

An Economic Argument for Water Trails



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This report is a summary of findings from existing studies, which provide examples of the economic impact of water trails in their respective communities. It is meant to provide a helpful resource to communities interested in learning about the economic benefit water trails have provided for cities and towns in the US.

Background

Water trails are marked routes on navigable waterways such as rivers, lakes, canals, and coastlines for people using small non-motorized boats such as kayaks, canoes, rafts, and rowboats. They were not formed to be an economic engine for communities, but rather, were created by environmentalists, conservationists, and recreationalists to make nature accessible and to encourage environmental awareness. They have evolved to be recreational routes on waterways with a network of public access points supported by broad-based community partnerships.

Historically, many towns and urban areas have turned their backs on their rivers due to water quality issues, fear of flooding, and dams. Not surprisingly, communities have not always had systems in place to maintain safe waterside trails, advocate for their use, and educate the public about their value as outdoor amenities. Today, communities are discovering the benefits of water trails and beginning to look to their waterfronts as assets. By sharing meaningful examples of economic benefits of water trails they are learning how they can engage a larger audience (outside of the environmental realm) to create a positive impact in new communities, rediscovered natural spaces, and new businesses.

While their contribution to the growth of outdoor activity has not been measured per se, water trails programs contribute to the health of the outdoor recreation industry. The Outdoor Industry Association ranked outdoor recreation as the third largest industry (\$646 billion annual consumer spending) after outpatient healthcare and financial services and insurance (\$767 and 780 billion, respectively). The outdoor recreation economy grew 5% during an economic recession from 2005 to 2011 (*The Outdoor Recreation Economy, 2012*), and paddlesports have increased significantly within the outdoor industry arena. Water sports (motorized and non-motorized) contributed \$85 billion in spending, \$4.8 billion in local and state taxes, and created over 800,000 jobs.

An example of recent recession-related growth in outdoor recreation, Minnesota's kayak registrations doubled between 2000 and 2005: new boat ownership offered a tremendous opportunity for communities to promote their water trails and provide amenities that draw paddlers to their town (MN Canoe and Kayak Study, 2005).

The 140 million Americans who spent \$646 billion on outdoor recreation created \$80 billion per year in national, state, and local tax revenues (*The Outdoor Recreation Economy, 2012*).

The Project

Over 30 articles, presentations, and studies were reviewed for this project: of these only a few studies were found to be formal economic impact studies. In reviewing those studies, it became clear that there is not a common framework to measure the economic impact of water trails. While the studies explored similar categories of growth, they used different measurements, jargon, and timeframes for data collection.

This report summarizes notable findings from three economic impact studies produced by experts using data specific to the particular water trail, measured and reported using accepted analytical methods. Surveys and analysis of collected data specific to the economic benefits of water trails are brought to life by success story commentaries.

The studies featured in this summary were undertaken based on the premise that paddlesports tourism has the potential to diversify the local economic base and stabilize or improve the economic health of communities connected through the water trails. Each report shows that water trails can increase paddlesports tourism and bring new money into local economies.

The Opportunity

The following studies were included in this review:

Northern Forest Canoe Trail Study (NFCT)

[Northern Forest Canoe Trail: Economic Impacts and Implications for Sustainable Community Development, 2007](#)

Length: 740 miles

Territory: NY, VT, NH, ME, QC

Type: Rural and urban, rivers and lakes

Estimated economic impact: \$12 million

Estimated number of paddlers: 90,000

Jobs supported: 280

Number of communities: 45 towns

Length of study: Summer and fall of 2006

History & development of water trail: According to the history of the NFCT in this study, towns along the NFCT traditionally relied on industries such as agriculture, forestry, and mining for economic stability. Due to technological innovations, fewer people were needed to maintain those industries. Those people turned towards manufacturing facilities such as paper mills for steady employment. Manufacturing has seen a decline in recent years and, in turn, services in rural communities have decreased. Several towns have experienced population decline and some villages along the NFCT no longer function as centers for residential settlement.

The Northern Forest Canoe Trail study highlights research on the increasing importance of tourism and recreation for rural areas and the sustainability of clean industry; economic activities that will provide employment and income without environmental burdens (Power, 1996).

This study supports the concept that “amenity rich” towns are less likely to experience decreasing populations. Communities with abundant environmental resources evidence more sustainable economies due in part to tourism development and immigration.

