

BOATING OPPORTUNITIES:

A GEOGRAPHICAL ANALYSIS OF TRAVEL

PATTERNS AND MOTIVATIONS

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Pleasure boating is a major recreation activity today. In Massachusetts alone, there are more than 100,000 registered pleasure boats. Optimizing the availability of boating resources on inland and coastal waters is a major concern for recreation managers. The purpose of this paper is to explore where boating recreation may take place and the motivating factors that influence the destination choice.

Introduction

Pleasure boating is a major outdoor recreational activity in America today. It involves millions in the population across the country. In just Massachusetts alone there are nearly 150,000 boats registered. Recreation managers, as well as associated private-sector interests, are concerned with optimizing the availability of boating resources on inland and coastal waters. Knowledge of the travel behavior, site choice process, and preferred activities is key to better accommodating the needs of boaters.

The purpose of this study was to examine the boating destinations of a sample of representative pleasure boat owners in Massachusetts in order to better understand the typical travel patterns to boating sites, the factors influencing site choice, and the specific boating-related activities undertaken at different sites.

Literature Review

Boating is a very popular form of recreation. All recent nationwide and regional studies have shown an increase in participation (cf. Clawson and Van Doran 1984; USDI 1986; PCAO 1986; Kelly 1987; Warnick and Vander Stoep 1990). While Kelly (1987) and Warnick and Vander Stoep (1990) believe this growth to be dependent on the economy and demographics, Clawson and Van Doran (1984) found boating was highly dependent on fuel prices and therefore elastic. Yet today, since the fuel prices have stabilized, any visit to a water body during the summer will highlight the enormous use.

One primary issue for water based resource managers is that increased boating use may create conflicts on site. Therefore it is important to understand the factors that influence boating demand. Once identified, managers can administer resources in an efficient manner.

Recognizing the classic Lancaster (1966) approach to consumer behavior, recreation planners have sought to identify what factors influence choice behavior. Typically recreation demand models have considered socio-economic/ demographics and site characteristics to forecast recreation choice. Lately researchers have begun to define recreation choice as a function of activity (purpose of trip), travel patterns and lastly resource distribution and amenities. Each of these components will be discussed below.

It is quite obvious that boating requires water resources. The act of boating will often include a variety of secondary activities, since the boat serves as a mode of transport. These secondary activities may dictate the type of boat one utilizes, i.e., a high horsepower engine is required for water skiing, while not for an angler. Boating typically takes places within the confines of limited bodies of water, although coastal states have the added waters of oceans. This carrying capacity issue has been evaluated for similar coastal states like Maryland. Here the researchers found that the capacity of tidal waters was dependent on whether or not the boater utilized motors (Roy Mann 1976). That is, water skiers towed behind a boat need more space than someone merely swimming from a boat. Clearly boating activity takes on a variety of forms.

The travel for boating next needs to be considered. Regional planners need to evaluate system wide resources to efficiently allocate public expenditures (Cordell et al. 1983). Research at the regional scale has concentrated on boating participation at various park resources. For example, boaters have been thought of as individuals that tend to participate close to home. Stynes (1982) found that 50% of the Great Lakes residents traveled less than 30 minutes to boat. Graefe (1986), in his literature review for the President's Commission on Americans Outdoors found a similar trend in boating travel.

An earlier study by Lentnek et al. (1969) disaggregated this travel behavior further and found that sailors and water skiers had the greatest distance decay function, whereas anglers and non-specialized boaters sought more remote lakes to visit. This is a fairly important distinction since recreational boaters will have different purposes in mind when selecting a resource to visit.

Ditton and his colleagues concurred since "(fishing in a stream is quite unlike trolling in Lake Michigan..." (Ditton et al. 1975:292). Therefore, specific activities are found at specific resources which in turn, directs recreators to seek alternative destinations for alternative activities. Beyond biophysical resource characteristics, facilities nearby may prove to be significant attractants to participation (McCool 1978).

But as researchers have long known, it is not what is found at the resource, but rather what is perceived to be there that influences demand. Recreation choice can be a function of attitudes or motivations and was found to be a primary influence on recreation site selection (Murphy 1975). Linked obviously to site characteristics, motivations can direct the recreator to select one site over another.

