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MICHIGAN PASSENGER RAIL: AN ANALYSIS OF COMMUNITY BENEFITS

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ABSTRACT

Passenger rail service is perceived to provide important benefits to Michigan communities. However, the extent of these benefits has never been quantified in a systematic way. The study reported on here involved the performance of a broad based assessment of the community level benefits of passenger rail service. The main objective of the research project was to estimate the full range of these benefits at the community level, as opposed to at the state level. Benefits were estimated for individual travelers, Amtrak expenditures, and local businesses. This research indicates local communities currently realize \$62.0 million annually in benefits. Additional benefits accrue to the region, state, and nation in the form of congestion relief, air quality improvement, energy conservation, and safety.

INTRODUCTION

Passenger rail service is perceived to provide important benefits to Michigan communities. The objective of this article is to report on the results of research which sought to estimate the full range of direct, indirect, and induced benefits at the community level. In addition to community benefits, passenger rail may provide statewide macro benefits related to reductions in congestion, air quality improvement, and energy conservation. This article focuses on community benefits such as individual traveler savings, Amtrak expenditures, and local business benefits, but does not address statewide macro benefits. The individual benefits focus on the savings to the passenger by choosing a mode of transportation less expensive than driving or flying. The Amtrak expenditure benefits quantify the amount of money Amtrak expends in employee wages and goods and services. The final benefit measured, local business benefits; quantifies the economic impact of a person accessing a community where they will spend money on goods and services, such as restaurants and taxi fares. These benefits are

assigned to the community where the rail station is located. In cases where more than one train station serves one metropolitan area, the benefits are added together to quantify a reasonable representation of the benefits for the metropolitan area. These benefits were analyzed using ridership data from 2007 and costs from 2008.

OVERVIEW OF MICHIGAN SYSTEM

Passenger rail services have been provided in Michigan for over 170 years. The first passenger train operated between Toledo and Adrian in 1836. By 1909, a 9000-mile network of railroad lines provided passenger service to nearly every city, town, and village in the state. The railway depot provided the doorway to the community and stations ranged from small wooden shelters to massive and distinguished buildings.

Railroads provided virtually all of the intercity transportation until the second decade of the 20th Century when automobiles and improved roads began to siphon off local rail traffic. This trend accelerated over the decades as roads were improved and longer distance traffic shifted to

air. By the early 1960's, the construction of the Interstate Highway System and massive investments in airports and airways dealt an almost fatal blow to the passenger rail industry. As ridership declined and losses grew, many passenger trains were discontinued by their private railroad operators and it became apparent that government must become involved if any passenger rail service was to survive.

In response to this crisis, in 1970, the federal government passed the National Railway Passenger Service Act that created the National Railroad Passenger Corporation known as Amtrak. This Act provided for private freight railroads to turn over passenger equipment and assets to Amtrak and, in return, they were relieved of their passenger service obligations. On May 1, 1971, virtually every privately operated intercity passenger train in the country was discontinued and most remaining services were assumed by Amtrak under a nationwide system.

In Michigan, about a dozen daily round trips on seven routes operated on April 30, 1971. The next day, May 1, only two round trips operated between Detroit and Chicago. Since that time Amtrak has been the sole operator of intercity passenger rail services in Michigan and, with minor exceptions, the entire U.S. These services receive financial assistance from the federal government and from many states including Michigan. Additional routes were added at the request of the State of Michigan between Port Huron and Chicago in 1974 and between Grand Rapids and Chicago in 1984.

Michigan Routes

In 2009, three routes provided passenger rail service in Michigan as shown in Figure 1 below.

MICHIGAN AMTRAK ROUTES

These Amtrak services have generally been in place for many years. The first of these services is the Wolverine. The Wolverine Service

provided by Amtrak began with two round trips on May 1, 1971 between Detroit and Chicago. A third round trip was added in 1975 and service was extended to Pontiac in 1994. Between 1980 and 1995, one of the round trips was extended to and from Toledo while continuing to serve Detroit and all other stations to the west.

