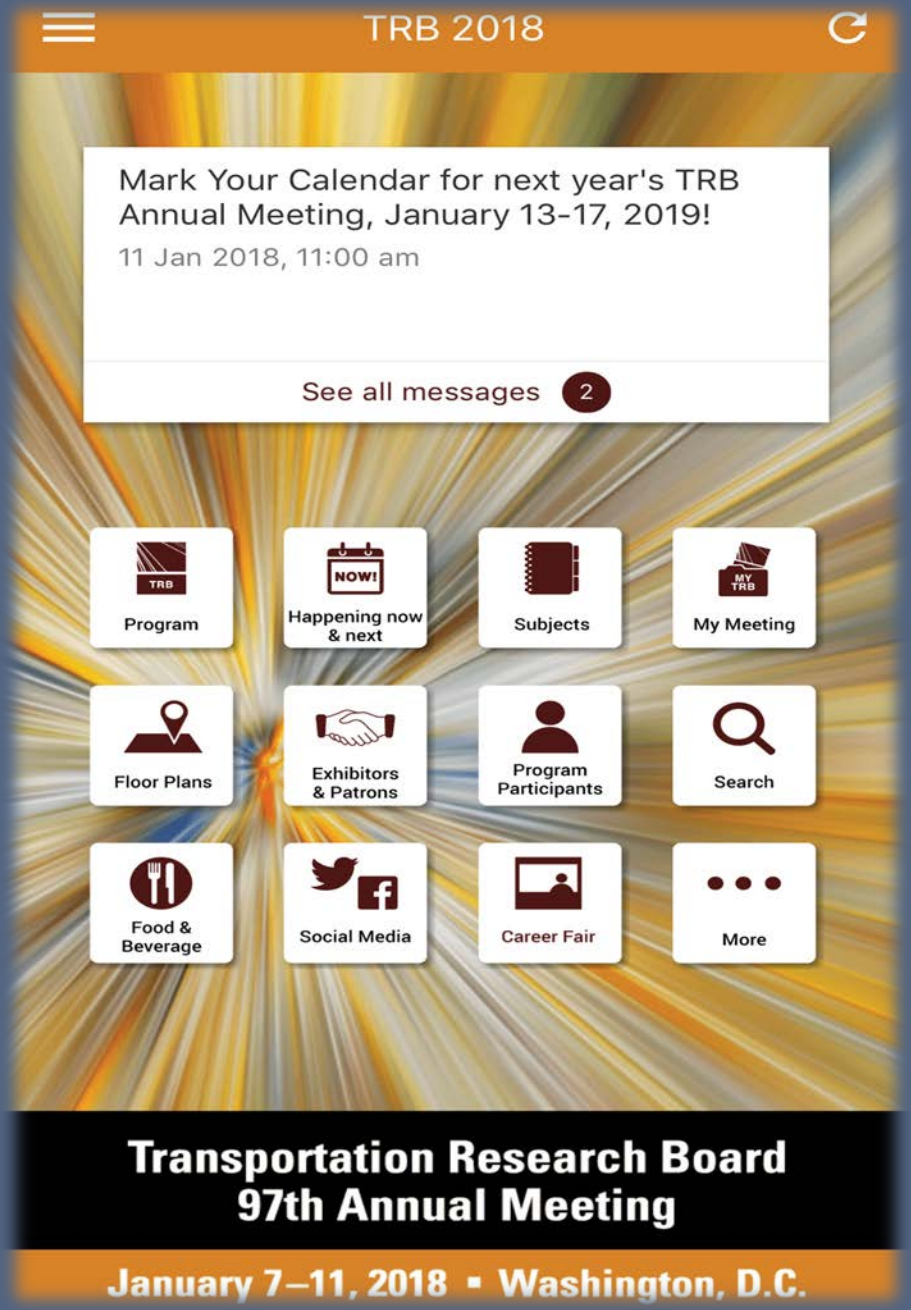
Capital Program Support

Veronica Murphy



MyTRB Annual Meeting January, 2018

Veronica Murphy

My Activities

Committee Meetings Attended

- Joint Subcommittee on Community Impact Assessment (Chair)
- Public Involvement Committee (Member)
- Environmental Justice Committee (Member)
- Joint Subcommittee on Health & Transportation (Friend)
- Census for Transportation Planning (Friend)
- Health and Transportation (Friend)