While not directly explored, motivations can be measured in the Hernandez and Sanchez (1987) study of boating behavior in Puerto Rico. The authors found travel to be concentrated at a few primary lakes with some diversification at competing inland waters when the recreators sought some variety. Apparently, boating enthusiasts may be motivated to seek different destinations depending on these primary and secondary activities.

Research by Bristow, Klar and Warnick (1992) discovered that Massachusetts residents typically participated in a variety of activities. The activities chosen were found to influence the variety of destinations visited. When all boating activities were aggregated together (i.e., power boaters, canoe, sailing etc.) the sample evaluated indicated a propensity to diversify travel. Statewide the modal number of resources visited was three per year, indicating boaters in Massachusetts to exhibit variety seeking behavior. But when boaters were asked about other tourist travel and visiting parks, there was a tendency to repeatedly visit the same resource, indicating some level of resource dependency. Secondary activity selection apparently curtailed diversified travel, by perhaps narrowing the choice to fewer sites.

In a subsequent study, Bristow, Caron and Green (1993) more closely investigated the relationships between the demand for boating and the available supply characteristics for the activity. Certain areas in the Commonwealth were found to have an excess

supply of opportunities, while other regions failed to meet the local demand. Local demand was considered to be the most important factors since most boating takes place close to home. Areas where local demand exceeded local demand were found in the suburbs of Boston, much of Plymouth County and the Northern portion of the Connecticut River Valley. While this is important at the aggregate level, specific reasons for this behavior could only be speculated.

Questions arose, for example, when travel patterns were examined. First, since all boating was grouped together, subtle differences between different boaters could not be identified. Large boats obviously, were inappropriate on some smaller bodies of water. Second, other purposes of the trip or ancillary activities may influence the destinations selected. Anglers may seek their favorite fishing hole while a racer may select a wide open stretch of water. Third, specific site characteristics may motivate the boater to visit a particular lake.

Methodology

The survey instrument constructed for this study included roughly fifty separate data items. The procedure employed to write, pretest and evaluate the instrument followed Dillman's (1978) suggestions.

The first several items were background items dealing with boat characteristics such as boat type and engine horsepower; data for these initial items were provided together with boat owner names and addresses, courtesy of the Division of Law Enforcement, Commonwealth of Massachusetts. These background questions

were followed by the questions identifying boat use over the past year and boat mooring location.

The remaining questions, comprising the bulk of the survey instrument, dealt with boater evaluations of their three most visited boating sites over the past year. First, pleasure boaters were asked to identify the importance of each of six different factors potentially influencing their motivations to select each respective boating site. The six factors included here were "nearness to home," "water body size," "nearby facilities," "water cleanliness," "mooring/ramp fees," and "fishing quality."

Next, boaters were asked to identify the frequency with which they engaged in each of five different potential boating activities at each respective boating site. Specifically, the five identified boating activities were "fishing," "swimming," "skiing/boarding," "picnics/parties," and "sightseeing."

The final survey item was an open-ended question intended to solicit other comments, positive or negative, regarding boating in Massachusetts. A copy of the actual survey instrument is included in the Appendix.

Data Collection

The survey instrument described above was administered by telephone in November, 1993 to a stratified random sample of pleasure boat owners registered in the Commonwealth of Massachusetts. As previously noted, complete, current computer listing of registered boat owners was provided through the courtesy of the Division of Law Enforcement, Commonwealth of Massachusetts.

