Economic Impact Analysis of Ferry Operations in Wisconsin

Authors:

Teresa M. Adams, PhD, (contact author) (608) 263-3175
Professor, Department of Civil & Environmental Engineering

Raine Gardner, Graduate Student, Department of Civil & Environmental Engineering
Bob Gollnik, Graduate Student, Department of Urban & Regional Planning
Mark Ray, Undergraduate Student, Department of Civil & Environmental Engineering
Judith Ruetsche, Graduate Student, Department of Urban & Regional Planning
David Sokolowski, Graduate Student, Department of Civil & Environmental Engineering

University of Wisconsin-Madison
2205 Engineering Hall
1415 Engineering Drive
Madison, Wisconsin 53706-1691

Dennis Leong
Liat Lichtman, AICP
Bob Russell
(608) 266-9910
Wisconsin Department of Transportation
Hill Farms State Transportation Building
4802 Sheboygan Avenue
PO BOX 7913
Madison, Wisconsin 53707-7913

And

David Scheler
(608) 261-8184
Wisconsin Department of Tourism
201 W. Washington Ave.
Madison, WI 53703

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ABSTRACT

Many travelers view ferry transportation as an adventure and an experience that cannot be obtained from other modes of transportation. In Wisconsin, the ferries strengthen the state's economy by generating tourism and support for local business. Ferry operations in Wisconsin hold historic, economic, and environmental value to their surrounding areas and are important to not only the state and local economies, but also the neighboring states' economies. The ferries provide critical transportation mobility to communities, and a convenient travel bypass to avoid congested Chicago highways.

Most ferry operations in Wisconsin are privately owned and independently operated. They are located in separate parts of the state and operate small fleets of one or more vessels. This paper presents economic analyses of selected ferry operations in Wisconsin. The intent is to quantify the significance of the ferry operations to the economies and transportation of their respective communities in Wisconsin. A cost and time analysis compares travel by ferry versus highway from the traveler's perspective. An economic impact analysis quantifies the baseline estimates of direct, indirect, and induced output and total jobs supplied that can be attributed to the ferry operations.

INTRODUCTION

The Washington State Ferries (1) and the San Francisco Bay Area ferries (2) provide important mass transit services for commuters, helping the states' transportation systems run more efficiently by offering alternative routes for travelers. In other states, such as Wisconsin, public transport ferries are independent, privately operated small fleets at various locations across the state and their economic and transportation importance may not be so obvious.

Wisconsin Department of Transportation (WisDOT) analyzes the economic importance of transportation in Wisconsin including bicycling, airports, highways, and harbors, ports and ferries. The agency uses measures of economic impact to communicate the importance of transportation and to justify investments in related infrastructure. A literature review and personal contacts with port authorities, waterfront alliances, local and state transportation departments, and economic development corporations in Wisconsin and elsewhere reveal an obvious void of Data for an impact analysis depends upon the ferry operators' willingness to provide information. For privacy reasons, data are kept confidential and published impacts are aggregated.

This paper presents results of a collaborative effort between the Midwest Regional University Transportation Center (MRUTC) at the University of Wisconsin-Madison (UW-Madison) and WisDOT to collect operational information from the state's independent ferry operators and to analyze their individual and aggregate economic importance. The multidisciplinary student team of engineers and planners conducted the project to satisfy a requirement of UW-Madison's interdisciplinary Transportation Management and Policy certificate program.

OBJECTIVES AND METHODOLOGY

The objectives of the study are to determine the importance of the public transport ferry industry in Wisconsin and to assess the role of the ferry operations within the communities they serve. The study involved understanding the significance of ferry services as a transportation mode,

cost analyses of ferry versus highway modal choices, and economic impact analyses. Data and information were collected from existing records, websites, and interviews with operators and administrators of each ferry operation.

The ferry operators are interested in knowing the economic impact of their services. Most operators want to raise awareness in the minds of state and local legislatures as a means of getting public support and funding for new boats, dock, landing, and boat maintenance, and security. At the same time, the ferry operators are reluctant to provide financial and ridership information. Accordingly, the economic impact analysis results were aggregated to protect the privacy of the individual ferry operations.

The researchers prepared a narrative of the historic and cultural significance of each ferry operation, including descriptions of operations and environmental impacts where information was available. The information collected provides a framework of ferry operations and allows for understanding the ferry services and business issues.

A modal choice analysis based on cost and travel time was conducted for the Lake Express and SS Badger ferries to compare travel by ferry across Lake Michigan versus driving around the lake through the Chicago area, which has the third highest congestion in the nation (3).

