



Transport Challenges in Rural Indiana

Introduction

For many activities in our lives, we take trips between home and some place else. Going shopping is an example of such activities. Commuting to work involves, for many of us, daily trips. Other examples of activities that require us to leave the house are: going to the movies, visiting friends, attending worship services, and visiting a doctor's office or a hospital. On average, Americans make 3.79 trips per day, travelling a total of 36.13 miles (Santos et al. 2011).

How do we get to all these places? We go by car. That, at least, is the answer for the vast majority of Americans: 83.4% of all trips are made using a private automobile (Santos et al. 2011). In rural areas, the percentage is even higher, amounting to 88.5%.

However, not everybody has access to a car or is capable of driving to the various activity sites. Low-income households may not own a car. Children are not licensed to drive. And the elderly often avoid driving at night and during rush hours; some have even stopped driving altogether (Waldorf and Pitfield 2005, Waldorf 2003). Walking is sometimes an alternative to driving, at least for those who live close to their friends, to stores and shopping malls, to doctors' offices, schools, and work opportunities. In rural areas, however, people rarely live in walking distance to their activity sites and thus need other modes of transportation. Because rural areas frequently lack such alternatives, some studies conclude that the choice and ability to own an automobile shapes rural residents' quality of life (Pucher and Renne 2005; Kamruzzaman and Hine 2012).

In fact, if such alternative transportation modes are not available, persons who do not own a car or cannot drive are disadvantaged. They cannot easily reach opportunities and depend on others for rides. Such a situation limits travel flexibility and may put people at risk of social exclusion. In the extreme, staying home becomes the default, signaling a severely diminished quality of life.

In this publication we look at the transport situation in Indiana's rural counties. We first explore the transport need in Indiana's rural counties. Next we look at the public transportation availability in rural counties and proximity to hospitals, schools, and recreational opportunities. In combination, public transportation availability and proximity to services determine a county's accessibility levels. Comparing needs and accessibility, we then identify the counties with the greatest transport challenges, that is, those counties with the largest gaps between needs and

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The Rural Indiana Issues Series

Audience: Local and state leaders who work with rural communities.

Purpose: To find data about issues of concern in rural communities and to interpret that data in meaningful ways to aid in decision-making.

Method: U.S. Census and transportation data analyzed across the county groupings—rural, rural/mixed, urban.

Potential Topics: Demographic changes, business development, health, health care, local government, taxes, education, agriculture, natural resources, leadership development, etc.

Outcome: Better, more informed decisions by rural decision-makers.

Some Useful Terms

Opportunities or Activity Sites

Any desired destinations or sites providing employment, goods, and/or services.

Social Exclusion

The lack of access to opportunities ensuring participation in the community. Social exclusion contributes to marginalization, reduced citizenship, and a diminished quality of life.

Mobility

Mobility is the ability or ease of people to travel between places (or activity sites). It mainly depends on the availability and quality of transportation networks.

Accessibility

Accessibility refers to the ease of reaching opportunities. It is influenced by:

- a) The availability and quality of transportation networks
- b) The proximity to opportunities.

Transport Need

An area's transport need refers to the number of residents who are in need of public transportation services.

Transport Need Index

The transport need index is a measure of a county's relative transport need. It varies between 0% and 100%. For example, Harrison County has a need index of 67% (see Table 1). This means that Harrison County's tracts have—on average—higher needs than 67% of all Indiana tracts, but fewer needs than 33% of all Indiana's tracts. For more details on the estimation of the index, refer to Pyrialakou et al. (2015).

Transport Need (or Mobility) Gap

The need gap is the mismatch between the transport need of a population (or area) and the transport supply or opportunities available.

accessibility. Finally, we discuss the planning and policy implications for addressing the mismatch between transport needs and available opportunities and resources in rural Indiana.

Transport Need in Rural Indiana

To assess the transport need in rural Indiana, we use the transport need index developed by Pyrialakou et al. (2015). The index, calculated with data from the American Community Survey (American Fact Finder; U.S. Census Bureau 2014), is based on the relative share of transport-vulnerable population groups. The transport-vulnerable groups are comprised of persons at risk of decreased mobility due to:

- Physical factors. These include:
 - Persons under the age of 14 years;
 - Persons over the age of 65 years;
 - Disabled persons.
- Socio-economic factors. These include:
 - The unemployed;
 - The working poor;
 - Persons living in households without a vehicle;
 - Single parents with children under 18.