The second route is The Blue Water Service started in 1974 between Port Huron and Chicago. From 1982-2004, the service operated as an international route from Toronto and Port Huron to Chicago. The international component to Toronto was discontinued in 2004 and service again originated and terminated in Port Huron. The Pere Marquette Service is the third route. This service was started in 1984 between Grand Rapids and Chicago and has operated continuously since that time. Table 1 summarizes ridership on these services and ridership (MDOT, 2007).

The three corridors are operated by Amtrak with financial support for the Blue Water and Pere Marquette services coming from the State of Michigan. The Wolverine service is part of Amtrak's basic national system and does not receive State support for operations.

The three corridors primarily operate over rail lines owned by Michigan's major freight railroads—Canadian National Railway, Norfolk Southern, CSX Transportation plus portions of the Conrail Shared Assets territory in metropolitan Detroit. This is typical of all Amtrak operations throughout the nation. An important exception is the railroad between Kalamazoo, Michigan and Porter, Indiana that is directly owned and operated by Amtrak. This line has been improved for service at speeds up to 110 mph, although the current allowable passenger train speed is 95 mph. This line segment is used by both the Wolverine and Blue Water trains.

The freight railroads used by Amtrak typically allow Amtrak operations at maximum speeds of 65-79 mph. Freight railroad ownership of the