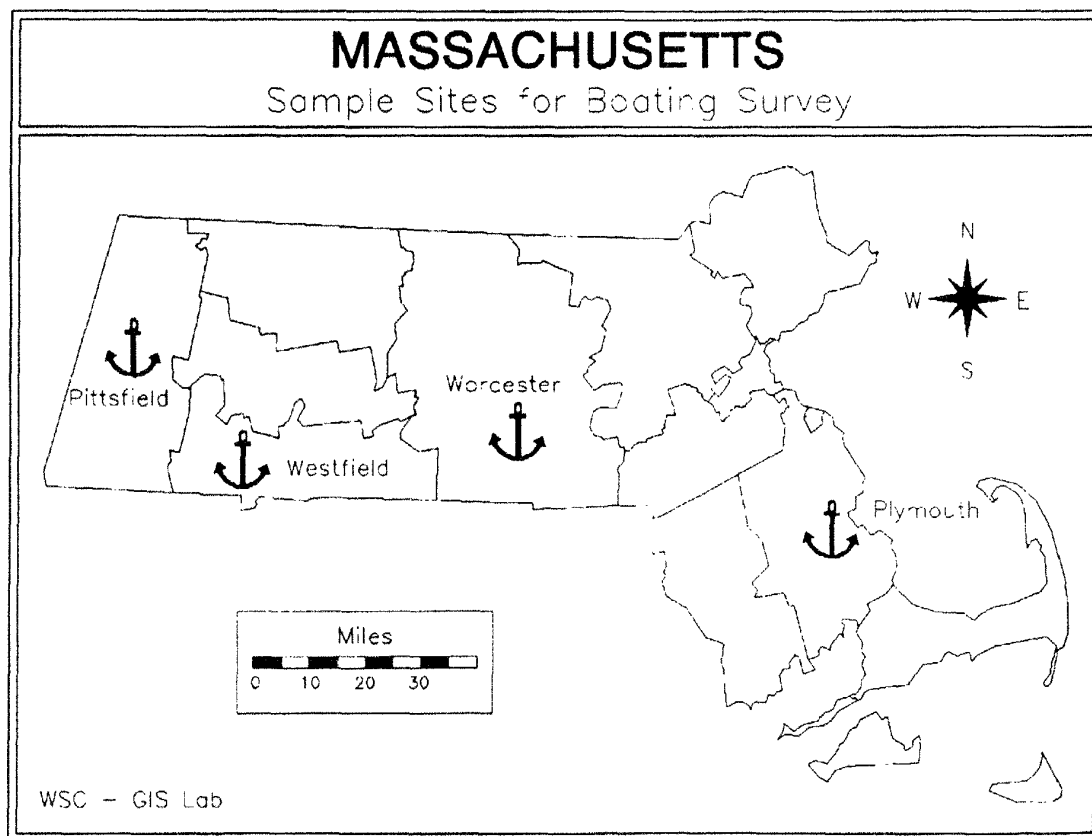


Figure 1. Locations of four sampled cities in Massachusetts.

In order to discern overall recreational boating use patterns as well as any potential city-to-city differences, boat owners from four cities spread across the state comprised the population for the study. The locations of the four targeted cities, Pittsfield, Westfield, Worcester, and Plymouth, are shown in Figure 1. Randomly-selected boat owners from each city were selected and interviewed, until a desired fifty-participant tally was reached for each of the four cities. As is typical with telephone surveys (Dillman 1978), there were difficulties contacting some boat owners because of unlisted phone numbers, telephone answering

machines, changes of residence, or simply refusal to participate. In sum, a respectable overall response rate of 21.2% (200/942) was achieved, and a good 59.2% rate of participation (200/338) was elicited from among the boat owners with whom phone contact was actually established, as shown in Table 1. It should be noted that no attempt was made in this study to explore the nature of the non-responding segment of the sample; this non-responsive group was not deemed a priority since boat owner demographics were not emphasized in the study.

Table 1. Boating Survey Responses.

	Pittsfield	Westfield	Worcester	Plymouth	Totals
Total Boats	1353	1321	2330	1584	144233
Total Checked on Random No List	214	222	288	218	942
Number of Different Numbers Called	93	137	136	128	494
Number of Owners Actually Contacted	68	84	87	99	338
Number of Surveys Actually Completed	50	50	50	50	200

The tabulation of the survey responses and the subsequent analyses of the data was done using SPSS/PC+.

