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## The Value of Lake Erie Beaches



**W**hat is the value of a day at a Lake Erie beach? How often do Lake Erie beach visitors travel to the beach? What influences their decisions to visit a Lake Erie beach? How much do people spend when they visit beaches along Lake Erie's shoreline? For Great Lakes states, where public access and open space on the lakefront is limited, gaining better insight into these questions can help beach managers, state and local policy-makers, and visitor bureaus make more informed decisions about public resources. This fact sheet describes research at The Ohio State University that attempts to answer these questions.

During the summer of 1997, the Lake Erie Protection Fund, the Ohio Sea Grant College Program, the Greater Toledo Convention and Visitors Bureau, and the Lake County Visitor Bureau sponsored a survey of two Lake Erie beaches. Surveys were given to 760 visitors to Headlands State Park in northeast Ohio, and 394 were returned. Headlands has a 1-mile natural beach, nearby state nature preserve, ample parking, and public fishing access. Surveys were also given to 607 visitors to Maumee Bay State Park in northwest Ohio and 376 were returned. The state has spent considerable resources at Maumee Bay developing infrastructure, including a lodge, hiking trails, swimming beach, campgrounds, golf course, and other amenities. The research continued during the summer of 1998 with surveys at 15 additional beaches.

There are several ways that understanding beach users' recreational values and attitudes can help both public decision-makers and private businesses. First, by understanding what attributes visitors are most interested in preserving or enhancing, managers can allocate scarce public resources to address needs. Second, by determining the value of public assets to users, public officials can make better land-use decisions. Finally, by providing data on who is visiting beaches, local businesses and visitor bureaus can target tourism marketing efforts.

This fact sheet provides several pieces of information: characteristics of Lake Erie beach users; estimates of the non-market value of the recreational use of the beaches; and a summary of typical visitors from different counties.

## Characteristics of Visitors to Two Lake Erie Beaches

The survey allowed us to group visitors into two market segments: single day visitors and multiple day visitors. Multiple day visitors were those on an extended trip that lasted more than one day, and likely had alternative objectives than visiting the beach. A comparison of the average travel distance for visitors on single day trips indicates that Maumee Bay attracts individuals from a wider area than Headlands (Table 1). While Headlands attracts visitors from a more local area, these individuals tend to take more trips than those visiting Maumee Bay.

**TABLE 1: Summary information beach trips to Headlands and Maumee Bay State Park beaches during the summer of 1997**

Panel A. Visitation Patterns	Single Day Trips		Multiple Day Trips	
	Headlands	Maumee	Headlands	Maumee
Trips <sup>1</sup>	345	230	31	101
Average distance traveled to the beach (miles)	26	35	175	86
Annual trips to this beach (number of trips)	7.9	6.0	3.9	3.7
Percent time on beach	64%	56%	33%	30%
<b>Panel B. Demographic and Economic Variables</b>				
Average expenditure per trip	\$ 21	\$ 34	\$ 344	\$ 213
Average annual household income	\$ 49,544	\$ 47,168	\$ 53,182	\$ 52,750
Average annual recreational expenditures	\$ 5,052	\$ 4,985	\$ 5,282	\$ 6,488
<b>Panel C. General Beach Attitudes<sup>2</sup></b>				
Water quality affects my decision to go to the beach	4.14	4.25	4.17	4.38
Beach maintenance affects my decision to go to the beach	4.38	4.50	4.30	4.47
Beach cleanliness affects my decision to go to the beach	4.55	4.59	4.39	4.66
Congestion affects my decision to go to the beach	3.77	3.86	3.87	3.85
Beach facilities affects my decision to go to the beach	4.04	4.26	3.91	4.09
Lake Erie water quality affects my decision to go to the beach	3.47	3.36	4.22	3.40

<sup>1</sup>Of the visitors surveyed, 47% responded at Headlands and 54% responded at Maumee.

<sup>2</sup>The averages reported are based on the number of survey respondents. Scale ranged from 1 = strongly disagree to 5 = strongly agree.

The results also suggest that visitors to Headlands tend to spend more of their time on the beach than those at Maumee Bay. This makes sense because Maumee Bay is more developed than Headlands, and it has a wider variety of alternative activities for visitors. Despite this, visitors are spending more than 50% of their time on the beach in each case.