FIGURE 1

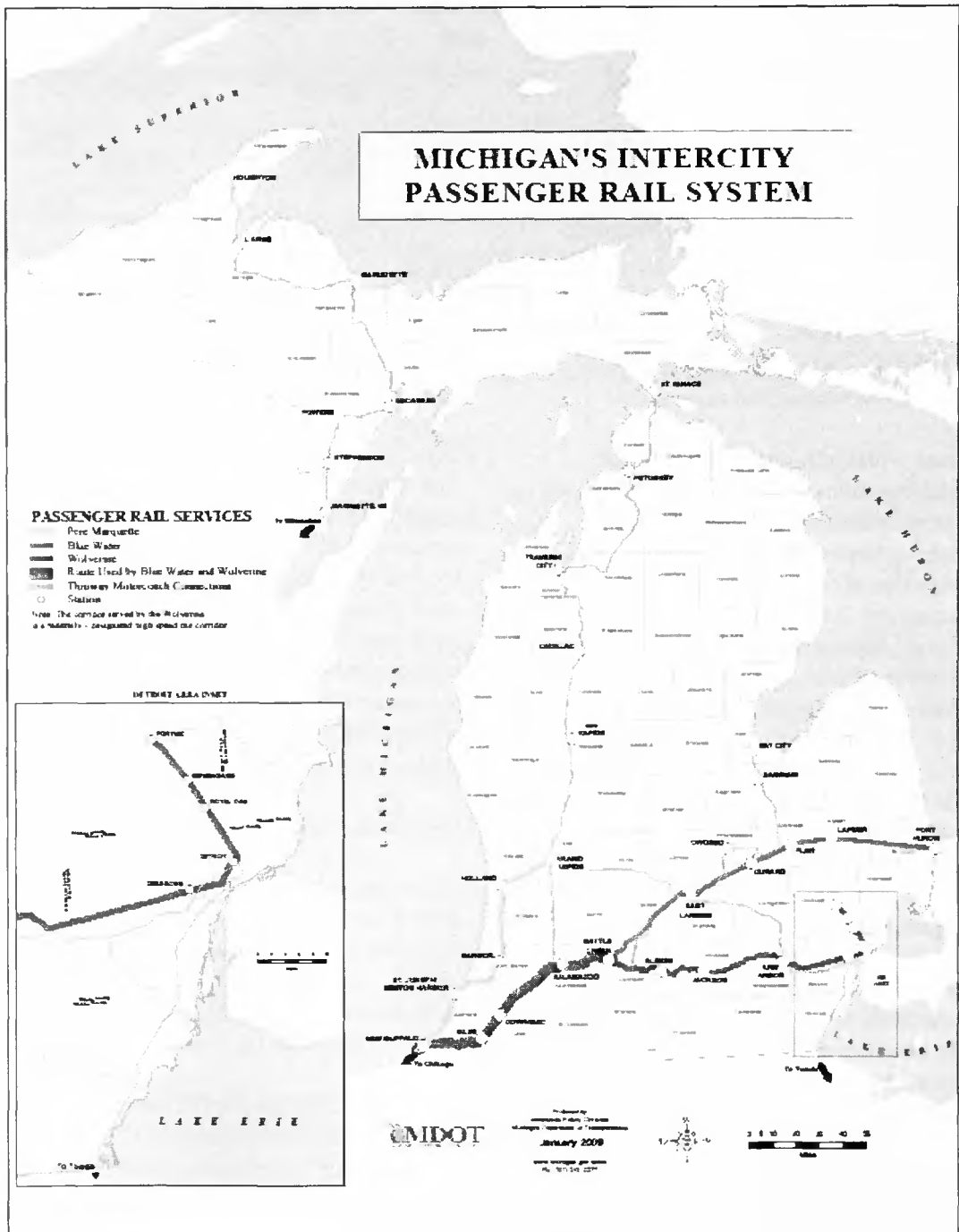


TABLE 1
MICHIGAN PASSENGER RAIL RIDERSHIP

Route	Name of Service	Daily Round Trips	2007 Ridership	2008 Ridership
Pontiac-Detroit-Chicago	Wolverine	3*	455,020	474,479
Port Huron-Chicago	Blue Water	1*	130,063	138,604
Grand Rapids-Chicago	Pere Marquette	1	106,462	111,575
Statewide			691,545	724,658

* The Blue Water service operates on the Wolverine route from Battle Creek to Chicago resulting in 4 round trips on that segment.

rail lines with the resulting control of dispatching duties has caused problems with on-time performance of passenger trains. Some of the line segments have heavy freight train volumes that often delay passenger trains, producing persistent on-time performance problems. However, the State of Michigan has recently received federal funding to allow for purchasing and upgrading the Amtrak used Norfolk Southern line between Dearborn and Kalamazoo. This will allow for faster train speeds on this segment, and more importantly, for more reliable service with fewer "slow" orders.

Michigan Stations

There are 22 station communities associated with the three passenger routes. Thirteen of the twenty two stations are city owned, five are owned by Amtrak and one each is owned by a local travel agency, Michigan State University, MDOT and a private owner. These stations vary greatly in age, architecture, staffing models and operation. Ten of the 22 stations are staffed by employees, while the remaining ones require passengers to purchase tickets from a ticket machine or Amtrak's website. The variability in station type and staffing models has resulted in an inconsistent operating model, and impacts some of the community level benefits.

The Amtrak stations that serve the passenger rail community all vary significantly in size, structure, and services offered. In general, there are four types of Amtrak stations in Michigan; basic, historical, modern and other. The station types vary by community served and do not offer common services of each type. Since the stations are under different ownership models, the employment and maintenance models for each station vary.

Ridership Levels

Ridership on Michigan passenger trains has grown by over 50 % between 2000 and 2008 – and from 481,223 passengers in year 2000 to 724,658 passengers in 2008. Current ridership is, by a wide margin, the highest ridership level since the inception of Amtrak in 1971.

Recent increases are part of nationwide increases in Amtrak ridership primarily caused by higher fuel and other transportation costs. In addition, state, local, and national marketing efforts have increased awareness of the advantages of train travel. In Michigan, anecdotal evidence suggests that the ridership would be even higher if more passenger cars were available and if on-time performance were more reliable. Ticket agents and others told the research team that

**TABLE 2
MICHIGAN RIDERSHIP TRENDS
1994-2008**

Year	Wolverine	Blue Water	Pere Marquette	Statewide
2008	474,479	138,604	111,575	724,658
2007	455,020	130,063	106,462	691,545
2006	444,319	124,953	103,912	673,184
2005	411,092	115,741	98,299	625,132
2004	379,677	98,356	90,522	568,555
2003	344,107	88,530	75,606	503,243
2002	295,550	88,045	63,596	447,191
2001	294,570	103,197	59,437	457,204
2000	313,255	106,866	61,102	481,223
1999	334,946	113,864	69,934	518,744
1998	365,143	112,168	65,788	543,099
1997	414,601	125,126	65,065	604,792
1996	383,426	111,348	58,516	553,290
1995	366,365	111,773	45,159	523,297
1994	402,461	117,100	70,995	589,142

many trains are sold out and potential passengers are unable to purchase tickets on the days that they prefer to travel. Table 2 provides information on ridership by route since 1994 (Amtrak, 2008).