Findings

Boat Type, size and Propulsion

Typically, the surveyed pleasure boaters were owners of relatively small, open, outboard-powered watercraft. Among all the participating boat owners, 82% reported their boat to be of the "open boat" type. The most commonly reported boat lengths were 14, 12, and 16-foot crafts which together accounted for 46.3% of the boats; similarly, the mean reported boat length was 16.34 feet. As one would expect, the overwhelming majority of these boats, (72%) were powered by outboard engines. Reported engine sizes varied widely but the most common were the 40-horsepower and the 10-horsepower sizes.

Boat Mooring

Boating issues involving location and travel were central to this study, and it was important to determine where boat owners tend to lodge their watercraft. On this item, 80.0% of the respondents reported that their boat was kept at home, while 19.5% of those surveyed noted that their boat was moored away from home.

Multiple Boating Sites

In the survey boat owners were asked to identify the three boating sites which they had used most frequently during the past year. Here, it was found that very few boat owners had visited three different launching sites during the past year, and less than one-half of owners had utilized even two different sites. Only 41.5% of the responding owners had launched their boat from a second site, and a scant 8.0% reported using a third boating site.

Distance Traveled

In general, pleasure boaters do not travel widely when seeking boating sites. The survey results showed that most boaters traveled only short to moderate distances to access their primary boating site, and they traveled only slightly farther typically when utilizing a secondary boating site. The median reported travel distance for trips to a primary boating site was 8 miles, while the median travel distance for trips to a secondary site was 10 miles.

Fully 37.7% of the owners identified their primary boating site as involving virtually no travel, i.e., being located in their home town. More than one-half of the survey group (52.3%) said they

traveled ten miles or less to reach their primary boating site, and 75.9% identified a primary boating site within twenty miles.

Home town sites involving little or no travel were identified as secondary sites by 21.6% of these respondents. Secondary site trips of ten miles or less were noted by 51.1% of the respondents, while secondary site travel of twenty miles or less accounted for 67.0% of the survey participants.

In short, hometown boating trips are quite common. In fact, the hometown is the most used boating site for more than one-third of Massachusetts boaters. The distances traveled to secondary boating sites are only slightly greater than the distances traveled to primary boating sites; furthermore, the increased distance for secondary sites is largely a reflection of the "occasional out-of-state" vacation boating trip.

Motivations for Choosing Boating Sites

Survey participants were asked to evaluate as "Not Important," "Somewhat Important," or "Very Important" each of a series of motivating factors thought to have potential importance in the choice of specific boating sites. The six examined factors were: nearness to home, water body size, availability of nearby facilities, water cleanliness, mooring or ramp fees, and fishing quality.

Primary Site Motivations

Looking first at these items for just the primary boating site, the issues which were most often ranked as "very important" by sizable percentages of the respondents were "Water Cleanliness" (68.0% of respondents), "Fishing Quality" (56.5%), and "Nearness to Home" (46.0%). A smaller portion of the survey participants, (29.5%), identified the "Water Body Size" factor as being "very important." Lastly, "Mooring or Ramp Fees" and "Availability of Nearby Facilities" were found to be of little consequence; on these respective items only 14.5% and 17.0% of the respondents cited them as "very important." The survey items are found in Table 2.

Secondary Site Motivations

Now focusing on the motivations influencing the choice of a secondary site, the items which were most often ranked as "very

important" by sizable percentages of the respondents were "Water Cleanliness" (64.0% of respondents), "Fishing Quality" (64.0% of respondents), and "Water Body Size" (37.1% of respondents). A smaller portion of the survey participants, (32.6%), identified the "Nearness to Home" factor as being "very important". Again, as before with the primary site criteria, "Mooring or Ramp Fees" and "Availability of Nearby Facilities" were found to be of little consequence; on these respective items only 18.0% and 27.0% of the respondents cited them as "very important".

Table 2. Percent of respondents citing "very important" motivations.

Motivations	At Primary Site	At Secondary Site
Water cleanliness	68.0%	64.0%
Fishing quality	56.5%	64.0%
Nearness to home	46.0%	32.6%
Water body size	29.5%	37.1%
Mooring/ramp fees	14.5%	18.0%
Nearby facilities	17.0%	27.0%

In short, when choosing their primary site the criteria of most importance to boaters were clean water, fishing quality, and proximity to home--in that order. These criteria changed only slightly when boaters sought an alternative site; here the important factors, in order, were clean water, fishing quality, and water body size.