Workshops Attended

- Including Social Equity in Community Transportation Planning and Design
- Public Engagement for Crisis Situations: Weaving your network with existing tools and Solid relationships

Sessions Attended

- Let us take you for a ride: Understanding Mobility on Demand
- The Future of Transportation and reliance on Knowledge Sharing Among Transportation Organizations
- Health Impacts of Transportation Noise
- Does Location Matter? Performance Analysis of the HUD Assistance programs
- Planning Process and Environmental Justice
- The Built Environment, Travel Behavior and Smart Growth

Overarching Themes

Equity

- Are we measuring
- How are we measuring
- Burden of transportation cost on vulnerable populations
- Equality of Opportunity

Effective Public Involvement

- Flexibility to try new strategies
- We can always do better
- Helps to build public trust

Health Impacts

- How do we incorporate health impact analysis into project planning and development
- Noise is a health impact – more research needed on this topic

Transportation and Public Health

What is the relationship between Health & Transportation

- How can transportation support better health outcome for underserved populations
  - Equitable access to transportation services and health services
  - Transportation amenities that can help to support better health outcomes (walking, biking, open space)

Community Impact Assessment

- How can both Subcommittees work together to help bridge the gap between transportation and health.
  - Include health components into Community Impact Assessment
  - Identify health professionals as partners

NCHRP 201-112 - Health Research Roadmap

NCHRP 25-25 - A Guidebook for Communications between Transportation and Public health Communities

Public Involvement

Workshop – Public Engagement for Crisis Situations
Georgia DOT – I-85 Collapse and Rebuild (Bridge Fire)
Colorado DOT – Glenwood Canyon Rockfall Event

- **No matter how bad it is, own it.**
- **Manage the press and the story**
- **The public need to see and hear you**
- **Leverage Social Media**
- **Utilize as many outreach tools as possible to maximize reach**

Discussion: ***How to incorporate Public Involvement in Engineering Curriculum – Can we make an impact?***

- ***Committee to develop Public Involvement lesson for engineering curriculums***

Research Underway

- 08-105 B-06 Measuring the Effectiveness of Public Involvement in Transportation;
- NCHRP Synthesis – Best Practices for Online Public Involvement;
- FHWA - Techniques for Improved Engagement in Public Participation

Environmental Justice Committee

Training

- NHI Course – Fundamentals of Environmental Justice Web-based (4hr)
- NHI – environmental Justice Analysis – *Underdevelopment*

https://www.fhwa.dot.gov/environment/environmental_justice/training/

Planning Process and Environmental Justice

Assessing the Equity Impacts of a Transportation Improvement Program, *Alex Kramer & Aaron Grubb*

- How can TIP Projects be assessed for fairness?
  - All transportation projects entail *benefits* and *burdens*
  - Considering benefits or burdens in isolation is not appropriate
  - Not all groups derive the same benefit from all investment
  - What is the burden on non-vehicle households
  - Both benefits and burdens decline with distance
- Using the projects in the TIP, researchers propose that a project level analysis might do a better job of assessing equity.
- Need to fine-tune methodology to arrive at more meaningful measures and metrics.

We should always be looking to answer this question:

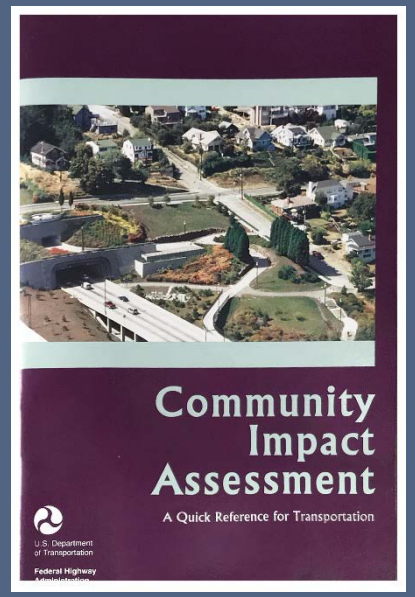
- *What is the share of the burden on the underserved and vulnerable populations ?*