ANALYSIS OF BENEFITS

The research team surveyed individuals associated with each of the stations and found

that in each community there was at least one person who had some knowledge or responsibility for the station. Although the research team was able to identify at least one person with knowledge of the station, it is important to note that the actual responsibility for operating the station may have been with the city, transit agency, regional planning agency, Amtrak, or some combination of these agencies. As a result, the person surveyed may or may not

have been able to provide substantive information about the operation, care and upkeep of the station. This results from each community operating the station in a way that suits their particular needs. The surveys revealed that the community generally supports the stations, and would likely support increased ridership and investment in the stations if the ridership levels supported the additional investments. The business benefits of the Amtrak stations are generally acknowledged in the community, but little data is available to support the notion that there is additional business resulting from station traffic.

The benefit associated with development and investment in new or improved stations is driven by overall ridership levels. Ridership levels are influenced by the services offered at the station as well as train service such as frequency of service, price, train capacity and perceived benefit. Surveys conducted with Amtrak personnel indicated that there is a need to increase the frequency of routes. Due to increases in gas prices, and the perceived value of train travel, certain routes have been selling out at peak times. To support this growth, there are several initiatives underway such as the Midwest Regional Rail Initiative. This initiative proposes the operation of a "hub and spoke" system of transportation to and through Chicago and other cities in the Midwest. Initially, Michigan would see an increase of 3 additional daily trains, and eventually there would be 10 total trips between Detroit and Chicago. In addition to the Detroit-Chicago routes, there would be four trains between Chicago and Kalamazoo. The additional frequency of routes, and speed/reliability improvements in the Dearborn-Kalamazoo corridor discussed earlier, are expected to greatly increase the ridership, and overall economic benefits in station communities. The station community benefits would also be enhanced by the infrastructure improvements needed to support such an increase in ridership.

The benefits of passenger rail to a community can be classified as individual station benefits, Amtrak expenditures, and local business benefits. These benefits vary by community, Amtrak station type, number of daily routes, and overall ridership. Overall ridership tends to be the largest driver of quantifiable benefits.

Individual Station Benefits

The first type of benefit a station community receives is the individual passenger benefit. This benefit exists because trains offer an economical mode of transportation that is generally less expensive than air and automobile travel. Quantifying this benefit involves analyzing the costs that would be incurred if there was no passenger rail service in a community and alternative modes were used, or the trip were not taken all together. To quantify the benefit, ridership data was obtained for each Michigan passenger rail station from MDOTs Transportation Management System (TMS) (MDOT, 2007). This information is provided directly from Amtrak, and is available by station. For the purposes of this study, 2007 data was used and data was compiled for the Wolverine, Pere Marquette and Blue Water Corridors. Once the data was obtained from TMS, the research team determined the mode of transportation that would be used if Amtrak was not available. This determination was made by surveying riders on the Amtrak routes and captured not only the alternate mode that would have been used, but also data points as to whether or not a trip would have been taken in the absence of an Amtrak route. To supplement the survey results, the research team leveraged a similar study conducted in 2000 by the University of Michigan (2000). This survey captured additional data points such as duration of the trip, number of travelers in the party, and the percentage of travelers using hotels. The multiple surveys were conducted during different time periods, the 2000 survey in December and the 2007 in spring. The difference in the time periods allowed the

research team to capture data that is more representative of passenger travel.