Notable impacts measured:

- Lodging
- Transportation
- Restaurants
- Groceries
- Access Fees
- Guides/Outfitters
- Other Retail
- Entertainment
- Other

Huron River Water Trail Study (HR)

[Huron River Water Trail: Economic Impact Analysis, 2013](#)

Length: 104 miles

Territory: SE Michigan

Type: Rural and urban

Estimated economic impact: \$50 million

Estimated number of paddlers: 103,000

Number of municipalities: 26

Length of study: 2 years, 2010-2012

History & development of water trail: As described in this study, the Huron River was used for industry, transportation, and waste disposal. In the early 2000s, river advocates challenged local businesses and environmental leaders to clean up the river through a comprehensive plan called *RiverUp!*. The goal of *RiverUp!* is to make the Huron River a destination for both residents and tourists. The study defines the three main goals of *RiverUp!*: investment in river-based recreation infrastructure; improvement of the ecological health of the river; and transformation of the Huron River corridor by turning the face of its communities toward the river and making the Huron River a premiere destination for people throughout Michigan, the Great Lakes, and across the country. This study is a great example of the power of combined efforts to create positive change on a water trail and in river communities.

Notable impacts measured:

- Food and Drink
- Transportation
- Recreation and Entertainment
- Souvenirs and Gifts
- Lodging

Pennsylvania Water Trail Study (PA)

[Pennsylvania Recreational Water Trails Economic Impact Study, 2012](#)

Length of water trail: Schuylkill: 128 miles, Susquehanna—North Branch: 181 miles, Juniata: 142 miles, Three Rivers: 38 miles. Total river miles over four case studies: 489 miles.

Territory: Pennsylvania. Four of the twenty-one designated water trails in Pennsylvania were chosen for this study: the Schuylkill, Susquehanna—North Branch, Juniata, and Three Rivers.

Type: Rural and urban

Estimated economic impact: \$731,000

Estimated number of paddlers: 3,530

Jobs supported: 11

Length of study: 6 weeks, July 27 - September 3, 2012

History & development of water trail: The first water trail in Pennsylvania, the Susquehanna River Water Trail, launched in June 1988. The project was initiated by a group of local stakeholders interested in bringing paddlers to their community. According to the 2012 study, Pennsylvania has developed 21 statewide water trails and has a nationally acclaimed water trails program.

Notable impacts measured:

- Other accommodations (campgrounds, B&B)
- Food services and drinking places
- General and consumer goods
- Hotels and motels
- Rental activity
- Retail stores: Sporting goods, hobby, book, music
- Retail stores: Food and beverage
- Real estate establishments
- Museums, historical sites, zoos, and parks
- Private hospitals

Amenities such as lodging, dining, and outfitters had the greatest visitor expenditures across the three studies. Activities and retail services did not represent the bulk of visitor expenditures but did play an important supporting role in the paddlesports economy. Several towns in the reports showed growth in tax revenue, employment, and immigration as a result of visitor expenditures on their water trail.

Benefits of Water Trails

All of the reports referenced here indicate that water trails provide environmental, social, and economic benefits to communities. The Northern Forest Canoe Trail study links outdoor recreation to greater environmental awareness (NFCT 2007), which includes a greater awareness of water quality and ecosystem issues. Dunlap and Heppernan (1975) found that nature appreciation activities increased environmental concern among visitors. The Northern Forest Canoe Trail study also found that the majority of paddler surveys reflected an appreciation of natural surroundings. Through experiencing the water firsthand, paddlers are exposed to environmental issues affecting recreation areas like those they enjoy.

The formal economic studies reviewed found that both tourists and community members benefit socially from water trails. Reeder and Brown (2005) found that water trail communities have lower poverty rates and higher education and health levels than communities that do not provide recreational opportunities. Furthermore, the development of recreational opportunities can build community pride and provide stewardship opportunities that can enhance social capital - relationships among people who live and work there - and foster a new understanding and sense of pride for the place they call home, redefining the outdoors as an accessible space for people of all ages, ethnicity, and class to exercise, connect, and reflect.

Many cities and towns have not tapped the economic potential of their water trails. Research cited in the Northern Forest Canoe Trail study summarizes that:

While communities predominately dependent on manufacturing, mining, energy, and timber are witnessing population declines, "amenity rich" communities are growing, particularly those close to the coast, mountains, lakes, and in forested areas (McGranahan 1999, Nelson 1997, Shumway and Otterstrom 2001) that have both "a desirable physical environment and a relaxed small town atmosphere"(Rudzitis and Johnson 2000). This trend is apparent in the Northern Forest counties with accessible environmental amenities (White and Hanink 2004).