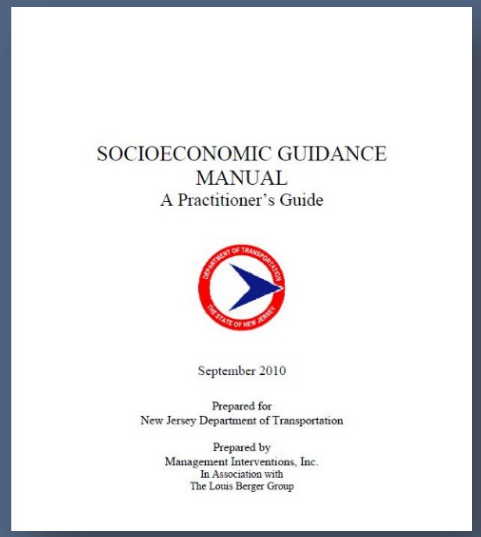
Joint Subcommittee on Community Impact Assessment

Veronica Murphy(Chair), Shivani Patel (Research Coordinator)

Committee Activities

- State of the Practice Survey
- Poster Session
- Identifying Research Needs





Next Steps

- Creating Practitioner Sharing Network
- Training Opportunity
- FHWA Updating the Community Impact Assessment Guide
- FHWA to host two webinar after release of updated Community Impact Assessment Guide

TRB provides best opportunity for practitioners to share and learn from each other.

Samples from the Community Impact Assessment Poster Session

P18-20554

Using BikeAble to Connect Disadvantaged Neighborhoods in Milwaukee, Wisconsin

rails-to-trails conservancy

City of Milwaukee, Wisconsin

Milwaukee is home to amazing trail facilities, but those trails do not reach residents in the north-central or south-central neighborhoods of the city

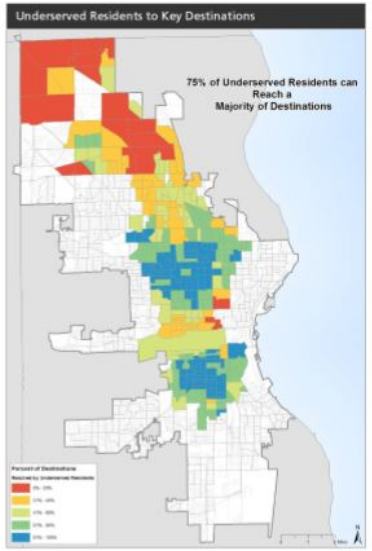
The Hank Aaron Trail runs East-West while the 120 miles long Oak Leaf Trail surrounds the City of Milwaukee, Wisconsin on all sides.

The disadvantaged communities are isolated by high-speed and unsafe streets, reinforcing patterns of segregation and inequity in the city.

Opportunities for new trails exist that would better connect these communities and stitch them back into the fabric of the larger city.

How are disadvantaged neighborhoods defined?

- Population living under the poverty line
- Population unemployed
- Population without a high school degree
- Zero-car households
- African-American population
- Hispanic population



Basket of Destinations

Destinations	Desired Number
Amusement and Recreation	2
Bank	2
Beauty Salon and Barber Shop	2
Child Care	2
Clothing and Accessory Store	2
Colleges and University	2
Drinking Place	5
Eating Place	5
Elementary and Secondary Schools	2
General Retail Store	2
Grocery Store	2
Health Care Provider	2
Library	1
Office and Home Furnishings Store	2
Public Park	2
Pharmacy	1
Physical Fitness Facility	1
Postal Service	1

People's ability to get to key destinations using routes they feel safe biking or walking is important everywhere but crucial in disadvantaged neighborhoods where oftentimes few people have access to a car.

What is BikeAble?

BikeAble is a GIS-modeling platform that analyzes bicycle connectivity to determine the best low-stress route for bicycling between a set of user-specified origins and destinations.