The importance of each ferry line depends upon its impact on Wisconsin's economy. The economic impact analysis made use of the IMPLAN© Input/Output computer models.

PUBLIC TRANSPORT FERRIES IN WISCONSIN

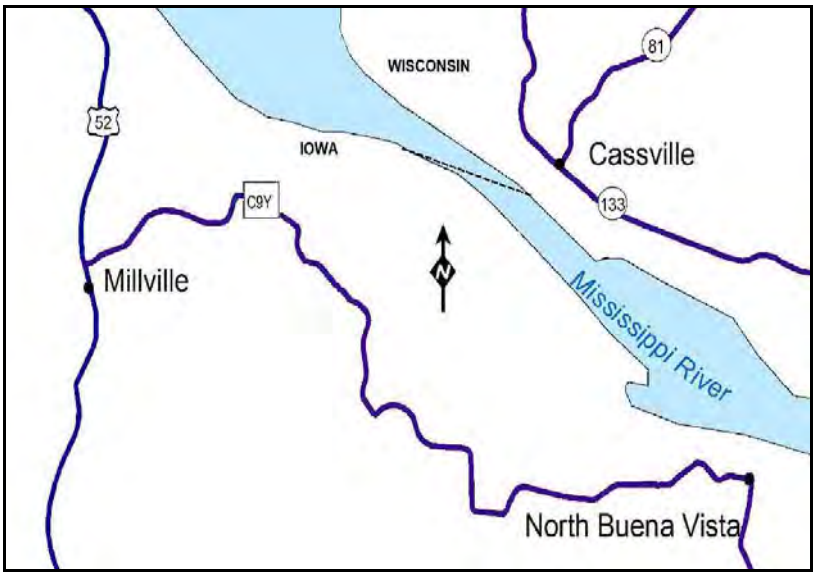
Wisconsin has six ferry operations that provide seasonal or year-round public transportation services. The Merrimac Ferry, located in southwestern Wisconsin, is operated by WisDOT. This paper focuses on the state's five privately-owned, public transport ferry operations described in the following section.

CASSVILLE CAR FERRY

The Cassville Car Ferry operates across the Mississippi River between Cassville, Wisconsin and Millville, Iowa. It makes its voyage from Wisconsin's Great River Road to Iowa's Great River Road and back. Figure 1 shows the ferry's crossing location. The ferry was established in 1835 with a state grant to purchase the boat and ran uninterrupted for 107 years (4). During that time, Cassville Canning used the ferry to transport produce from farms in Iowa to its cannery in Wisconsin (21).

Today, the ferry promotes tourism within both states and is the only ferry running north of St. Louis, Missouri. The ferry is the only mode for crossing the Mississippi River along 70-mile (113 kilometer) between Dubuque, Iowa and Prairie du Chien, Wisconsin.

Each year, the ferry carries tens of thousands of passengers, passenger vehicles, motorcycles, commercial trucks, buses, bikes, and tractors across the river. The boat uses a 5% soybean byproduct fuel to reduce emissions of sulfur. The ferry crosses upon demand, except for the two scheduled trips at the beginning and end of the day (21).



Fare	One-way	Round Trip
Adult	$2	$4
Auto	$11	$22
Motorcycle	$6	$12
Bike	$3	$6
Bus ($/person)	$2	$4
Commercial Vehicle	$40	$80

Operating Season	5/5 – 10/29
Length of Trip	10 minutes
Trips per Day	~40

FIGURE 1 Cassville Ferry Crossing and Fare Structure.

LAKE EXPRESS

The Lake Express ferry offers service from Milwaukee, Wisconsin to Muskegon, Michigan across Lake Michigan. Lake Express was founded by Ken Szallai, the former Director of the Port of Milwaukee and current President of Lake Express. Since 1970, when Milwaukee's ferry operations ended, Szallai was interested in bringing them back in an economically viable way. Lake Express, LLC, was formed in 2000 and opened for operation in June 2004. It is the first high-speed, catamaran style auto/passenger ferry built in the US. Under the Passenger Services Act of 1886 (discussed below), the ship had to be built in the US. Figure 2 shows the Lake Express's sailing route and fare structure (23).

The Lake Express is a passenger vessel tailored towards tourism. The Lake Express reaches speeds up to 40 miles per hour. The ferry can accommodate 48 vehicles, 12 motorcycles, and 248 passengers per trip, and is able to reach its maximum speed because it does not carry freight, trucks, or buses. This ferry trip is a favored option for travelers who do not want to travel through the congestion around Chicago. Passengers are estimated at over 100,000 per season and growing every year (23).