Increased tourism around water trails could bring new money to circulate in the community to aid population growth and lead to increased amenities and standard of living.

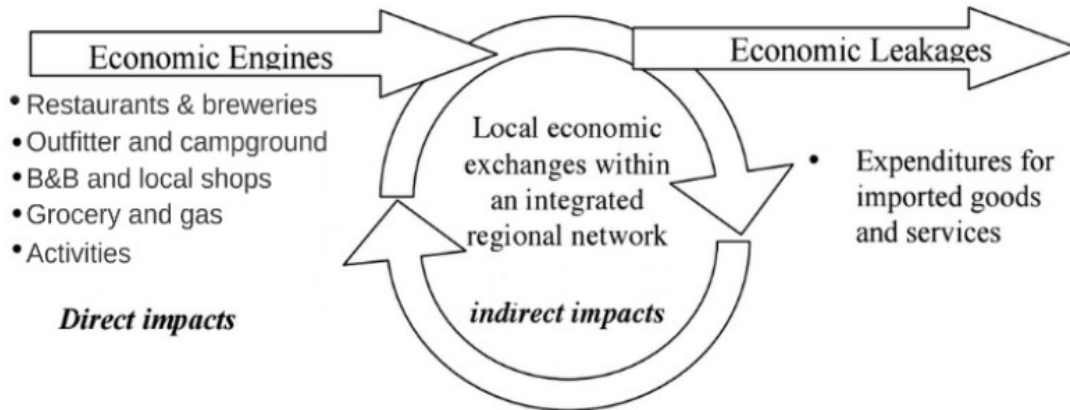
Economic Impacts

The Pennsylvania Water Trail study categorizes economic impacts of water trails by **direct** and **indirect** impacts (PA, pg.32). **Direct** impacts are payments for goods and services such as food, gasoline, and recreational equipment (i.e. impacts made while a visitor is in a town). Examples of goods and services a tourist might spend money on are:

- Outfitters
- Lodging
- Restaurants and grocery stores
- Retailing and services
- Activities
- Transportation (including gas)

Indirect impacts result from the purchases of supplies by the directly affected businesses to produce goods and services demanded by consumers (i.e. impacts made after the visitor leaves town). Examples of indirect impacts on a community are:

- Real Estate/Immigration
- Employment/Household Income
- Tax Revenue



This chart was edited from the original in the NFCT study (p.11) to show examples of direct impacts.

Direct Impacts

The following are examples that exemplify economic growth in direct impact categories. While each study varied, outfitters, lodging, and food were typically the top visitor expenditures and generated the greatest economic impact from paddlesports tourism.

Outfitters

According to the Huron River Water Trail Study, the Huron River was used through its history primarily for transportation, industry, and waste disposal. Communities experienced a surge in paddlesports recreation after, in the early 2000s, local businesses and environmental leaders were challenged by their congressman to revitalize the river (HR, p.5).

Nearly ten years after the call to attention for the river, 120,000 boats were rented from canoe outfitters along the Huron River, an annual average of almost 40,000 boat rentals (Table 1, HR, p.11). The number of boat users increased by 33 percent from 2010 to 2012, aided by renovations to Ann Arbor's Argo Dam in 2011.

Location	Daily Average	Annual Average	2012	2011	2010
Kensington Metropark	123	13,174	13,253	13,288	12,982
Hudson Mills Metropark	53	5,633	5,928	5,225	5,745
Heavner Canoe Rental	Unavailable	Unavailable	Unavailable	Unavailable	Unavailable
Village Canoe Rental	Unavailable	Unavailable	Unavailable	Unavailable	Unavailable
Argo Canoe Livery	93	9,966	15,314	5,858	8,727
Gallup Canoe Livery	103	11,014	13,392	12,010	7,639
Total	372	39,787	47,887	36,381	35,093

Boat rentals along the Huron River Water Trail generated at least \$2,692,994 in revenue between 2010 and 2012, an annual average of roughly \$900,000 (Table 3, HR, p.13). Revenue grew by 29 percent over the 3-year period.