Interestingly, the results are reversed for multiple day trips and could be attributed to the fact that Maumee Bay serves as an attraction in and of itself. With a campground and resort for individuals to stay the night, as well as the other recreational activities, visitors can plan to spend more than one day at Maumee Bay itself. Alternatively, Headlands is near Cleveland and other attractions in northeastern Ohio. Multiple day visitors to Headlands visit the beach on a side trip as part of a more extended visit to northeastern Ohio. Most multiple day visitors to Headlands do not list the beach as their primary reason for visiting the region.

Expenditures for single day trips are relatively modest, as they range from \$21 per trip for Headlands to \$34 per trip for Maumee Bay. Nevertheless, individuals spend only 26-30% of these dollars on travel expenses, with the rest going to the local economy. In 1996, the

Ohio Department of Natural Resources estimated that there were 1.4 million visitors to each beach. Accounting only for single day beach users, expenditures in local economies near the beaches could amount to \$6.2 million at Maumee Bay, and \$3.3 million at Headlands.

Average household income for visitors to the two beaches is relatively high ranging from \$47,000 to \$50,000 a year. Median income for visitors to both beaches is slightly lower at \$45,000 per household (the median is the half-way point between the highest and lowest income levels). Comparatively, Ohio's median household income in 1997 was \$35,493 (U.S. Bureau of the Census, 1998). Data obtained from the 1990 U.S. Census suggests that median household income for the regions with visitors to Headlands was approximately \$32,000, and median family income was approximately \$38,000. Median household income for the regions with visitors to Maumee Bay in 1989 was approximately \$31,000, and median family income was approximately \$38,000. Visitors in this survey have higher income than the general populations from which they were drawn.

The results indicate that visitors tend to spend nearly 10% of their income on recreation in any given year. Of annual recreational expenditures, 3% to 5% are budgeted for single day beach visits. This suggests that visitors spend a relatively small proportion of their household income on beach visits, generally less than 1%. However, when these expenditures are totalled over the large number of visitors going to beaches each year, the effect on a local community can be large.

Questions about beach attitudes suggest that beach visitors are most interested in beach cleanliness and maintenance, with water quality appearing to play a relatively strong role as well. Given that beach closings have become more prominent in recent years, it is surprising that water quality is not more important for visitors.

The last survey question asks about Lake Erie water quality in general, and the respondents suggest that this consideration has a relatively small effect on their decision to go to a beach. A potential explanation for why the first and last questions in panel C of Table 1 differ is that beach visitors are generally satisfied with water quality in Lake Erie, but they may be concerned about water quality at the particular beach they are visiting.

The full set of results for this survey are found in a companion document *Summary of 1997 Survey of Lake Erie Beach Users* (contact lead author for a copy) or at the following website: <http://www-agecon.ag.ohio-state.edu/Faculty/bsohnngen/beach/beachin.htm>

## Two Components of Economic Value

There are many aspects of the value of a public asset, such as a beach. One component, often called "economic impacts," represents the value of dollars spent in the local economy by visitors to the beach. Economic impacts measure how visitors from distant locations who access the beach affect local businesses, such as restaurants and other service industries. The direct effects of these impacts for single day visitors to the beach were measured as \$6.2 million per year for Maumee Bay and \$3.3 million for Headlands (discussed above).

A very different component of value, however, is the

“value of the satisfaction” obtained by individuals who are visiting the beach. Understanding whether this value is high or low for a beach can help policy makers compare the use of public lands in one activity, such as beaches, versus another activity, such as marinas or dock space. Public resources should flow to uses that bring in the highest value of satisfaction to users.

Measuring the value of satisfaction is more difficult than measuring economic impacts because beaches are provided free for the consuming public. There are no readily available measures of price to determine how valuable trips are to people who take them. Nevertheless, economists have developed techniques to allow us to estimate this value based on the time and transportation costs associated with visiting a beach. These techniques, called the travel cost model, are grounded in well established economic theory. They have been used widely to estimate the value of public resources, beaches, for which prices are not set in the traditional buyer and seller market.

These values are distinctly different from the economic impacts discussed above. The economy near the beach obtains the economic impacts, but the consuming public who uses the beach obtains the value of satisfaction. The consuming public may be individuals who live in distant locations. Most importantly, these individuals both spend money in the local economy when they travel to a beach, but they also obtain satisfaction in return. Capturing both economic impacts and the value of satisfaction provides a more complete picture of the value of the public beach.