Once this data was compiled, the team was tasked with determining the cost of alternate modes of transportation. These costs were gathered by internet searches of bus routes and airline prices for the same O-D pairs. There is a considerable amount of variability in the alternate modes of transportation as pricing on a particular route can vary based on the frequency, day of week traveled and seasonality. To help normalize the data, a 14-day advance round trip ticket was used for the analysis. The round trip ticket was then divided in half to estimate the cost to compare to a one way Amtrak ticket. When a traveler indicated that they would drive rather than take the train, the 2008 IRS rate of \$.505 per mile divided by 1.8 persons per vehicle was used. The IRS rate per mile was used because this rate factors in gas, depreciation or lease payment, maintenance costs, insurance, tires, oil, and license and registration. The IRS rate is the most widely accepted measure of an automobile cost. In addition to the IRS rate and ticket costs, parking, tolls and any other fees from a particular mode we factored into the savings calculation.

In addition to traveler benefit, the team quantified non traveler benefits by using a complex procedure where numerous tables and data points were analyzed. Non traveler benefits were quantified because some travelers were

unwilling to take the trip if a less expensive alternative was available. Knowing that a person was willing to spend money on a train ticket, but not on the next most expensive alternative mode of transportation allows for the calculation of a consumer surplus. This estimate of non-traveler benefit assumes that if the money was not spent on a ticket, it would be spent on something else, but they do not get any additional benefit beyond the price of the ticket. The non traveler savings represent a small piece of the total benefit.

Table 3 below shows that across the state of Michigan, there was a total of \$22.7M in savings generated by the availability of an Amtrak station. This table is supported by a number of more detailed analysis spreadsheets that are too long to show here.

Local Business Benefits

A traveler may use the train to travel to and from a community where they stay in a hotel, use a taxi, shop or eat in a restaurant. Although the level of these activities may vary from community to community, these types of expenditures send a stream of benefits to the station community. To quantify these benefits, the research team relied heavily on the 2000 and 2007 surveys. The survey captured the mode of transportation used to get to and from the Amtrak, as well as the length of stay. Respondents were also asked their primary

**TABLE 3
STATION INDIVIDUAL TRAVELLER BENEFITS**

	Pere Marquette Corridor	Blue Water Corridor	Wolverine Corridor	Total
Traveler Savings with Amtrak	\$2.8M	\$4.3M	\$12.9M	\$20.0M
Non-Traveler Savings	\$.3M	\$.5M	\$1.8M	\$2.7M
Total	\$3.1M	\$4.8M	\$14.7M	\$22.7M

purpose for the trip. With this information estimates for expenditures were developed. Since many of the routes involve travel to and from Chicago, expenditures were isolated to the state of Michigan. With the heavy travel volume to Chicago, only an estimated 7% of Amtrak travelers in Michigan were expected to use hotels for business, convention, shopping or other purposes. This approach is considered conservative since there are likely some Michigan residents who would stay and shop in state. A fair set of cost estimates were used based on the 2008 State of Michigan government travel rates. These rates are \$65/night for hotels and a \$38.50 daily per diem for meals with an average stay of four days.

Table 4 indicates that local communities receive annual benefits of \$25.7M due to Amtrak passengers using stations and surrounding businesses. Again, a number of more detailed spreadsheets support these values. These benefits include \$15.7 million of direct benefits, and indirect benefits of \$9.9 million.

The \$15.7M equates to approximately \$23 per passenger using the Amtrak stations in Michigan. This estimate was developed using conservative cost estimates, and takes into consideration the fact that some smaller communities may not attract the same level of business travelers as more diverse metropolitan areas. As a result, the station types were classified as Category 1, 2 or 3 stations. The category 1 stations have a metropolitan area station with multiple daily service frequencies and yield a per passenger benefit of \$25. The category 2 stations have a metropolitan area with single daily service, and yield a per passenger benefit of \$20. The category 3 stations are defined as smaller community stations and yield a per passenger benefit of \$15. Total passenger value was estimated and then adjustments were made to estimated benefits based on station type. This results in a reduction of \$200,000 in annual expected benefits from the \$28/passenger estimate. In addition to the station type

adjustments, the multiplier effects of direct expenditures in a community were quantified. These multipliers were obtained through the Bureau of Economic Analysis for (2006) at the county level. Different multiplier sets were obtained for the five regions served by Amtrak. The sets contained multipliers for retail related expenditures ranging from 1.426 to 1.5817 and rail related expenditures ranging from 1.5591 to 1.8081.