Table 3. 2010-2012 Boat Rental Revenue				
Location	Annual Average	2012	2011	2010
Kensington Metropark	\$143,277	\$158,430	\$151,300	\$120,100
Hudson Mills Metropark	\$26,626	\$26,864	\$23,531	\$29,483
Heavner Canoe Rental	\$348,375	\$356,582	\$330,945	\$357,599
Village Canoe Rental	Unavailable	Unavailable	Unavailable	Unavailable
Argo Canoe Livery	\$200,245	\$282,983	\$119,777	\$197,974
Gallup Canoe Livery	\$179,142	\$238,877	\$182,114	\$116,435
Total	\$897,665	\$1,063,736	\$807,667	\$821,591

Lodging

Whether it is a campsite, hotel, or bed and breakfast, lodging was a necessity for communities in the studies hoping to increase paddlesports tourism beyond the day paddling by local residents. Figure 4.18 from the Northern Forest Canoe Trail study shows that lodging accounted for 28% of visitor expenditures in the study regions (NFCT, p.64).

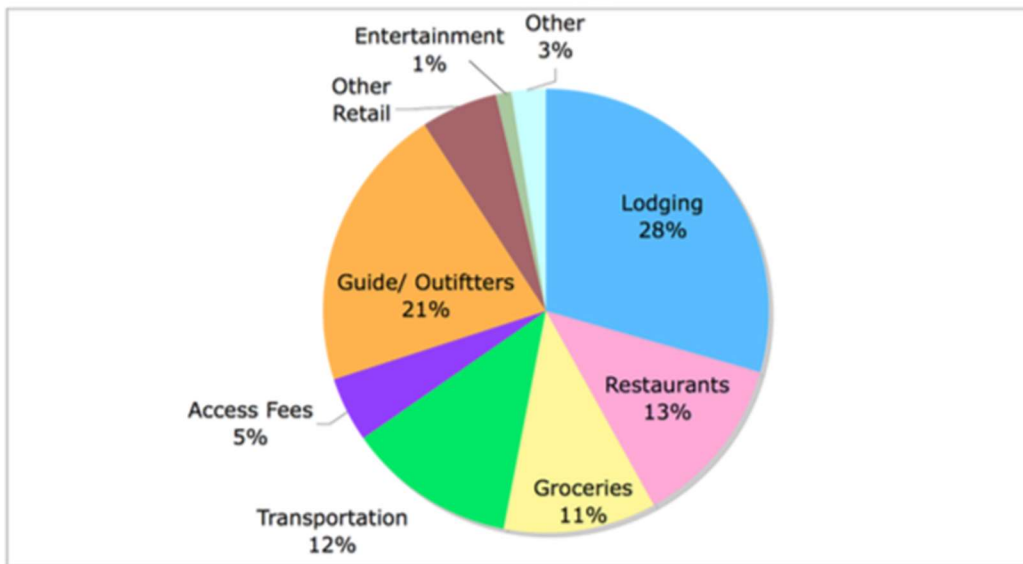


Figure 4.18. Distribution of total paddler spending across expenditure categories

The NFCT study found that, while nearly 90,000 visitors paddled the waterways in the six study sections during the summer and fall of 2006, use varied significantly by region, even after accounting for variations in the waterway length. High relative use levels in the Adirondacks, Rangeley Lake, and the Allagash can be attributed to a combination of ample camping and lodging and well known, high quality recreational opportunities (NFCT, p.87).

Annual events were shown to increase visitor rates and expenditures in the study regions, especially in lodging. For example, the multi-day canoe races hosted in the Adirondacks bring a surge of visitors to the region. Interviews from the NFCT study with area lodging establishments in the Adirondacks suggested that paddlers are more inclined to stay in lodging establishments during the races than during the rest of the season. Table 4.4 shows that visitors spend more money on lodging in the Adirondacks than any other region. Surveys conducted revealed racers and their support crews were mostly non-locals, with 38% staying in local lodging establishments (NFCT, p.92-93).

Table 4.4. Mean per group, per trip, expenditures. Standard errors are in italics.

Expense Category	Adirondacks	Missisquoi River	Northeast Kingdom	Androscoggin	Rangeley Lake	Allagash	All Regions
Lodging	\$235.16	\$17.44	\$17.68	\$94.55	\$181.40	\$68.92	\$127.86
	<i>\$29.13</i>	<i>\$13.25</i>	<i>\$9.32</i>	<i>\$15.86</i>	<i>\$24.33</i>	<i>\$6.42</i>	<i>\$11.06</i>

Beyond lodging: paddlers seem to be drawn to places with diverse amenities. The communities along the NFCT with more lodging, dining, and outfitter/rental services experienced the greatest economic benefit.