## The Value of Satisfaction for Single Day Beach Visits

Using the distance people in our sample travel to the beach, along with information on the number of trips they take each year and their income, we determine that the value of a single day trip to Headlands State Park Beach ranges from \$14.20 to \$16.88 per trip. This suggests that single day trips may be near \$15.50 per trip. Similar estimates from Maumee Bay revealed that the value of a single day trip ranges from \$24.67 to \$26.63, for an average of approximately \$25.60.

Trips to Maumee are more valuable than trips to Headlands. One reason is that Maumee Bay is a relatively unique resource in the northwestern part of the State of Ohio. There are few close substitutes nearby, and our surveys indicate that visitors perceive that it is well maintained. While Headlands has one of the longest stretches of natural beach in the State of Ohio, it is not an entirely unique resource in the northeastern part of the state. There are more beaches near Headlands that can act as substitutes.

There are also a wide variety of alternative recreational opportunities at Maumee Bay. These alternative opportunities for recreation enhance the attractiveness of this beach for visitors from long distances. Longer trips are positively related to the estimates of value determined by the techniques used in this study.

These estimates can provide helpful information. Of the 1.4 million visitors to each state park during the year, approximately 53% are involved in general day

use at Maumee Bay, and 17% swim at the beach. At Headlands, approximately 83% of visitors are involved in general day use, and 16% swim at the beach.

Using the visitors who swim at the beach as an estimate of the total number of annual single day visits to the beach itself, we can derive an estimate of the annual value of day trips to each beach. At Maumee Bay there are approximately 238,000 beach users during summer months, while at Headlands, there are 224,000 beach users. Using an estimate of the value of satisfaction for single day trips of \$25.60 per trip for Maumee, and \$15.50 per trip for Headlands, the annual value of single day beach trips to Maumee Bay is \$6.1 million, and to Headlands it is \$3.5 million.

Table 2 shows how the value of satisfaction compares to the economic impacts described earlier. Interestingly, the value of satisfaction from visiting beaches is as high as the economic impacts for these two examples—this makes sense. While it is important for local communities to recognize that public land in beaches can help local community economics through the money visitors spend, it is also important for them to recognize that the value of a beach involves more than just economic impacts. Beaches that do not provide as much satisfaction are likely to have smaller economic impacts as well.

## Using the Data and Results

**TABLE 2: Two components of the value of single day beach visits: Economic Impacts and the Value of Satisfaction (millions per year)**

	Economic Impacts	Value of Satisfaction
Maumee Bay	\$ 6.2	\$ 6.1
Headlands	\$ 3.3	\$ 3.5

One can use these estimates to determine the value of an acre of public beach access. To do this, we begin by assuming that visitation rates remain stable in the future, and that the appropriate interest rate is 7%. Capitalizing the annual value of single day beach visits to determine the present value of the public asset, we find that the total value of Maumee Bay is \$87 million, and the total value of Headlands is \$50 million.

These estimates can be used to determine the value of an acre of public lakefront beach access in recreation. Maumee Bay has 15.8 acres of beach along 2,600 linear feet of beach, so that the public value per acre is \$5.5 million. On the other hand, Headlands has 21.5 acres of beach along 4,600 linear feet of lake frontage, so that the public value per acre is \$2.3 million. In the city of Mentor, recent land sales of property with lake frontage range from \$24,000 to \$29,000 per acre. Not surprisingly, the value of land as a public recreational site is much higher than the value of land as a private entity. This arises because there are relatively few acres of beachfront that are open to the public. Beaches are scarce, and therefore highly valuable in terms of recreation.

The data can also be used to develop profiles of

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visitors from different regions. Tables 3 and 4 present summary information on visitors from different counties or regions. Table 3 profiles visitors to Maumee Bay. Most visitors are from Lucas County (Maumee Bay's location). A large number of the single day visitors (21% of our sample) comes from other parts of Ohio, however, where they travel an average of 64 miles to visit the beach. The closest visitors spend more of their time on the beach, with the exception of visitors from Ottawa County. Ottawa County residents spend more time hiking and picnicking, an activity that is complementary to using the beach.