Fare	One-way	Round Trip
Adult	$55	$95
Seniors (66+)	$55	$85
Children (5-17)	$30	$50
Children under 5	Free	Free
Premier Class	$70	$130
Auto	$70	$130
Trailers	$65	$130
Motorcycle	$40	$70
Bike	$10	$20

Operating Season	Late April – Late October
Length of Trip	2.5 hours
Trips per Day	2-3

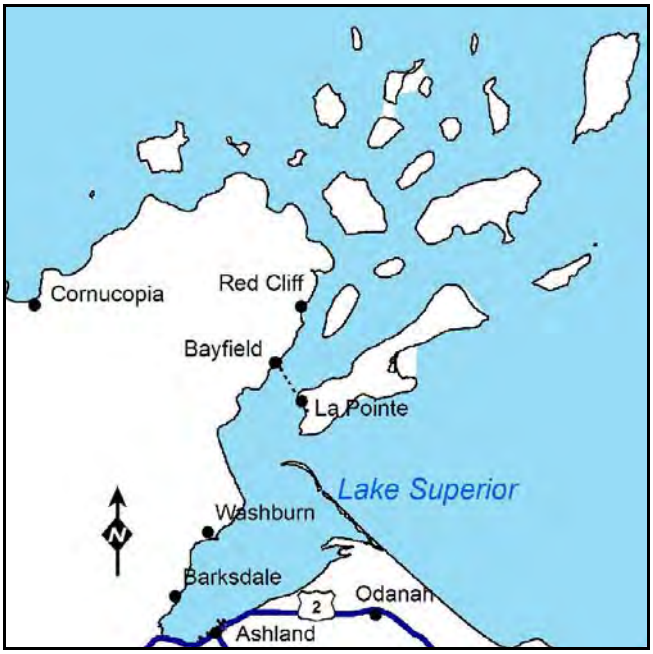
FIGURE 2 Lake Express Crossing and Fare Structure.

The Lake Express is located on property leased from the Port of Milwaukee. The ferry pays the Port annually a fee per passenger and vehicle parked on the property. This relationship allows the Lake Express to have a prime location near downtown Milwaukee and the Port to receive income.

MADELINE ISLAND FERRY LINE

Ferry service between Bayfield on the Wisconsin mainland and LaPointe on northern Wisconsin's Madeline Island (Figure 3) dates back to 1870. In 1970, two ferry operations out of Bayfield merged to become the current Madeline Island Ferry Service (25). Today, the Madeline Island Ferry Line operates four boats: Nichevo II, Island Queen, Madeline, and Bayfield, each having a capacity of 149 passengers and 10-26 vehicles. The maximum speeds of the ferries are 11.5 to 13.25 mph (18.5-21.3 km/h). The width of the Bayfield, the oldest boat, is large enough to transport trucks, buses, and even the occasional house (6).

The ferry is the only means of transportation for many of the residents of Madeline Island and is essential for their lifestyle. The ferry line makes approximately 6,000 crossings each year between early spring and late fall, and the number of daily trips varies seasonally. During the peak season in the summer, there are 23 round trips per day (6).



Fares	One Way	Round Trip
Adult (12+)	$5	$10
Children (6-11)	$2.50	$5
Children under 6	Free	Free
Auto	$11	$22
Motorcycle	$6.50	$13
Bike	$2.50	$5

Operating Season	March – December/January
Length of Trip	20-25 minutes
Trips per Day	8-25 depending on season

FIGURE 3 Madeline Island Ferry Crossing and Fare Structure.

SS BADGER

The SS Badger's service began in 1953, transporting rail freight cars across Lake Michigan (7). The ship sails from Ludington, Michigan to Manitowoc, Wisconsin and docks nightly in Ludington. In 1996, the Badger's propulsion system was designated a mechanical engineering landmark by the American Society of Mechanical Engineers (7). This 410 foot long (125 meters)

ferry is the largest car ferry traveling across Lake Michigan. Figure 4 shows the SS Badger's sailing route and fare structure.

Fare	One-way	Round Trip
Adult	$52	$87
Seniors (65+)	$47	$79
Children (5-15)	$24	$39
Children under 5	Free	Free
Auto, Vans, Pickups	$55	$110
Trailers<7'	$3.95/ft	$7.90/ft
Trailers 7'-8.5'	$4.95/ft	$9.90/ft
RVs/Motor homes	$4.95/ft	$9.90/ft
Pickup Camper	$69	$138
Motorcycle	$29	$58
Commercial Vehicle (vehicle and driver)	$270	$540
Bike	$5	$10

Operating Season	May - October
Length of Trip	4.5 hours
Trips per Day	1-2

FIGURE 4 SS Badger Crossing and Fare Structure.