Restaurants and grocery stores

Whether on an overnight adventure or a day trip, visitors to towns along a water trail often need a place to eat or to stock up on food during their stay. In the Northern Forest Canoe Trail study, (Figure 4.15) restaurants (57.4%) and grocery stores (60.9%) had the highest probability of visitor expenditures (NFCT, p.60).

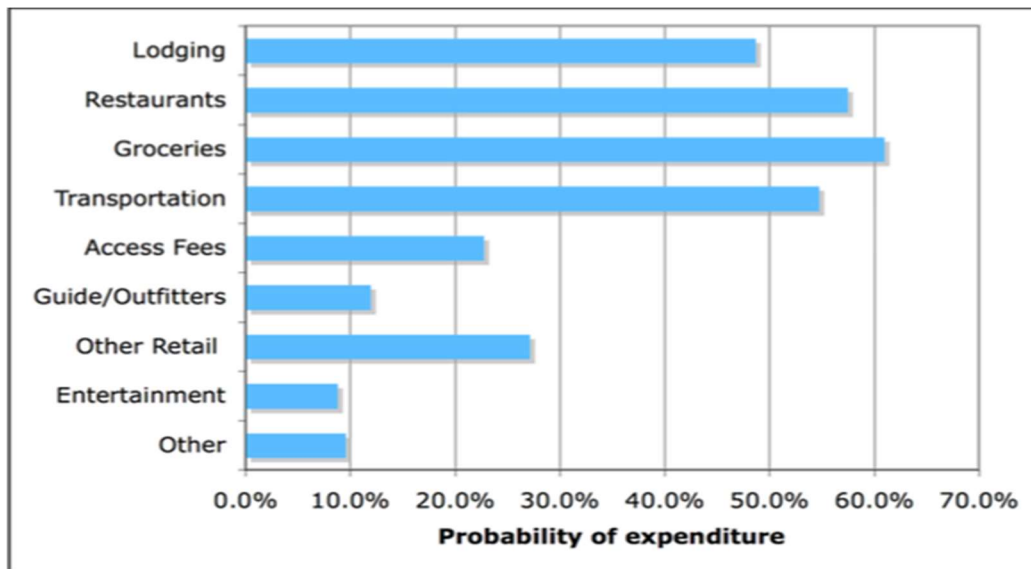


Figure 4.15. Probability of expenditures, per category

The Huron River Water Trail study also showed 'Food and Drink' as one of the highest trip expenditures. Table 4 from the Huron River Water Trail study shows the average visitor expenditures, with food and drink generating more trip-related revenue than other categories.

Region	Trip Type	Food and Drink	Transportation	Recreation/ Entertainment	Souvenirs and Gifts	Lodging	Total
East North Central	Day	\$41	\$35	\$39	\$11	N/A	\$126
United States	Day	\$32	\$31	\$33	\$7	N/A	\$103
East North Central	Overnight	\$87	\$52	\$45	\$18	\$66	\$268
United States	Overnight	\$75	\$61	\$40	\$12	\$67	\$255

According to the Outdoor Industry Foundation’s study, *The Outdoor Recreation Economy* (2012), a dollar spent for trip-related items, such as a hotel night or a restaurant meal, typically changes hands more often and generates greater economic activity than a dollar spent for equipment and gear that may be outsourced from the community. Money spent at a local restaurant or grocery store is more likely to re-circulate in the local economy (HR, p.16).

Activities

Exhibit 6 from the Pennsylvania Water Trails study shows nearly two-thirds percent of visitors cited the reason for visiting as fishing, canoeing, motor boating, kayaking, or paddling. Nearly 30 percent cited other tourism activities such as picnicking, relaxing, enjoying the river scenery, photographing, and watching wildlife as their reason for visiting water trails.