AMTRAK Expenditure Benefits

Amtrak is the operator of all passenger rail services in Michigan. As a result, Amtrak spends a significant amount of money in station communities in the form of wages, supplies, and stations. These expenditures provide benefits to the local communities where employees live and work or where the stations are located.

To quantify the benefits from direct Amtrak Expenditures, Amtrak provided information on employee residence location and procurement expenses in Michigan. Employees were assigned to station locations based on discussions with Amtrak officials and review of material provided by Amtrak. Procurement expenditures were assigned to stations if they had a relationship to a particular station. Procurement expenses that support system wide operations outside of Michigan were excluded from the benefits analysis.

A large portion of direct Amtrak expenditure benefits comes from employee wages. For the purpose of this analysis, employees were classified as operating employees, station service employees and engineering department employees. The operating employees, primarily based in Pontiac, Port Huron and Grand Rapids, include the train conductors, engineers, assistant conductors and train maintenance personnel. There are 48 operating employees. The station service employees sell tickets, clean and provide information, and also provide some security services. There are 27 service employees distributed among 10 Michigan Amtrak stations.

**TABLE 4
LOCAL BUSINESS BENEFITS**

Access	% Using	Trip Universe (000's)	Total Trips (000's)	Average Cost	Total Cost (000's \$)	Cost/Passenger
<u>Access</u>						
Taxi	8.5	692	59	\$10	\$ 587	\$0.85
Transit	2.4	692	17	\$ 1	\$ 17	\$0.02
Rental Car	.01	692	.7	\$50	\$ 35	\$0.05
Personal Vehicle	81.7	692	565	\$2.80	\$1,582	\$2.29
Total					\$2,221	\$3.21
<u>Lodging Materials</u>						
Hotels	7.42	346	26	\$260	\$6,671	\$9.65
Meals	7.42	346	26	\$154	\$3,951	\$5.71
Total					\$10, 622	\$15.36
<u>Incidentals</u>						
Shopping	5.00	346	17	\$100	\$1,728	\$ 2.50
Incidental Meals	10.00	692	69	\$ 10	\$ 692	\$ 1.00
Misc	100.0	692	692	\$ 1	\$ 692	\$ 1.00
Total					\$3,112	\$ 4.50
Passenger Total					\$15,955	\$23.07
Station Adjustment					\$15,722	
Indirect					\$ 9,953	
Grand Total					\$25,675	

The engineering department employees maintain track and signal systems on the 97 mile rail line between Kalamazoo and Porter, Indiana. There are 40 employees in this category. Expenditures on wages added up to \$7,150,000.

In addition to employee wages and direct expenditures, Amtrak spends a significant amount of money procuring diesel fuel in Pontiac. The value of the fuel was excluded from the study, but an estimate of the cost of direct labor and vendor profit was assigned as a benefit. Costs for items such as landscaping, office supplies, trash pickup and other expenses associated with station maintenance were estimated and included in the study. In addition, costs for Amtrak expenditures associated with crew layovers such as taxi fares, hotels and meals were estimated and included in the analysis. Costs associated with the materials and suppliers related to maintaining the rail lines between Kalamazoo and Porter Indiana we estimated and included in the analysis.

The analysis of the direct Amtrak expenditures resulted in over \$9M in direct benefit assigned to station communities. The values in the Table 5 are subject to economic multipliers, as the expenditures will flow throughout the community. The application of these multipliers results in \$13M of Amtrak direct and induced expenditures in Michigan.