- It can be used to compare current and future scenarios and evaluate the potential impact of investments in trails and bicycle infrastructure on the connectivity of a community.
- It also allows identification of inequities in the current bicycle network as well as opportunities to improve equitable access to trails in a community.
- For Milwaukee, it reveals how two new trails and extension projects could disproportionately improve connectivity for residents within a long-disadvantaged area of the city.

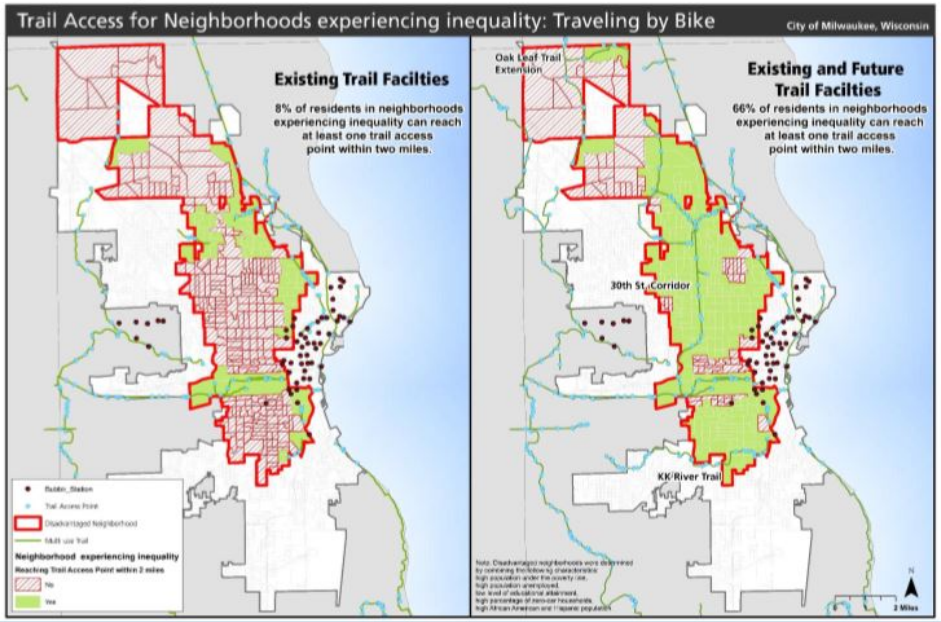
Level of Traffic Stress

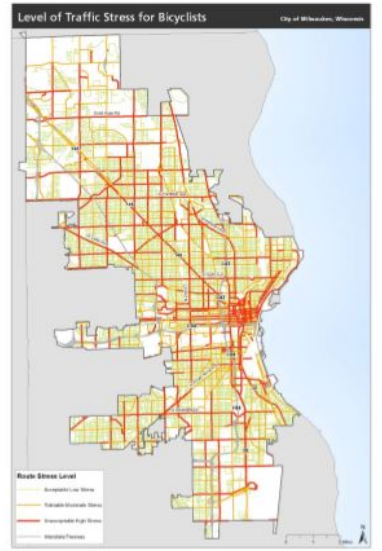
Stress is measured by existence of streets with speed limits greater than 25 miles per hour and more than two lanes of traffic, in addition to other factors..

In Milwaukee, we see this reflected in the paths of I-94 and I-43, which divide communities from destinations and opportunities.

Comfortable speed limit (mph)	25
Comfortable number of lanes	2
Maximum travel distance (miles)	2/0.5

Investment in the **30th Street Corridor** and the **Kinnickinnic River Trail** will provide not just health and recreation opportunities, but connectivity to centers of activity and employment.





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1. Michael B. Lowry, Peter Furth and Tracy Hadden-Loh. (2016). Prioritizing new bicycle facilities to improve low-stress network connectivity." *Transportation Research Part A: Policy and Practice*, 86, 124-140
2. Mekuria, M., Furth, P. and Nixon, H. (2012), "Low-stress bicycling and network 14 connectivity", *Mineta Transportation Institute*, No. Report 11-19.
3. McDaniel, S., Lowry, M., and Dixon, M. (2014), "Using Origin-Destination Centrality to Estimate Directional Bicycle Volumes" *Transportation Research Record*, 2430.
4. Broach, J., Dill, J. and Gliebe, J. (2012), "Where do cyclists ride? A route choice model developed with revealed preference GPS data", *Transportation Research Part A:* 9 *Policy and Practice*, Vol. 46 No. 10, pp. 1730–1740.