Exhibit 6. Reason for Visiting Water Trail

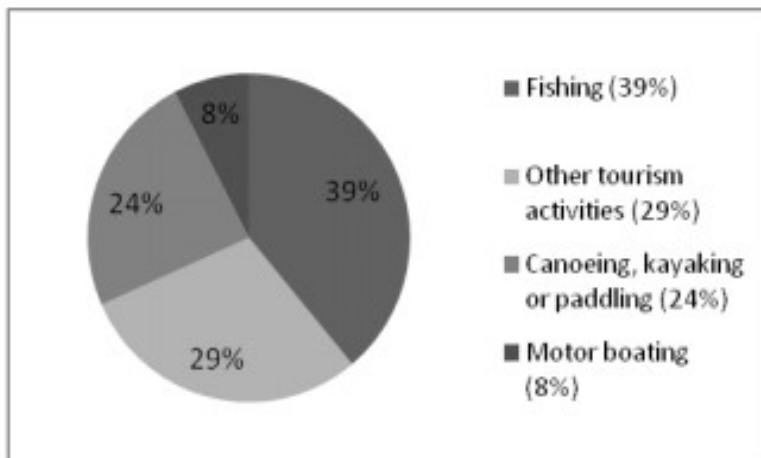
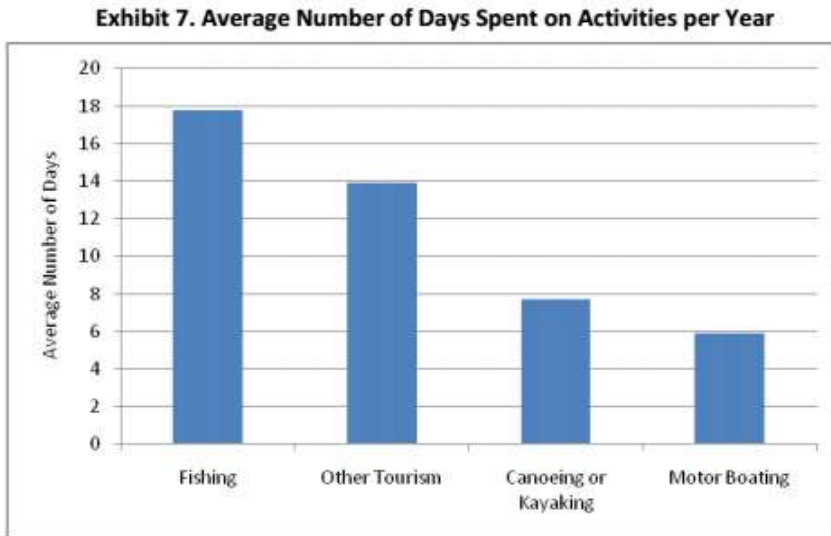


Exhibit 7 shows that visitors reported spending the most days per year (approximately 17.8 days on average), fishing on the water trail. Visitors spent approximately 13.9 days per year on other tourism activities including walking, picnicking, biking, and floating on or relaxing beside the water trail (PA, p.24).



This example reinforces the importance of diverse amenities: while people may come to a community for water sports, they also take advantage of other tourist activities. In this study, visitors spent more time participating in “other tourism” than canoeing, kayaking, or motor boating. As we have seen, lodging, dining, rentals and outfitters are more crucial amenities in paddlesports tourism, but other activities and amenities can positively impact the economic health of a community on a water trail.

Retailing and Services

The studies reviewed for this report showed that retailing and services had a lower economic impact on communities compared to other visitor expenditures (i.e. lodging, dining, outfitters). Local shops and services can enhance a visitor’s experience in the town and increase expenditures per person, per visit, and attract more tourists by highlighting their unique local flare. Returning to table 4 from the Huron River Water Trail study (HR, p.13), we see that visitors spend the least money on average on souvenirs and gifts.

Table 4. Per Trip Expenditures							
Region	Trip Type	Food and Drink	Transportation	Recreation/ Entertainment	Souvenirs and Gifts	Lodging	Total
East North Central	Day	\$41	\$35	\$39	\$11	N/A	\$126
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East North Central	Overnight	\$87	\$52	\$45	\$18	\$66	\$268
United States	Overnight	\$75	\$61	\$40	\$12	\$67	\$255

Table 6 (HR, p.16) includes a broader array of retailing and services, including equipment and apparel for paddling trips. The study’s primary research found that salaries increase by 25% more, business earnings by 15.3% more, employment by 13.7% more, state tax revenues by 8% more, and federal tax revenues by 12.1% more for the average trip-related dollar spent by an outdoor recreationalist compared to the average equipment dollar. The study recommends that the economic development of the Huron River Water Trail should focus on attracting more frequent trips and related services than selling equipment.

Table 6. Annual Paddler Equipment and Services Expenditures		
Expenditure Category	East North Central Region	National Average
Apparel, Self	\$42	\$57
Apparel, Children	\$11	\$7
Equipment, Self	\$61	\$82
Equipment, Children	\$9	\$7
Accessories, Self	\$28	\$41
Accessories, Children	\$7	\$4
Services, Self	\$31	\$40
Services, Children	\$7	\$5
Total	\$196	\$243

Indirect Impacts

Indirect impacts result from the purchases of supplies by the directly affected business to produce goods and services. When visitors spend money at an outfitter, their dollars eventually go to taxes, supplies for the store, and wages for employees, etc. If that money remains in the local economy, it could increase average household incomes and improve standard of living. The following are examples from the selected studies that show long-term economic benefits of water trails for a community.