By the 1970s, the railroads lost economic value to shippers and the industry plummeted. After many years of low productivity, in November of 1990, the SS Badger terminated operations (7). In 1991, the late Charles Conrad used personal finances to convert the SS Badger vessel to a leisure passenger and vehicle-carrying ferry offering travelers the option of avoiding the congestion of Chicago. It can hold 620 passengers and 180 automobiles, tour buses, RVs, motorcycles, and commercial trucks. The ferry makes 492 crossing per year (7). In a typical year, the SS Badger transports more than 100,000 passengers (22). The SS Badger is designated by both Wisconsin and Michigan as a historical site so many tourists make it a part of their vacation (7).

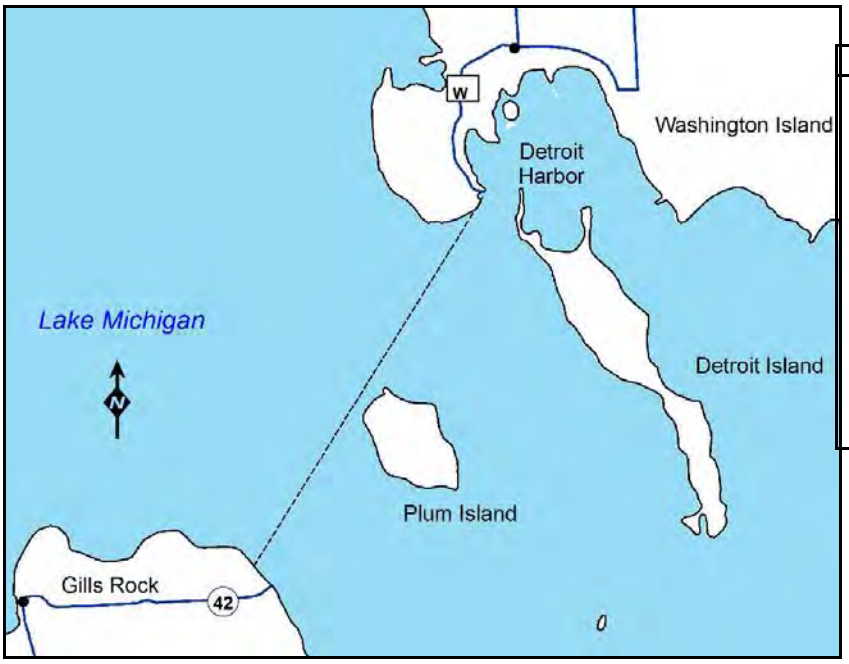
WASHINGTON ISLAND FERRY LINE

For over one hundred years, a variety of ships have provided service to Washington Island. Prior to 1940, small motorized vessels carried freight, passengers, and a few cars across Lake Michigan. In 1940, the Washington Island Ferry Line (WIFL) began and the. service's wooden-hulled boats only operated when there was no ice on the lake. When the lake froze, passengers and freight traveled over the ice or used a small fishing tugboat.

The ferry travels from Detroit Harbor, on Washington Island, to Northport Harbor, on Wisconsin's mainland (8). Figure 5 shows the Washington Island Ferry route and fare structure. The ferry crossing takes about 30 minutes each way. Today, the WIFL operates five ferries, provides service year-round but relies on summer tourism as its main source of revenue. .The WIFL raises the winter tariff for trucks, trailers, and large equipment to recoup the high winter maintenance and operating costs (24).

The WIFL recognizes its tremendous impact on the island's well-being and environmental health. The ferry brings goods and supplies to the residents and businesses including the summer tourist establishments. The ferry also carries the island's garbage and recyclables back to the mainland (24). The ferry line brings tourists, vehicles, and the associated

traffic and pollution to the island. Adjustments in the scheduled service of the ferry service can promote or inhibit growth and activity on the island.



Fare	One-way	Round Trip
Adult	$52	$87
Seniors (65+)	$47	$79
Children (5-15)	$24	$39
Children under 5	Free	Free
Auto, Vans, Pickups	$55	$110
Trailers<7'	$3.95/ft	$7.90/ft
Trailers 7'-8.5'	$4.95/ft	$9.90/ft
RVS,Motorhomes	$4.95/ft	$9.90/ft
Pickup Camper	$69	$138
Motorcycle	$29	$58
Commercial Vehicle	$270 (vehicle and driver)	$540 (vehicle and driver
Bike	$5	$10

Operating Season	May - October
Length of Trip	4.5 hours
Trips per Day	1-2

FIGURE 5 Washington Island Ferry Crossing and Fare Structure.