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Exploring The Vicious Cycle of Mobility Inequality

Bumjoon Bae, Ph.D. [1], Ho-Ling Hwang, Ph.D.[1], S.M. Chin, Ph.D.[1], Brandon Worley [1], Tim Reuscher [1], Angel Canales, P.E.[2]

[1] Center for Transportation Analysis, Oak Ridge National Laboratory

[2] New York State Department of Transportation

BACKGROUND

It is known that socioeconomically disadvantaged households face more mobility challenges in their daily travels as compared to other households. In many cities, it is more difficult for those living in socioeconomically disadvantaged households to access jobs, goods, and services including health care. One of the macroeconomic goals of any government is to establish equitable distributions of resources, which is to ensure that all people are equal in terms of their ability to move, or be moved, freely and easily.

This study explored the use of National Household Travel Survey (NHTS) data, in examining the effects that socioeconomic disadvantages have on the mobility of New York State (NYS) residents. Specifically, the research aims to identify and quantify mobility inequalities between as examples, elderly and non-elderly, as well as white and non-white groups among NYS populations.

Along with 2009 NHTS data, prior year NHTS data were also used in this study to investigate trends in New Yorkers' travel patterns, and to evaluate changes in mobility inequalities over time. The mobility inequality measure explored under this study was the Lorenz curve with its associated Gini Coefficient (expressed as a normalized Gini index), which is a well-known and intuitive economic inequality measure. Specifically, this study quantified the inequality distribution numerically through the Gini Index.

DATA SOURCES

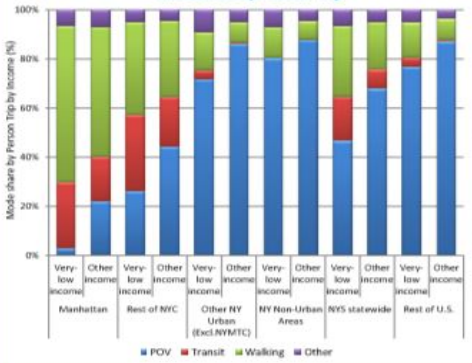
- 1995, 2001, and 2009 NHTS NYS Data
- American Community Survey (ACS) 2008-2012 data

Percent of population below poverty level in NYS counties (source: ACS 2008-2012 data)

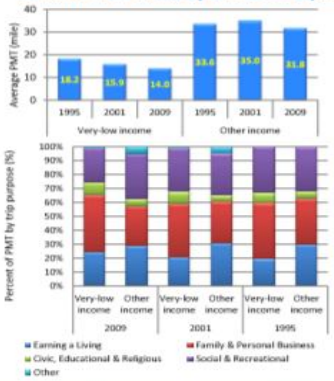
INVESTIGATING TRAVEL CHARACTERISTICS AND PATTERNS AMONG NYS POPULATIONS

This research addresses differences in travel characteristics and patterns among different socioeconomically disadvantaged groups. Person trips (PT) and person-miles traveled (PMT) were used below to demonstrate the mobility inequalities among NYS households, while considering household income.

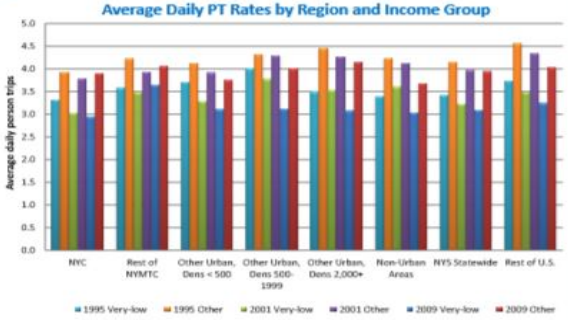
Mode Share by Income & Region in 2009 Measured by Person Trip