While the station communities receive significant economic benefit from the Amtrak stations, it is important to take into consideration that the communities incur certain costs. These costs may vary from community to community but in general include staff time to coordinate with Amtrak, MDOT or others involved with the station, staff time to coordinate with local volunteers or to arrange for necessary maintenance, and routine station operating costs. Since only six of the 22 stations are owned by Amtrak, maintenance of the remaining 16 stations is the responsibility of the local

**TABLE 5
AMTRAK EXPENDITURE BENEFITS**

Type of Expenditure	Expenditure
Direct Employee Wages	\$7,150,000
Employee Layover Costs	\$242,000
Miscellaneous Expenses	\$300,000
Pontiac Refueling Costs- Direct Vendor Labor and Profit	\$700,000
Amtrak Line Equipment and Materials	\$485,000
Amtrak Owned Station Operations	\$150,000
Total Expenditures Before Multipliers	\$9,027,000
Impact of Economic Multipliers	\$4,606,80
Total Community Benefit	\$13,633,680

community. The annual expense for maintaining these stations is an estimated \$10,000-\$60,000 annually, depending on station size. The total local community expenditures for the Amtrak stations are estimated at \$510,000 statewide. In addition to the \$510,000, Amtrak spends an additional \$150,000 maintaining the stations it owns.

Total Benefits

The total benefits associated with the 22 station communities are estimated at \$62M annually. These quantifiable benefits are associated with passenger rail service. The benefits are summarized in Table 6. As expected, the benefits are highest in the "Wolverine Corridor". This corridor has the most ridership and the greatest population. The Wolverine Corridor receives \$45M, the Blue Water Corridor receives \$9.7M, and the Pere Marquette Corridor receives \$7.3M in annual benefit. It is important to note that the \$62M in total benefits are the quantifiable benefits associated with passenger rail. There may be additional benefits that exist, but are more difficult to quantify. These benefits relate to how the existence of passenger rail service enhances its image as a place to live or do business. There are also significant benefits that accrue to the entire state related to relief in

traffic congestion, energy conservation and environmental impact. The quantifiable benefits and the macro benefits should be taken into consideration when determining the overall benefit of Amtrak service in a community.

Other Benefits

The benefits associated with passenger rail are highly impacted by ridership levels. Enhancing stations or building new stations could increase the benefits associated with passenger rail. In order to accurately estimate the benefits, ridership levels must be accurately estimated. Estimating these levels typically involves use of complex models. These models take into consideration service frequency, travel time, fare pricing, on board amenities and other factors. The models factor in the number of city pairs serviced by a particular station. As evidenced by the \$62M in annual community benefit, there may be a business case to expand passenger rail service in the state of Michigan. The quantified benefits of the existing rail stations may be increased by developing new stations or relocating stations to more strategic locations. There are several projects underway throughout the state where local communities are trying to increase the value of the station to their community.

**TABLE 6
TOTAL BENEFITS**

	Pere Marq. Corridor	Blue Water Corridor	Wolverine Corridor	Total Statewide
Traveler Savings	\$2,808,380	\$4,283,972	\$12,872,105	\$19,964,456
Non Traveler Savings	\$345,737	\$545,449	\$1,848,575	\$2,739,761
Local Business Benefits	\$3,572,199	\$2,942,865	\$19,159,480	\$25,674,544
Amtrak Expenditures	\$551,035	\$1,949,089	\$11,133,556	\$13,633,680
Total Community Benefits	\$7,277,351	\$9,721,374	\$45,013,716	\$62,012,441

There are many direct and indirect benefits resulting from the passenger rail services provided at existing rail stations. These benefits can be enhanced and expanded through investment in a new station or relocating an existing station. When considering whether or not to add a new station to a community or relocate an existing station, the numerous economic opportunities must be quantified. These economic opportunities may include local job creation, increased property values, new residential and commercial construction, and creation of new business in and around the station. The analysis of these economic benefits comes primarily from studies of Transportation Oriented Development (TOD) throughout the U.S. While these studies typically focus on commuter rail service in densely populated communities, many of the benefits discussed could accrue to Michigan Amtrak services through enhancements to station locations and levels of service.

One of the major economic benefits associated with building or relocating a station comes from the construction costs. There is an increase in both direct jobs and spinoff jobs in the local economy. The construction of a station with a cost of \$10M will result in the creation of 90-140 new jobs and contribute \$5M to the local economy. These conservative estimates of job creation and economic stimulation focus only on direct construction impact and do not include future development based on business stimulation.