The transport need index is assigned to every census district, and the values range between 0 and 100. A value of 0 denotes a very low transport need, and a value of 100 denotes a very high transport need. Aggregating to the county level, we can rank Indiana's rural counties according to their transport need (for details on the classification of Indiana's 92 counties into rural, rural-mixed, and urban categories, refer to Ayers et al. 2012). The results are shown in Table 1.

Table 1. Transport Needs of Indiana's Rural Counties

Rank	County	Transport Need Index	Rank	County	Transport Need Index
1	Harrison	67.0%	22	Newton	50.5%
2	Putnam	63.3%	23	Pulaski	49.9%
3	Tipton	62.1%	24	Union	49.8%
4	LaGrange	61.6%	25	Starke	49.7%
5	Washington	59.3%	26	Perry	49.6%
6	Jennings	58.8%	27	Rush	49.4%
7	Ripley	58.1%	28	Randolph	48.4%
8	Gibson	57.8%	29	Posey	48.3%
9	Warren	56.9%	30	Vermillion	48.0%
10	Whitley	56.5%	31	Crawford	47.6%
11	Sullivan	55.1%	32	Blackford	47.1%
12	Clay	54.9%	33	Pike	46.6%
13	Parke	54.9%	34	Orange	46.4%
14	Spencer	54.4%	35	Brown	46.3%
15	Jasper	54.3%	36	Jay	46.2%
16	Greene	52.5%	37	White	45.8%
17	Owen	52.0%	38	Fulton	45.4%
18	Franklin	51.6%	39	Martin	45.1%
19	Wells	51.0%	40	Ohio	44.8%
20	Switzerland	50.8%	41	Carroll	44.8%
21	Fountain	50.6%	42	Benton	40.2%

The range of transportation needs across Indiana's rural counties is quite narrow, ranging from 40% to 67% and thus staying far away from the extreme values of 0% and 100%. Only four counties have a somewhat higher transport need index, exceeding 60%. Harrison County, located along the Ohio River, tops the list with 67%, followed by Putnam (63.3%) and Tipton (62.1%) counties in Central Indiana, and La Grange County (61.6%) at the border to Michigan. At the bottom of

Figure 1. Transport Needs in Indiana's Rural Counties

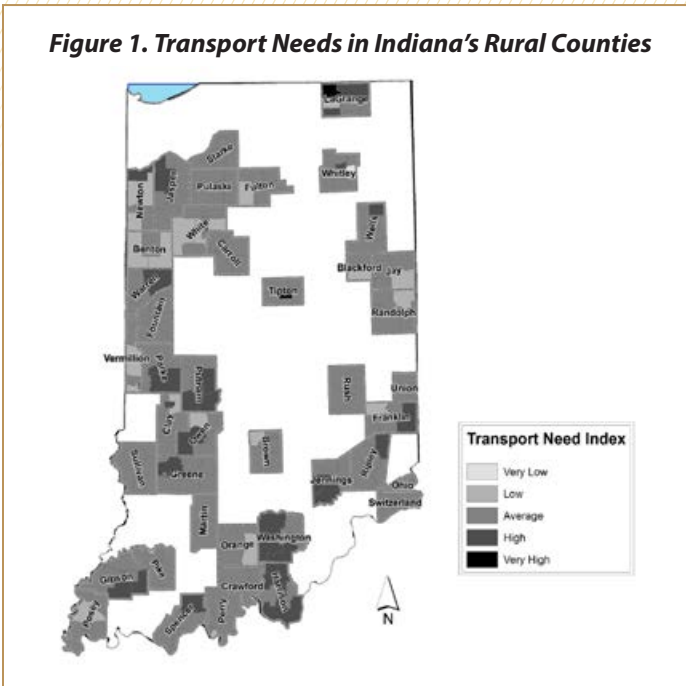
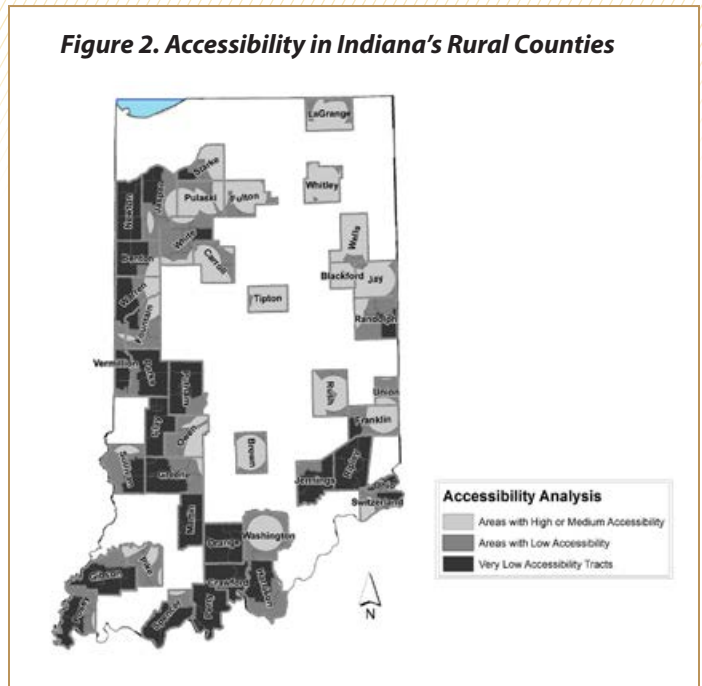