PASSENGER SERVICES ACT OF 1886

The Passenger Services Act of 1886 requires that all passenger ships operating between two points in the US be US-owned, built and crewed (9). The law has become a source of frustration for the water transportation industry because of the high cost of shipbuilding in the US (10), which can be hundreds of thousand dollars more than elsewhere. In 2005, Hurricane Katrina destroyed many boats harbored along the Gulf Coast causing a surge in demand for vessels. The increased demand has led to rise in cost of used vessels.

SECURITY

Ferry operators with vessels that carry over 150 passengers are mandated by the Transportation Security Administration (TSA) to implement security plans. Most of the costs are borne by the operators, possibly at the expense of ship maintenance, port upkeep, and other industry necessities, or by customers through increased fares.

Limited fund for ferry security are available from the Transit Security Grant Program, which covers rail, ferries, and intercity busy (20). In 2006, $136 million was available with $123 million going to at-risk urban areas with high populations. This severely limits smaller operations in more remote areas. .

STATE FUNDING OPTIONS

State funding for ferry operations is only available to public entities, municipalities and for public property. WisDOT manages three programs. The Harbor Assistance Program offers grants to local governments for up to 80 percent of the cost for projects on publicly owned property. The Transportation Economic Assistance Program provides grants of up to 50 percent for projects that create or retain jobs. And, the State Infrastructure Bank Program offers low interest loans, loan guarantees, interest rate subsidies, lease-buy options, and other financial leveraging instruments to help communities fund infrastructure projects that improve transportation efficiency and mobility.

The Wisconsin Department of Commerce (DOC) manages the Community Development Block Grant-Public Facilities for Economic Development programs that fund up to 75 percent of a project's cost based on the projected number of jobs created or retained and subsequent business generated. Eligible applicants are either municipalities or counties.

COST COMPARISON OF MODAL CHOICES

The Lake Express and SS Badger provide alternative routes by highway and ferry across Lake Michigan versus by highway only around the lake. A cost and time analysis compares the alternatives. Both ferries were analyzed for one-person, roundtrip between various origins and destinations (O-Ds) in Wisconsin and Michigan. A passenger vehicle was analyzed for both ferries. A commercial vehicle was analyzed for the SS Badger only; the Lake Express does not transport trucks.

Costs for multi-modal travel by ferry and highway include the passenger fare, vehicle fare, vehicle operating cost, and travel time cost. In addition, the Lake Express fare includes a $6 fuel surcharge fee per crossing per fare. The fares (Figures 2 and 4), fuel surcharges, loading, unloading, and crossing times are available on the ferries' websites. Highway distances and travel times are from the Rand McNally website (11). The personal vehicle operating cost is the Internal Revenue Service's (IRS) reimbursement standard of $0.445 per mile (12). The estimated multi-modal travel time by ferry and highway included time spent on the highway, ferry loading and unloading, and lake crossing. The travel time value while driving a passenger vehicle commonly used by WisDOT is $15.00 per hour; while not driving, i.e., riding the ferry, the value of time used is $9.65 per hour.

Costs for travel by highway around the lake include tolls, vehicle operating cost, and travel time cost. Unit costs for vehicle operation and travel time are described above. (Trips via ferry crossing do not incur highway tolls.) Tolls are calculated using the Illinois State Toll Highway Authority's toll calculator assuming the motorist uses an IPASS (13). The travel time on highways includes 1.5 hours per roundtrip for congestion delay in the Chicago area.

Cost items for commercial vehicle travel are similar to passenger vehicle travel but with different rates. The commercial vehicle operating cost, from Minnesota Department of Transportation, is $1.80 per mile (14). For a commercial vehicle, the value of travel time, including an hourly salary with 30% added fringe benefits is estimated at $22.60 per hour (15). This value is used for the entire trip duration as the driver is assumed to be on-duty during the entire trip.

Table 1 lists the roundtrip travel costs incurred for Green Bay, Wisconsin to Grand Rapids, Michigan for passenger and commercial vehicles. For a passenger vehicle, total travel cost via the SS Badger (ferry and highway) is least expensive, but total travel time is estimated at

three hours longer than via the Lake Express or highway only. This suggested a cost-travel time tradeoff. For a passenger vehicle, travel by the Lake Express has highest cost with no time savings over travel by highway only. This suggests the ferry offers values-added such as unique experience, avoiding Chicago, and reducing travel stress. Cost, time, and stress are important factors in modal choice decisions.