Real Estate/ Immigration

‘Amenity rich’ communities often become destinations for new residents, notably retirees. The Northern Forest Canoe Trail study references research that ranks outdoor recreation as the second most important reason for immigration, with social and physical environment factors consistently outweighing employment considerations.

According to the Huron River Water Trail study, most towns along the Huron River have experienced population growth in part due to tourists choosing to retire or relocate to the area after visiting the town for its recreational amenities. The table below (HR, p.10) shows the projected population for towns along the Huron River. While growth may result from the presence of increased trails and amenities in the communities, these data are not directly related to the growth of the Huron River’s water trail program. However, it is notable that populations in eight out of the eleven communities in the study are projected to grow significantly in the coming decades as more people take advantage of increased amenities around the water trail.

Huron River Water Trail Region Population Growth** (projected by county)				
	Oakland	Livingston	Washtenaw	Wayne
2020	1,218,449	192,116	354,116	1,700,779
2030	1,230,755	204,704	368,262	1,664,635
2040	1,246,863	214,323	386,235	1,656,931
2012 – 2040 Percent Change	+2.15%	+17.22%	+10.06%	-7.56%

Huron River Water Trail Region Population Growth** (projected by municipality)							
	Milford	Brighton	Dexter	Ann Arbor	Ypsilanti	Belleville	Flat Rock
2020	6,546	8,136	6,741	116,827	19,071	3,841	10,012
2030	6,446	8,794	6,787	119,113	20,003	3,813	10,048
2040	6,550	9,628	6,855	123,786	19,937	3,743	9,702
2012 – 2040 Percent Change	+5.41%	+28.80%	+13.46%	+7.71%	+1.74%	-6.21%	-0.78%

This table can be found on page 10 of the Huron River Water Trail Study

Tax Revenue

When locals and visitors purchase goods and services, sales tax that goes to the local community, state, and federal level may return to improve infrastructure and municipal amenities such as roads, bridges, schools, and parks. The Pennsylvania Water Trails study shows that, over the study period, over \$82,000 in revenue from paddlesports tourism went to state and local taxes and nearly \$89,000 went to federal taxes (Table 3, PA, p.34).

Table 3. Summary of Tax Impacts

Tax Level/ Description	Employee Compensation	Proprietor Income	Indirect Business Tax	Households	Corporations	Total Tax Impact
Total State and Local Tax	\$600	\$0	\$68,600	\$11,400	\$1,600	\$82,200
Total Federal Tax	\$41,400	\$2,200	\$10,800	\$25,700	\$8,800	\$88,800

Employment

Employment opportunities can increase from tourism due to the demand for direct services and the greater flow of money in the community. Paddlesports tourism has the potential to provide jobs and income while creating few public or environmental burdens. The Northern Forest Canoe Trail study states that the NFCT supported an estimated 283 jobs and provided \$4.1 million in personal income (NFCT, p.65). This is significant because several of the communities historically relied on manufacturing, which has been declining, to support their economy. This report highlights paddlesports tourism as a way to combat decreasing populations, increase services in rural areas, and provide employment opportunities.

Table 4.8 (NFCT, p.66) summarizes the impact of increased paddler tourism and recreation. The table shows that every \$1,000 in paddler spending leads to \$338 in personal income and .027 jobs. Using these values, the NFCT report estimates that an additional 85 non-local paddlers, spending roughly \$37,000 in local communities, will support the equivalent of one new job.

Table 4.8. Marginal impacts of increased spending and paddler groups

	Change of \$1000 in visitor spending	85 additional paddlers
Direct personal income	\$253	\$9,488
Direct value added	\$385	\$14,438
Direct jobs	0.023	0.86
Total personal income	\$338	\$12,675
Total value added	\$542	\$20,325
Total jobs	0.027	1

According to the Pennsylvania Water Trails study, the total employment generated from the impact of the water trail visitors over the six-week period was estimated to be 11 full-time, year-round jobs. Approximately 70 to 75 percent of those jobs are direct results of trail expenditures (PA, p.39).