Figure 2. Accessibility in Indiana's Rural Counties



the list are four counties with transport need indices at or slightly below 45%, two counties in northcentral Indiana—Benton and Carroll—and two counties in southern Indiana—Martin and Ohio.

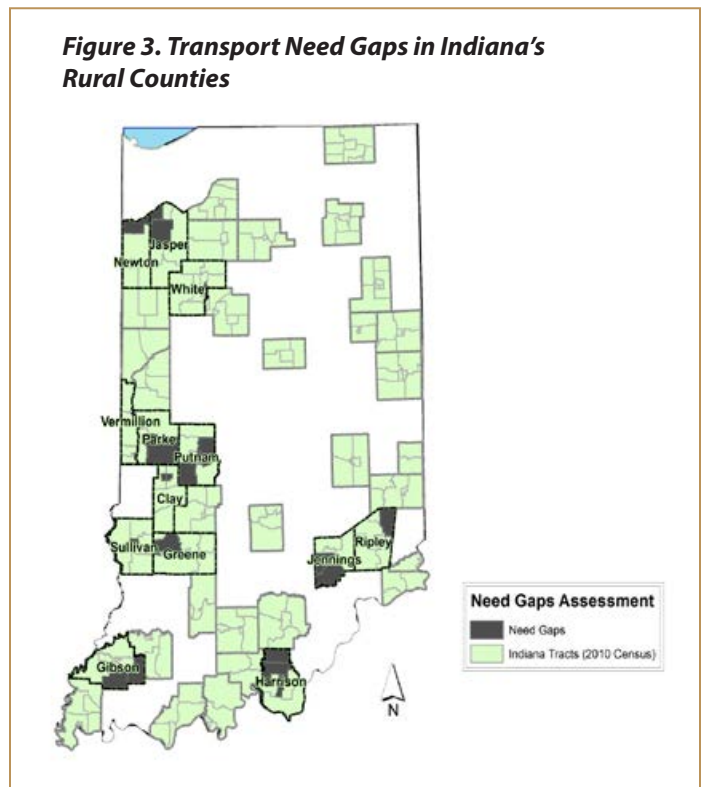
However, as shown in Figure 1, there is a considerable variation of transport needs within the rural counties. In fact, only 10 of the 42 rural counties have average values throughout their entire territory. Most counties have mixtures of average and high transport needs, or average and low transport needs. Whitley County, for example, includes an area with very low transportation needs (as indicated by the light grey coloring). At the other extreme, in two counties (Tipton and LaGrange), we even find very high transport needs (as indicated by the black coloring).