For a commercial vehicle, the SS Badger is least costly with a flat, one-way fee of $270 for the truck, driver, and one passenger. However, the round trip duration is approximately three hours longer than by highway only. For tight shipping schedules, this may be significant. Commercial vehicle drivers can work up to 14 hours per day, with a maximum of 11 hours of driving (16). Accordingly, time on the ferry is designated "on-duty, not driving". Whether ferry travel works for commercial drivers depends upon schedules and length of drive.

Reliability influences modal choice decisions. For highway travel, reliability is the variance in congestion time, and depending on location, the time of day, or day of the week, can be significantly. Factors affecting reliability of ferry travel are similar to air travel. Equipment problems, inclement weather, and constraints on number of passengers/vehicles that can be accommodated influence reliability of ferry services. Availability of service in terms of schedules and number of crossings also influence modal choice for ferry travel.

TABLE 1 Estimated One-Person, Roundtrip Travel Costs, Times, and Distances from Green Bay, WI to Grand Rapids, MI via Highway and Ferry or Highway Only

		Passenger Vehicle via			Commercial Vehicle via	
Totals	Cost Item	SS Badger	Lake Express	Highway	SS Badger	Highway
Distance (mi)	Estimated Mileage	274	320	768	274	768
Travel Cost ($)	Passenger Fare	87	112	0	540	0
	Vehicle Fare	110	149	0	(vehicle & driver)	0
	Tolls	0	0	9	0	47
	Vehicle Operating	122	142	342	493	1,382
	Total	493	554	539	1,384	1,712
Travel Time (hrs)	Highway includes congestion delay	4.5	5.5	12.5	4.5	12.5
	Ferry includes loading and unloading	11	7	0	11	0
	Total	15.5	12.5	12.5	15.5	12.5

Major origins and destinations (O-Ds) in Wisconsin and Michigan were selected to simulate real trip inquiries of which option (ferry and/or highway) is more economical and time efficient. The O-Ds include Green Bay, Milwaukee, and Madison in Wisconsin and Grand Rapids, Traverse City, and Detroit in Michigan.

Roundtrip travel time and cost by passenger vehicle for each O-D pair are listed in Table 2. The least cost and shortest duration alternatives are indicated in bold. The geographic distribution of the cheaper choices shows good competition for a market share of passenger travel. For most of the O-D pairs, one choice is both least expensive and least time consuming. For travel between Green-Bay - Grand Rapids and between Green Bay – Detroit however, modal choice involves a tradeoff of cost for travel time savings.

Table 2 also shows total cost and travel time for round trip commercial vehicle travel between the selected O-Ds. For one case, Green Bay-Traverse City, travel via the SS Badger is

both least expensive and quickest. For four other cases, Milwaukee – Grand Rapids, Milwaukee – Detroit, Madison – Grand Rapids, and Madison – Detroit, travel by highway is least expensive and quickest. For these cases, and from a purely economic perspective, the choice of mode is trivial as one mode dominates the other in both time and cost. For the remaining four cases, commercial vehicle travel via the SS Badger is least costly (only ferry choice) but with longer trip duration. The carrier must make a choice involving tradeoffs of time and cost.

Overall, this cost analysis shows that travel by ferry competes well with highway travel when considering both cost and travel time. Each ferry operator appears to have a unique market share.

TABLE 2 Estimated Roundtrip Travel Time and Cost for Travel by Ferry and /or Highway by a Passenger Vehicle (with one person) and Commercial Vehicle for Selected Major O-Ds

	Total Roundtrip Time and Cost by Passenger Vehicle Via						Total Roundtrip Time and Cost by Commercial Vehicle Via			
	Lake Express		SS Badger		Highway		SS Badger		Highway	
Origin - Destination	Time (hr)	Cost ($)	Time (hr)	Cost ($)	Time (hr)	Cost ($)	Time (hr)	Cost ($)	Time (hr)	Cost ($)
Green Bay-Grand Rapids	12.5	554	15.5	493	12.5	539	15.5	1,384	12.5	1,712
Green Bay-Traverse City	16.5	697	**16.5**	**505**	17.0	602	**16.5**	**1,052**	17.0	1,788
Green Bay-Detroit	17.3	764	20.5	706	18.0	715	20.5	1,712	18.0	2,214
Milwaukee-Grand Rapids	**9.0**	**398**	17.0	552	11.0	415	17.0	1,569	**11.0**	**1,268**
Milwaukee-Traverse City	**13.0**	**542**	18.0	565	16.0	613	18.0	1,237	16.0	1,877
Milwaukee-Detroit	14.0	615	22.0	766	**14.0**	**551**	22.0	1,900	**14.0**	**1,706**
Madison-Grand Rapids	11.5	504	19.5	658	**11.0**	**466**	19.5	1,556	**11.0**	**1,477**
Madison-Traverse City	**15.5**	**648**	20.5	670	17.5	686	20.5	1,568	17.5	2,121
Madison-Detroit	16.5	718	24.5	871	**15.5**	**625**	24.5	2,230	**15.5**	**1,950**