Interestingly, although Ottawa County residents are close to the beach, they comprise only 4% of the respondents. There are two reasons for this. First, they are a small percent of northwest Ohio's population near the beach. There are only 40,000 residents in Ottawa County, while there are 450,000 in Lucas County, and 116,000 in Wood County according to the Census Bureau. Second, Crane Creek State Park is a nearby substitute, which many Ottawa County residents can use for beach recreation. Lucas County residents have to drive further to obtain this substitute.

Net expenditures are the total expenditures minus the costs of traveling to the beach. This represents the amount of money that each visitor from the given county spends near the park. The annual value of satisfaction from beach visiting is highest for the most local visitors (i.e. those from Lucas, Wood, and Ottawa Counties). These individuals take a large number of trips each year, but they do not have far to go to obtain the beach. The annual value of satisfaction is smaller for more distant visitors, mostly because these individuals have relatively high expenses in traveling to the beach.

The visitor's value of satisfaction can be summed by region to determine which regions benefit the most from visiting the beach. Lucas County residents obtain the

largest share of benefits because they are close to the beach, and they take advantage of the resource (as shown by the high number of trips each individual takes). Residents in other parts of Ohio, and in Michigan, also obtain large benefits. While Maumee Bay is highly valued by the closest visitors, it is also highly valued by individuals from more distant regions.

Table 4 presents a profile of visitors to Headlands State Park beach. A large proportion of the sample comes from Lake County (where Headlands is located), and nearby Cuyahoga County. Visitors to Headlands are spending a large proportion of their time on the beach, regardless of where they originated. Net expenditures range from \$14 per trip to \$27 per trip for visitors from the most distant locations.

The annual value of satisfaction for each visitor is highest for Lake and Geauga County residents, while it is lower for residents of Cuyahoga County and elsewhere. However, a large proportion of the total value of Headlands is gained by Cuyahoga residents. As with Maumee, Headlands provides value both for local consumers and for those from longer distances.

The results can have direct implications for both state and local decision-making. Suppose, for example, that a local community is faced with determining whether or not to develop lake front property as a public beach, or to allow it to be developed privately. These results suggest that public beaches have two economic effects. First, they can provide dollars for the local economy through expenditures by individuals who visit the beach. Second, they provide economic benefits for the visitors themselves. While this economic benefit is captured by visitors from regions that may be far from the beach itself, it is an important component of the overall value of the beaches.

**TABLE 3: Profile of visitors from different regions to Maumee Bay State Park beach**

	Ohio Counties				Michigan	All Regions <sup>1</sup>
	Lucas	Wood	Ottawa	Other		
Percent of sample	56%	11%	4%	21%	8%	100% <sup>2</sup>
Trips per person per year	7.1	5.8	10.2	2.4	4.0	6.0
Distance per trip (miles)	18	24	43	12	85	35
Time on beach per trip	61%	63%	38%	44%	51%	56%
Income of visitors	\$ 44,232	\$ 51,020	\$ 48,333	\$ 49,918	\$ 60,028	\$ 47,000
Net expenditures per trip	\$ 18	\$ 18	\$ 6	\$ 52	\$ 12	\$ 24
Annual value of satisfaction per visitor	\$ 182	\$ 148	\$ 262	\$ 62	\$ 103	\$ 122
Annual value of satisfaction for all visitors	\$ 3,400,617	\$ 669,413	\$ 481,977	\$ 240,989	\$ 1,312,049	\$ 6,105,044

**TABLE 4: Profile of visitors from different regions to Headlands State Park beach**

Ohio Counties	Cuyahoga	Lake	Gauga	Summit	Other	All Regions <sup>1</sup>
Percent of sample	36%	40%	9%	4%	12%	100% <sup>2</sup>
Trips per person per year	5.6	9.4	7.3	2.5	3.1	6.9
Distance per trip (miles)	31	9	22	41	59	26
Time on beach per trip	69%	61%	64%	70%	54%	64%
Income of visitors	\$ 49,050	\$ 50,037	\$ 47,931	\$ 69,167	\$ 50,513	\$ 50,000
Net expenditures per trip	\$ 14	\$ 8	\$ 16	\$ 19	\$ 27	\$ 13
Annual value of satisfaction per visitor	\$ 80	\$ 133	\$ 103	\$ 36	\$ 45	\$ 91
Annual value of satisfaction for all visitors	\$1,145,609	\$1,278,159	\$274,568	\$113,614	\$369,246	\$3,481,578