Accessibility Levels in Rural Indiana

Accessibility has two components. The first is the proximity to important activity sites. We included hospitals, schools, recreation facilities (such as parks, beaches, and zoos), museums, and public libraries. The second component is public transportation availability. Fixed public transportation services are not available in Indiana's rural areas, and intercity buses run only between major cities like Indianapolis, Lafayette, Fort Wayne, and Bloomington, mainly to and from Chicago. Thus, our accessibility measure—adapted from Pyrialakou et al. (2015)—is based on walkable and short-driving distances (up to 20 minutes trip) to the various activity sites.

Figure 2 shows that a large portion of rural Indiana suffers from low (dark grey) or even very low (black) accessibility levels. In fact, there is not a single rural county in which the entire area has medium or higher accessibility. Moreover, 26 counties include sections with very low accessibility, and among them are eight counties for which the entire territory is categorized as having very low accessibility. In

Figure 3. Transport Need Gaps in Indiana's Rural Counties



total, the 26 counties house over half a million Hoosiers, and almost 400,000 of them reside in the sections with very low accessibility levels.

Many residents in the accessibility-deficient areas belong to the transport-vulnerable groups. Table 2 (see page 4) shows a profile of the population living in the areas with very low accessibility levels. Fifteen percent of the residents in the areas of very low accessibility are 65 or older, one fifth is under 15, 15% of the residents are disabled, and 2% are working poor. Moreover, 5% of the households do not own an automobile.

Table 2. Transport Disadvantaged Population in Rural Census Tracts with Very Low Accessibility

County	County Residents	Residents in sections with very low accessibility						Households in sections with very low accessibility
		number	%	65+	under 15	disabled	has a job and lives in poverty	without automobile
Clay	26,890	26,890	100%	15%	20%	16%	738	245
Crawford	10,713	10,713	100%	15%	19%	22%	298	234
Martin	10,334	10,334	100%	16%	20%	10%	246	192
Newton	14,244	14,244	100%	17%	19%	16%	195	112
Ohio	6,128	6,128	100%	17%	18%	12%	177	103
Orange	19,840	19,840	100%	16%	20%	17%	536	468
Perry	19,338	19,338	100%	15%	18%	13%	287	453
Ripley	28,818	28,818	100%	15%	22%	13%	595	587
Gibson	33,503	30,060	90%	15%	20%	13%	781	509
Jennings	28,525	24,604	86%	13%	22%	14%	684	343
Putnam	37,963	31,916	84%	13%	17%	12%	697	473
Parke	17,339	14,194	82%	16%	17%	15%	356	326
Harrison	39,364	26,598	68%	14%	20%	15%	396	366
Vermillion	16,212	10,851	67%	17%	20%	16%	197	130
Spencer	20,952	13,309	64%	15%	19%	14%	342	177
Greene	33,165	21,017	63%	18%	19%	19%	629	636
Benton	8,854	5,441	61%	17%	20%	16%	157	57
Sullivan	21,475	12,492	58%	15%	16%	14%	211	342
Jasper	33,478	17,018	51%	14%	22%	11%	238	186
Randolph	26,171	12,901	49%	19%	21%	19%	425	323
Posey	25,910	12,044	46%	16%	18%	14%	208	254
Warren	8,508	3,762	44%	16%	20%	14%	314	283
Fountain	17,240	6,167	36%	19%	20%	15%	124	234
White	24,643	7,778	32%	20%	20%	15%	37	57
Franklin	23,087	4,865	21%	15%	23%	12%	59	37
Starke	23,363	3,980	17%	15%	19%	17%	86	67
Sum	576,057	395,302	69%	15.3%	19.4%	14.5%	2.3%	4.8%

Transport Need Gap in Rural Indiana

Looking simultaneously at the transport needs and accessibility levels allows us to identify the areas that are highly transport disadvantaged. Specifically, we designate an area as having a transport need gap if it meets two conditions:

1. The area has a high or very high transport need, and
2. It has a very low accessibility level.

Figure 3 (page 3) shows the rural areas that suffer from a significant need gap. The areas are distributed over 13 of the 42 rural counties. Of concern is that some of these counties—Clay, Jennings, Parke, and Vermillion—do not offer any organized transportation service at all (see Table 3, page 5).