CRITICAL TRANSPORTATION LINKS AND IMPACT ON TOURISM

The ferry operations in Wisconsin impact tourism and provide vital transportation links for the host communities' residents. People travel by ferry for various reasons: shopping, friends and family visits, honeymoon trips, business journeys, or cultural experiences. During 2005, travelers and tourists spent nearly $12 billion in Wisconsin on food, shopping, transportation, lodging, and recreation.

The Madeline Island Ferry and Washington Island Ferry Line are essential to their communities. They are the only modes of transportation for many of the area's residents and provide a critical link between the islands and Wisconsin's mainland.

Although the annual economic benefits to the State of Wisconsin triggered by ferry users could not be quantified in this study, it can be inferred they may be substantial. In Wisconsin, ferry operations are an important contributor to the local tourism industry since every year these ferries carry thousands of people from one shore to the other. The travelers spend their money at the port, the nearby town, or elsewhere in Wisconsin. Surveys of passengers on the Cassville Ferry showed that a majority of the passengers were traveling to either Dubuque or Cassville. The survey indicated that passengers came from a wide area around Cassville (including Chicago, Minneapolis, Indianapolis, and Fargo). It can be inferred that these passengers probably traveled to Cassville to take the ferry because the interstate highways were not close. This assumption is corroborated by the survey showing that the vast majority of passengers defined their trip purpose as recreation. Finally, the survey showed that roughly half of the passengers surveyed were taking the ferry for the first time and another quarter of those surveyed said they take the ferry once a year or less (17).

Some areas served by the ferries are heavily reliant on the tourism economy. For example, while the Madeline Island Ferry Line services the sparsely populated Madeline Island's residents' day-to-day needs; it is also an essential component of the area's tourism economy. Many of the travelers that visit Bayfield County and the Apostle Islands do so to access the primary attractions of Bayfield County in Lake Superior's costal communities and the Apostle Islands National Lakeshore. The Wisconsin Department of Tourism estimates that travelers spent over $128,758,000 in Bayfield County and $71,244,252 in Ashland County during 2005.

The Washington Island Ferry is another example of the role played by a ferry in a major tourism destination. Door County generated nearly $400 million in travel expenditures during 2005. This area of the state provides immediate access to one of Wisconsin's national treasures, the Great Lakes.

Finally, the SS Badger, an historic Lake Michigan icon, has provided transportation for generations of travelers to and from Michigan. The SS Badger also allows for substantial ease in accessing the Green Bay and Fox Cities regions of the state in addition to the coastal communities of Lake Michigan.

ECONOMIC IMPACT ANALYSIS

Ferry operations within Wisconsin contribute to the economic success of the communities they serve. In addition, they bring tourism to the communities they serve and some provide an essential transportation link for the movement of goods from providers to consumers. The intent for performing the economic impact analysis in this study is to determine the significance of ferry operations on their respective communities in Wisconsin.

In order to engage in the analysis, numerous inputs are necessary: accurate payroll and operating expenditures (business, capital, and other improvements), ferry passenger expenditure patterns, nature of passengers specific to each operation (tourist, commuter, etc.), and detailed breakdowns of trip composition (passenger type, freight amount if applicable, and any other potential sources of income garnered from operation). Data for the analysis was derived from interviews with the ferry operators and available data from the WisDOT. The input for the study was limited in two ways: time and resources to gather data, and willingness of ferry operators to provide financial information.

Widely used methods to assess economic impact include the input-output approach used in this study. This approach is a key component of most regional economic modeling (18). Economic impact of the ferries is measured as a change in the local economies by quantifying the multiple economic effects resulting from a change in the final demand for specific products or services if the ferries are removed. There are three aspects of this kind of economic impact; The ferry operations have direct, indirect, and induced economic impacts. In the case of ferry services, the first economic impact is derived from the expenditures on goods and services by the ferry operators in order to provide the service. This might include spending on fuel, machinery and parts, employee wages, office supplies, and so on. This is known as *direct impact.*

In turn, this direct spending spurs economic activity by the suppliers of those goods and services to the ferry operators. Suppliers employ workers and purchase goods and services from other businesses in a ripple effect through the regional economy. This is known as the *indirect impact*.