In addition to the direct economic impact, property values near the station may increase. TOD studies reveal a wide variation in property value increases across the country. Property value may increase 2-45% for residential properties and 1-167% for office/retail space. As property values increase, there is also an opportunity for the station community to generate additional property tax revenue. The situation for Amtrak stations is somewhat different from light rail systems since Amtrak generally operates on freight lines. This may

make residential proximity somewhat less desirable, but creative land planning and the increased availability of public transportation can increase the desirability and value of adjacent land. Expanding a station could bring in more tourists, which in turn increases the value of land for some areas. In Michigan, St. Joseph is planning a major expansion of their current station. This will increase the area's reputation as a Michigan tourist destination which may increase the value of the adjacent land as there will be an increased customer base for some businesses.

Creating a transportation focal point can be a stimulus for various types of development in the station community. The location of the land and effective use of surrounding property is a key driver of economic benefits. A site surrounded by public land has the potential for development by both the municipality and private developers. In contrast, stations with little available vacant land or with land incompatible with development will have limited development potential. In order to maximize benefits and increase the effectiveness of land use, the municipalities should work with the developers throughout the station development process. An example of a study currently underway analyzing the benefits of repurposing land for light rail use is the Birmingham/Troy relocation study. This study is looking at the benefits of relocating a station from Birmingham to Troy. The current site is a shelter type station, and would be converted into a multimodal transportation hub. The proposed parcel used for this project is approximately 3.5 acres. Current estimates state that the development of a multi modal station development under optimal conditions could generate up to 300,000 square feet of retail development and 290 new residential units.

CONCLUSIONS

Significant local economic benefits are associated with Amtrak service in Michigan. The research indicates that local communities

currently realize \$62M in annual benefits in the form of individual traveler benefits, local business benefits, and direct Amtrak expenditures. In addition to the direct benefits, additional benefits accrue at the regional, state and national level in the form of traffic congestion relief, air quality improvements, energy conservation and safety. The benefits identified through this research accrue at the local level even though ridership in Michigan is quite low. Most of these stations provide only a single roundtrip route. This severely limits the potential for economic development and its associated benefit. Since ridership is a major driver in station community benefits, implementation of greatly improved service levels and train speeds such as those in the proposed high speed Midwest Regional Rail System could dramatically change the station area dynamics and overall benefit levels for local communities.

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REFERENCES

- Amtrak, *Traffic Data Reports*, 2008.
- Amtrak Downeaster (2008), *Overview of Projected Economic Impacts*, Center for Neighborhood Technology, Chicago.
- Amtrak Downeaster (2005), *Overview of Projected Economic Research Benefits*, Boston.
- Bureau of Economic Analysis (2006), Department of Commerce, *Multipliers at the County Level*.
- Cambridge Systematics, Inc. (1999), *Public Transportation and the Nation's Economy. A Quantitative Analysis of the Public Transportation System*, October.
- HLB Decision Economics, Inc, (2003), *The Socio-Economic Benefits of Transit in Wisconsin*, Silver Spring, Maryland, December.
- Lynch, Tim (2000), *Analyzing the Economic Impact of Transportation Projects Using RIMSII, IMPLAN, and REMI*, Office of Research and Special Programs U.S. Department of Transportation, Washington, D.C.
- Michigan Department of Transportation (2007), *Transportation Management System*.
- Transportation Research Board (2008), *Capturing the Value of Transit*, Reconnecting America's Center for TOD.
- Transportation Research Board (2004), *Transit-Oriented Development in the United States: Experiences, Challenges, and Prospects*, TCRP Report 102.
- University of Michigan (2000), *Survey of Michigan Amtrak Rider Characteristics*, MDOT Files.
- University of Wisconsin-Milwaukee (2007), *Community Economic Impact Study of the Proposed Kenosha-Racine-Milwaukee (KRM) Commuter Rail*, Institute for Survey & Policy Research, January.

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