Table 3 (page 5) lists the public transportation systems offered in the 13 counties with a transport need gap. All of public transportation systems offered in the 13 counties

are demand response systems. A demand response system means that passengers need to request and reserve a service in advance by calling the agencies. Table 3 also reveals that the services are quite limited—by and large constrained to daytime services on weekdays. The base fares are low, but prices can increase considerably for trips over longer distances or across county borders. For instance, in Ripley County, trips exceeding five miles cost \$4.50 plus \$1.00 per county border crossed; in Harrison County, fares are \$3.00 for 11 to 20-mile trips, and \$4.00 for trips longer than 20 miles.

In addition to the services listed in Table 3, all 13 counties offer transportation support services specifically for elderly persons and persons with disabilities. These services are supported by the Indiana Department of Transportation’s Office of Transit under the Section 5310 Program. The eligibility requirements to request the services as well as the fares vary by agency and county.

Table 3. Public Transportation in the Highly Transport Disadvantaged Rural Counties of Indiana

County	System Name	Weekday Service Hours	Base Fare
Clay		no services offered	
Jennings			
Parke			
Vermillion			
Gibson	SIDC	6:00 AM - 6:00 PM	\$2.00
Greene	SIDC	6:00 AM - 6:00 PM	\$2.00
Harrison	Southern Indiana Transit System	6:00 AM - 6:00 PM, (Saturday: By Request for Public Events)	\$2.00
Jasper	KIRPC	6:00 AM - 6:00 PM	\$1.00
Newton	KIRPC	6:00 AM - 6:00 PM	\$1.00
Putnam	Monroe Co.	5:30 AM - 10:15 PM	\$1.00
Ripley	SIRPC	6:00 AM - 6:00 PM	\$1.25
Sullivan	SIDC	6:00 AM - 6:00 PM	\$2.00
White	White Co.	8:00 AM - 4:00 PM	\$1.00

Meeting the Transport Challenge in Rural Indiana

Equitable access to transport is viewed as a civil and human right (The Leadership Conference Education Fund 2011) and recognized to play a crucial role in quality of life and access to education, health services, and employment opportunities (International Transport Forum 2011). Focusing on those who do not have access to transportation, Preston and Raje (2007) argue that “social exclusion is not due to a lack of social opportunities but a lack of access to those opportunities” (p. 153).

In this article we illustrate that large portions of rural Indiana have below average accessibility levels and that those areas house a good deal of the travel-disadvantaged population (such as elderly persons and low-income individuals). Moreover, we identify the 13 counties that include areas with severe transport need gaps.

For all areas with low (or even average) accessibility levels, and in particular for the counties with severe transport need gaps, we recommend that policy makers and planners adopt a three-pronged approach consisting of:

- (1) Optimal use of the existing transport opportunities. Specific measures include, for example:
 - a. Targeted campaigns to increase awareness of existing transport services;
 - b. Regularly assessing/coordinating schedules, routes, and fares with the needs of travel disadvantaged residents.
- (2) Extending the transport network and creating new transport services. This includes measures such as:
 - a. Extending the hours of operation to evening hours and weekends;

- b. Join forces with neighboring counties to share services, or to pool resources for new services;
 - c. Adding rural fixed, deviated fixed, or service routes.
- (3) Coordinating land use decisions and infrastructure plans—for example, where to locate a new school or a new health care clinic—with the needs of the transport-vulnerable population.

In case of limited budget and other resources, this analysis can be a starting point to locate target communities that might experience significant transport challenges. Policy makers and planners might want to further investigate the extent and experience of these challenges by the residents. For instance, survey techniques and focus groups can be used to explore the specific needs of the residents living in areas with transport need gaps, increased transport disadvantage, and/or decreased accessibility. In addition, gathering information regarding residents’ opinion can help to prioritize and select a specific approach (from the ones mentioned above) as the best fit for the community. Finally, state programs might help the communities to deal with any transportation related challenges. For instance, in Indiana today, six “Quality-of-Life Plans” are active for Indianapolis neighborhoods, initiated by the Great Indy Neighborhoods Initiative (LISC). Such programs aim to engage both public and stakeholders, and to build a consensus on which are the most crucial challenges of the community and which directions to take in order to mitigate these challenges. Today this initiative is limited to target communities near Indianapolis. This article can provide some guidance on which communities would greatly benefit from developing and adopting similar programs.

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