Finally, the employees of the ferry operator and its suppliers will spend their wages in the region. This provides income to retailers and services – grocery stores, barbershops, insurance agents, auto repairers, etc. – who also hire employees and purchase supplies. This wave of spending and re-spending is known as *induced impact*. Indirect and induced impacts are referred to as “multiplier” effects.

The analysis was conducted with the use of IMPLAN, a regional economic model for each county in which the selected ferry operates (19). IMPLAN is a standard input-output model that tracks the flow of goods and services produced by industries in the region. The following are pertinent assumptions of the IMPLAN analysis:

- The analysis captures the impact of the ferry operations on the scenic transportation economic sector that is a component of the larger “transportation and warehousing” category. The analysis does not capture the impact of the ferry operations on tourism in the surrounding areas.
- The analysis assumes that spending of fare-box revenue occurs primarily within each respective county and constitutes the direct impact.
- The analysis assumes that ferry employees live and consume largely within the county where the ferry is located.
- Fare structures for the Lake Express, SS Badger, and Washington Island Ferry Line are shown in Figures 2, 4 and 5, respectively.
- Ridership estimates provided by ferry operators were multiplied by elements of the fare structures. Some inputs were speculative, based on formulated reasonable and conservative estimates from all obtained information given that precise data was not available for classifications such as passenger type (adult, child, senior, etc), vehicle type, and trip type (round-trip, one-way).

The economic impact analysis provides a baseline of the economic presence that the selected ferry operations have within each locale. Given these assumptions, the following are baseline estimates of the annual economic impact in Wisconsin:

Cassville – Grant County (17)
- Total Impact: $5,120
  - Direct Impact: Not available
  - Indirect Impact: Not available
  - Induced Impact: Not available
- Supplying 1 job

Lake Express – Milwaukee County
- Total Impact $25.6 million
  - Direct Impact: $16.1 million
  - Indirect Impact: $2.9 million
  - Induced Impact: $6.6 million
- Supplying 316 jobs

Madeline Island – Bayfield-Ashland Counties
- Total Impact: $2.4 million
  - Direct Impact: $1.4 million
  - Indirect Impact: $151,500
  - Induced Impact: $828,000
- Supplying 28 jobs

SS Badger – Manitowoc County
- Total Impact $24.3 million
  - Direct Impact: $16.8 million
  - Indirect Impact: $1.8 million
  - Induced Impact: $5.7 million
- Supplying 215 jobs

Washington Island – Door County
- Total Impact: $10.2 million
  - Direct Impact: $7.1 million
  - Indirect Impact: $2.7 million
  - Induced Impact: $468,900
- Supplying 51 jobs

The full economic significance of each ferry operation may be higher than the estimated baseline for two reasons. First, the ridership levels and passenger types for each ferry line are conservative estimates. Second, given the relative proximity of tourist attractions to each ferry operation, it can be assumed that the ferry operations also attract tourists to the regions they serve. Visitors' expenditures in the region would constitute another part of the economic impact of ferry service.

In comparison to other transportation modes in the state, the economic impact of the ferry operations appears to be minor in terms of jobs, wages and other economic multipliers. However, the ferry operations in Wisconsin provide a unique service for travelers and are a vital part of the state tourism economy.

In order to accurately depict tourist activity within the model, extensive ridership surveys would have to be undertaken and tourist expenditure patterns within the local economy would have to be studied. Since accurate information on passenger characteristics, passenger spending, and trip types are not known, the tourism impacts cannot be quantified.

CONCLUSIONS

Several conclusions result from the evaluation of the ferry operations within Wisconsin:

- While the economic impact of the ferry operations is small when compared to other modes of transportation, the economic impact analysis shows the ferry operations are significant to the local economies.
- Each of the ferry operations has historical and cultural significance that contributes to tourism in the local community and the state. Measured in terms of being a tourist attraction and the expenditures associated with visitors to the state, the impact of ferry operations may have substantial impact on the regional economy they serve. A more detailed analysis is necessary to quantify the economic impact on tourism.
- Some ferry operations provide essential transportation links to communities they serve. In some cases the ferry operations have tremendous influence on the well-being and environmental health of the community. Adjustments in the scheduled ferry service can promote or inhibit growth and activity in the community.
- Some ferry operations provide time and cost competitive transportation alternatives for east/west highway travelers who wish to avoid Chicago congestion.

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