Person Miles Traveled by Income & Purpose



Average Daily PT Rates by Region and Income Group

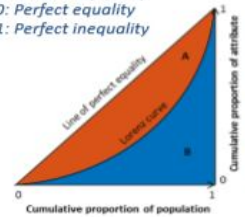


MOBILITY AND INEQUALITY STATISTICS

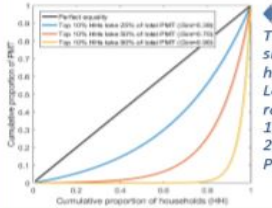
Among various mobility measures, PMT was used to illustrate the mobility inequality in NYS between 2001 and 2009. The inequality was measured by the Lorenz curve and its associated Gini index, which are frequently used for representing inequality in a wealth distribution. The mobility inequality is referred to as the disparity of the distribution of PMT, among the households of NYS with consideration of household income. The Lorenz curve shows the cumulative share of total PMT against the cumulative proportion of households in NYS. The Gini index is defined as the area between the Lorenz curve and the line of perfect equality divided by the area below the perfect equality line.

Gini Index for Measuring Mobility Inequality

Gini Index = A / (A+B)
0: Perfect equality
1: Perfect inequality



Note: In this study, mobility inequality measured in PMT distribution, with respect to household income, were identified using Lorenz curve and Gini index.

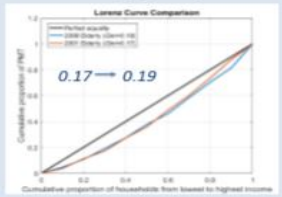


This example shows hypothetical Lorenz curves representing top 10% of HHs take 25, 50, and 90% of PMT, respectively.

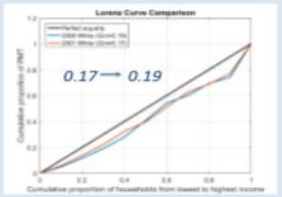
The mobility inequality for the elderly HHs and white HHs increased in 2009 compared to 2001.

On average, the mobility inequality in NYS increased between 2001 to 2009.

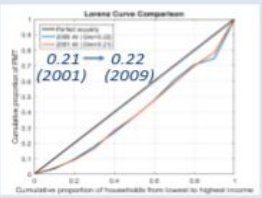
Elderly (age 65+)



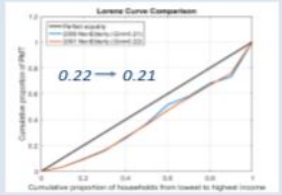
White



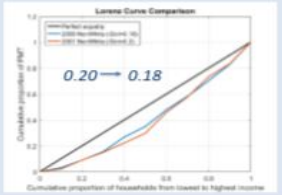
All households in NYS



Non Elderly (age under 65)



Non White



KEY OBSERVATIONS AND RESULTS

- Very-low income households in NYS had experienced slight mobility inequalities in 2009 compared to their neighbors with higher incomes
  - Very-low income households in NYS used a personally owned vehicle (POV) less frequently than other income households for their daily trips, while the share of using public transit is much higher among the very-low income households.
  - Very-low income NYS residents traveled 56% fewer miles and 22% fewer trips on average, compared to other income New Yorkers.
  - People from NYS very-low income households were less likely to travel for work and social/recreational purposes compared to their neighbors with higher income level.
- The mobility inequality, measured by PMT, for NYS residents showed a slight increase, on average, from 2001 to 2009.
  - Among NYS's elderly households, mobility inequality increased between 2001 and 2009, mainly due to the increased PMT in 2009 for the highest income households; while the mobility inequality declined for their non-elderly neighbors during the same period.
  - The mobility inequality within NYS's white households increased in 2009, due to the decrease in PMT among the lower-income white households. In contrast, the inequality of their counterpart non-white households decreased from 2001 to 2009.
  - Based on Gini Index, there is no noticeable differences in mobility measure between the two age groups, or among the white vs. non-white households in NYS.

POTENTIAL FUTURE RESEARCH

- To investigate mobility inequality with other mobility measures, such as trip frequencies (e.g., trip rates), total person/vehicle trips, and vehicle mile traveled (VMT).
- To examine mobility inequality trends over a longer period of time, as well as on work trips versus non-work trips.
- To consider estimate variances of the Gini Index.