Activities Associated with Primary and Secondary Sites

To explore the reasons people go boating, this study investigated activity selection (see Table 3). It was hypothesized that these secondary activities may have a great influence on site selection and should be identified.

Table 3. Percent of respondents reporting doing activity "often."

Activity	At Primary Site	At Secondary Site
Fishing	51.3%	64.0%
Swimming	23.5%	19.1%
Sightseeing	20.7%	26.1%
Picnics/Parties	17.6%	18.0%
Skiing/Boarding	14.6%	2.5%

By a wide margin, "Fishing" was the most popular activity associated with boating at the primary site. More than one-half (51.3%) of the boaters said they engaged in fishing "often" at their primary site. About one-fifth of the boaters reported swimming, sightseeing, and picnics and parties as activities done often at their primary boating site. Water skiing or boarding activity was reported as done often at the primary boating site by only 14.6% of the surveyed boaters.

Fishing remains popular for boaters seeking alternative sites for the experience. The other activities remained equally important to those identified with primary site selection. An interesting increase is observed in sightseeing, where a slight increase (26.1%) is observed. Could this be an indication of variety seeking behavior?

The relative overall importance of fishing discovered in the analysis led to the further disaggregation of the data. Here, the importance of site specific attributes of the primary boating site was separated for the anglers. Obviously anglers are more motivated by water and fishing factors. The issues which were most often ranked as "very important" by sizable percentages of the anglers were "Fishing Quality" (85.4%), "Water Cleanliness" (68.9%), and "Nearness to Home" (40.8%). A smaller portion of the anglers, (29.1%), identified the "Water Body Size" factor as

being "very important." Lastly, "Mooring or Ramp Fees" and "Availability of Nearby Facilities" were found to be of little consequence; on these respective items only 14.6% and 16.5% of the respondents cited them as "very important".

Lastly, the participation in other activities was summarized for the anglers. Of the anglers who indicated a propensity to fish often, sixty four percent never swam. A similar percentage was found for Picnic activities (65%). Water skiers were even less likely to fish often (82.5%), while pleasure use (or sightseeing) was never done by fifty four percent of the anglers. The is a distinct difference between the activities people participate while boating. The need for high horsepower engines is needed for water skiing, while perhaps unnecessary for a typical angler.

Implications to Managers

Recreation managers and in particular those with water resources are concerned with providing a safe and enjoyable environment for boaters. An understanding of motivations and client travel can aid in meeting those needs. Boating cannot be investigated unless the secondary activities are identified. Water quality is favored by all aquatic users, but more critical in the motivations of swimmers and anglers who may come in direct contact.

Proximity to the resource was found to be of less importance to boaters in Massachusetts, perhaps because the state enjoys an abundance of inland and coastal waters. Ramp fees and support facilities were also not important. The fees must be an accepted expense and the supporting infrastructure unnecessary for the angler who packs a cooler.

Massachusetts can expand the boating opportunities by opening up many of the reservoirs in the state that are closed to recreation use. This is an untapped resource that can reduce the impact on the existing resources.

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Figure 2. Copy of phone survey.

MASSACHUSETTS BOAT-OWNERS SURVEY

ID Code # _____ Name _____

Phone _____ Street & Town _____

Boat Type 1=Open Boat 2=Cabin Cruiser 3= Sailboat 4=other Boat Length _____ ft

Propulsion 0=None 1=Outboard 2=Inboard Motor Horsepower _____

Where is Boat Moored 1=at home 2=away...town name _____

Hello, my name is _____ and I'm calling from the Regional Planning Department at Westfield State College. We are conducting a telephone survey of registered boat owners in Massachusetts--to better understand the needs of boaters and to improve boating opportunities in the State. We would appreciate your responses to some questions about your own boating, particularly this past year...

1. During the past year did you use the boat described above? 1=Yes 2=No

2. Where do you generally keep this boat?

1=at main residence 2=at cottage 3=at marina 4=other...where? _____

Now I have some questions about the places you went boating this past year.