Summary

Building access to the water does not mean that you will see a surge in paddlesports tourism and putting in a small interpretive center does not mean more tourists will suddenly stop in your town to pay for goods and services. Once some or all of these components are in place it is important for a community to bring awareness to the amenities and experiences they offer paddlesports tourists. The studies suggested that marketing the water trail was essential to bringing non-locals and new money to the area.

The studies referenced in this report show that amenities for tourists successfully attract a new audience to generate economic activity in trail communities. As shown in the studies, towns that already have dining, lodging, and rental services are more likely to see an increase in paddlesports tourism when they advertise and promote their water trail, as contrasted with communities that market their water trail but do not provide standard amenities for paddlers. The following stand out as key amenities based on reports:

- Access to the water
- Outfitters: rental and shuttling services
- Lodging: camping, bed & breakfasts
- Dining: restaurants, breweries, grocery stores
- Integrated recreation: Hiking and biking paths
- Activities: museums, interpretive centers, and other activities
- Proximity: neighboring towns/cities with similar amenities

Metrics for Direct and Indirect Impacts

If you'd like to quantify the impact of your water trail, investigate methods to measure direct impacts: visitor expenditures (where tourists spend their money), and growth in businesses whose sales will correlate to the user of the water trail.

The following metrics for visitor expenditures are present in all of the studies:

- Outfitters
- Lodging
- Restaurants and grocery stores
- Retailing and services
- Activities
- Transportation
- Other

Surveys of visitor expenditures provide a fairly accurate representation of where and why money was spent in the economy, whereas the growth in an individual business could be a result of growth in the economy unrelated to the water trail. Growth in a business in direct relation to a water trail was less common in the studies, but could be used as a tool to attract new businesses to a town or to engage local stakeholders in the water trail. The Huron River Water Trail study provides the total revenue from boat rentals over the course of three years to show the growth in a specific business, coupled with visitor expenditures. Information about growth in businesses as a result of paddlesports tourism could be used a tool to attract business to an area and to engage local stakeholders in the water trail.

The Pennsylvania Water Trails study and the Northern Forest Canoe Trail study both utilize the IMPLAN model to calculate multipliers in the economy based on visitor expenditures. This model is used to calculate the flow of tourism dollars through the economy to quantify the larger economic impact, i.e. gross state product (GSP), jobs, and tax revenue for federal, state, and local governments. Suggested metrics to measure indirect impacts are:

- Real Estate & Immigration (survey based research)
- Tax Revenue (IMPLAN model based on visitor expenditures)
- Employment (IMPLAN model based on visitor expenditures)

Thank you to the River Management Society and the National Park Service for making this summary possible. To view this report online, visit: <http://www.river-management.org/water-trails>.

Literature Cited

- Pollock, Noah (2007). [Northern Forest Canoe Trail: Economic Impacts and Implications for Sustainable Community Development](#).
- Washtenaw County Office of Community and Economic Development (2013). [Huron River Water Trail: Economic Impact Analysis](#).
- ICF Marco, Inc. (2012). [2012 Pennsylvania Recreational Water Trails Economic Impact Study](#).
- Jennifer Beedle (2008). North Carolina State University. [North Carolina State Trails Program. 2008 Paddle Tourism Study](#).
- White, Bowker, Askew, Langer, Arnold, English (2014). National Center for Natural Resources Economic Research. [Federal Outdoor Recreation Trends: Effects on Economic Opportunities](#).
- The Outdoor Industry (2012). [The Outdoor Recreation Economy](#).
- Power, T. (1996). [Lost Landscapes and Failed Economies](#).
- Minnesota Department of Natural Resources (2005). [Minnesota Canoe and Kayak Study](#).
- Dunlap, R. E., & Heffeman, R. B. (1975). Outdoor recreation and environmental concern: An empirical examination.
- Reeder, R. J., & Brown, D. M. (2005). Recreation, Tourism, and Rural Well-Being: United States Department of Agriculture Economic Research Service.

Suggested Resources

- For more information about the IMPLAN Model: <http://test.implan.com/>
- National Water Trails Webinar: Exploring the Economic Benefits of Water Trails: <https://www.youtube.com/watch?v=VbkAAeskur8>
- [Excel outline of the studies used in this summaryhttp://www.fs.fed.us/research/docs/outdoor-recreation/ficor_2014_rec_trends_economic_opportunities.pdf](http://www.fs.fed.us/research/docs/outdoor-recreation/ficor_2014_rec_trends_economic_opportunities.pdf)