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P18-20581 A Multimodal Analysis to Identify Rural and Urban Areas of Low Accessibility to Healthy Food in Indiana

Lisa L. Losada[1], V. Dimitra Pyrialakou[2], Nadia Gkritza[3]

1 = Ph.D. Student, Lyles School of Civil Engineering, 2=Assistant Professor, Department of Civil and Environmental Engineering, West Virginia University, 3=Associate Professor, Lyles School of Civil Engineering and Agricultural & Biological Engineering

Research Motivation and Objective

- Health problems such as obesity and related illnesses have been attributed to the lack of both spatial and economic access to healthy food.
- Urban and rural locations often differ in both the availability and quantity of healthy food providers and in transit options and transportation costs.
- Access to healthy food in rural areas has not received much attention to date.
- The lack of access to reliable transportation in rural areas also acts as a barrier for accessing healthy food, especially for individuals that might not have access to an automobile.
- This research proposes a cost-based accessibility measure for different transportation modes.
- The methodology developed in this study can be used to identify areas with low access to healthy food as well as food deserts, in both urban and rural areas.

Study Area

- Group 1. IndyGo (Marion County)
- Group 2. Terre Haute Transit (Vigo County)
- Group 3. MAGOC (Elkhart County)
- Group 4. Catch-a-ride (6 Counties)

Data

Data	Source	Year
County Boundaries	U.S. Census Bureau	2010
Road and Walkable Network (TIGER/Line files)	U.S. Census Bureau	2010
Average cost per mile of operating a motor vehicle	Bureau of Transportation Statistics	2015
Hourly Wage by Census Block Group	Longitudinal Employer-Household Dynamics (LEHD) Census	2010
Transit routes and stops (GTFS)	Google Transit Data Feed	2015
Transit Fare Information	Agencies websites	2017
Transit Speed Information	Indy Go	2010
Supermarkets Information	ReferenceUSA	2017

Methodology

- ***Cost by driving***

$$TC_d = \frac{\frac{100}{s}}{1609.34} X Hourly Wage + \frac{c}{1609.34}$$

- ***Cost by walking***

$$TC_w = \frac{100}{w * 1609.34} * Hourly\ Wage$$

- ***Cost by transit – fixed route***

$$TC_b = \frac{100}{b * 1609.34} * Hourly\ wage + fare$$

- ***Cost by transit – demand response***

$$TC_{dr} = \frac{\frac{100}{s} X Hourly Wage}{1609.34} + \frac{m}{1609.34} + fare$$

Where, Hourly Wage= average hourly wage by CBG zone in dollars,
s=speed limit in mph,
c=cost of operating a motor vehicle in cents,
w=walking speed in mph,
b=the bus speed, assumed to be 12.5 mph (IndyGo, 2010),
m=cost per mile in cents,
fare=service fee in dollars, and
1609.34 is a conversion factor between meters and miles.

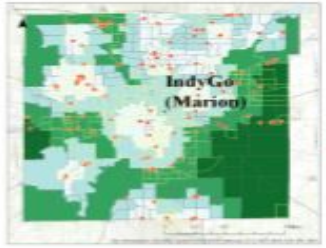
- ***Value of time***

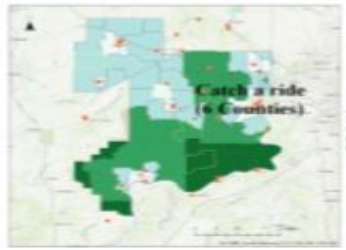
$$Hourly\ wage = \frac{(a * Low) + (b * Med) + (c * High)}{TotalWK}$$

where Low = number of workers classified in the low range income,
Med = number of workers classified in the medium range of income,
High = number of workers in the highest range of income,
a=$8.07* per hour, b=$14.80* per hour, c=$21.53* per hour, and
TotalWK = total number of workers at the CBG.

* Values in 2015 dollars

Results





Conclusions

- It was found that by driving, population located in more urbanized areas would pay less to reach a healthy food provider than in rural areas.
- It was found to be more costly to reach a healthy food provider by driving in low- or moderate-income population areas than in higher income areas, especially within the Marion and Catch-a-ride service areas.
- Similar findings were observed when transit and walking related costs were estimated.