First, thinking of just this past year, what was the boat launching SITE USED MOST OFTEN?

3. Where Is the Site? _____ (Site & Town)

4. Number of Days Used This Past Year? _____ (Number) (Miles from Home: _____)

When you chose this particular boating site, how important was--

5. Nearness to Home	0=Not Important	1=Somewhat Important	2=Very Important
6. Water Body Size	0=Not Important	1=Somewhat Important	2=Very Important
7. Nearby Facilities	0=Not Important	1=Somewhat Important	2=Very Important
8. Water Cleanliness	0=Not Important	1=Somewhat Important	2=Very Important
9. Mooring/Ramp Fees	0=Not Important	1=Somewhat Important	2=Very Important
10. Fishing Quality	0=Not Important	1=Somewhat Important	2=Very Important

At this particular boating site, how often did you use your boat for--

11. Fishing	0=Never	1=Seldom	2=Occasionally	3=Often
12. Swimming	0=Never	1=Seldom	2=Occasionally	3=Often
13. Skiing/Boarding	0=Never	1=Seldom	2=Occasionally	3=Often
14. Picnics/Parties	0=Never	1=Seldom	2=Occasionally	3=Often
15. Sightseeing	0=Never	1=Seldom	2=Occasionally	3=Often

Now, let's think about the boat launching SITE that you used 2nd MOST OFTEN this past year--

16. Where Is the Site? _____ (Site & Town)

17. Number of Days Used This Past Year? _____ (Number) (Miles from Home: _____)

When you chose this particular boating site, how important was--

18. Nearness to Home	0=Not Important	1=Somewhat Important	2=Very Important
19. Water Body Size	0=Not Important	1=Somewhat Important	2=Very Important
20. Nearby Facilities	0=Not Important	1=Somewhat Important	2=Very Important
21. Water Cleanliness	0=Not Important	1=Somewhat Important	2=Very Important
22. Mooring/Ramp Fees	0=Not Important	1=Somewhat Important	2=Very Important
23. Fishing Quality	0=Not Important	1=Somewhat Important	2=Very Important

At this particular boating site, how often did you use your boat for--

24. Fishing	0=Never	1=Seldom	2=Occasionally	3=Often
25. Swimming	0=Never	1=Seldom	2=Occasionally	3=Often
26. Skiing/Boarding	0=Never	1=Seldom	2=Occasionally	3=Often
27. Picnics/Parties	0=Never	1=Seldom	2=Occasionally	3=Often
28. Sightseeing	0=Never	1=Seldom	2=Occasionally	3=Often

We are nearly done with the questions. Are there any other boat launching sites that you used this past year. If so, think of the SITE that you used 3rd MOST OFTEN this past year--

29. Where Is the Site? _____ (Site & Town)

30. Number of Days Used This Past Year? ____ (Number) (Miles from Home: ____)

When you chose this particular boating site, how important was--

31. Nearness to Home	0=Not Important	1=Somewhat Important	2=Very Important
32. Water Body Size	0=Not Important	1=Somewhat Important	2=Very Important
33. Nearby Facilities	0=Not Important	1=Somewhat Important	2=Very Important
34. Water Cleanliness	0=Not Important	1=Somewhat Important	2=Very Important
35. Mooring/Ramp Fees	0=Not Important	1=Somewhat Important	2=Very Important
36. Fishing Quality	0=Not Important	1=Somewhat Important	2=Very Important

At this particular boating site, how often did you use your boat for--

37. Fishing	0=Never	1=Seldom	2=Occasionally	3=Often
38. Swimming	0=Never	1=Seldom	2=Occasionally	3=Often
39. Skiing/Boarding	0=Never	1=Seldom	2=Occasionally	3=Often
40. Picnics/Parties	0=Never	1=Seldom	2=Occasionally	3=Often
41. Sightseeing	0=Never	1=Seldom	2=Occasionally	3=Often

42. This survey has largely dealt with the places you boat most often. Are there any other comments that you would like to make about boating in Massachusetts? If so, what--

THANK YOU FOR YOUR VOLUNTARY PARTICIPATION IN THIS SURVEY.