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**COASTAL ZONE RECREATIONAL ACTIVITY
AND
POTENTIAL DEMAND OF DELAWARE RESIDENTS**

by

**Richard J. Agnello, Lawrence P. Donnelley,
Kenneth W. Eckhardt and Robert A. Rothman**

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Introduction

Considerable attention has been directed to the recreational potential of the Delaware coastal zone and the recreational preferences of Delaware residents. An important component of Delaware's coastal zone management legislation is the protection of the natural environment and, where appropriate, development of a recreational and tourism industry.

Delaware's coastal zone has the potential of helping to relieve the growing recreational demand of the State and the nearby megalopolis extending from Maine to Virginia. The Delaware River and Bay coastal zone area appears to be well suited for activities such as fishing, hunting, crabbing, and boating. The Atlantic coastal zone area is ideal for beach recreation along with several other popular water related activities.

Relatively little is known about current recreational preferences of Delaware residents.¹ The following report addresses three recreational topics specific to the State of Delaware. The first involves an assessment of the current recreational patterns among state residents. Major attention is devoted to the extent of utilization of the major recreational opportunities available in Delaware. The

¹For an earlier study, see The Market for Water Based Outdoor Recreation Services in New Castle County, Delaware by Paul Seidenstat (1966).

second is an attempt to measure the potential demand for new recreational options which could be introduced into the state. Since the total number of options was very large, it was necessary to be selective in limiting the analysis to a manageable number of options. The third focuses on the future of the marshlands along the bay coast; a topic of considerable debate over the last few years.

The State Survey

In order to address these questions systematically, a state-wide survey (see Appendix for a copy of the survey instrument) was undertaken. Between June and September of 1975 members of a total of 815 households in Delaware were interviewed. Approximately 200 households were included from each of four political subdivisions in the state: The City of Wilmington; New Castle County excluding Wilmington; Kent County and Sussex County.

This research strategy was undertaken in order to assure state-wide representation in the final sample. Households in each subsample were randomly sampled. Tables 1, 2 and 3 report the basic socio-economic characteristics of members of the sample. These tables and all that follow are taken from a six volume computer tabulation of the state-wide survey results. It can be noted that approximately equal proportions of males and females were included, and that the ethnic-racial characteristics of the sample approximate the proportions in the total populations of these areas by other researchers.

²See The Delawarians by Robert A. Wilson and Charles P. Wilson, 1972, Tables 8, 22, 24, and 26.

Table 1 Sample by County and Sex of Respondent

Sex	Wilmington	New Castle	Kent	Sussex	Totals
Male	50.7% (106)	47.5% (96)	52.5% (106)	57.9% (117)	52.1% (425)
Female	49.3 (103)	52.5 (106)	47.5 (96)	42.1 (85)	47.9 (390)
Totals	209	202	202	202	815

Source: Volume 1, Interview Situation Section, VAR010

Table 2 Sample by County and Ethnic/Racial Group of Respondent

Racial Group	Wilmington	New Castle	Kent	Sussex	Totals
Caucasian	43.3% (90)	94.0% (189)	89.5% (181)	95.0% (191)	80.2% (651)
Black	53.4 (111)	4.9 (10)	10.0 (20)	4.5 (9)	18.5 (150)
Spanish	2.8 (6)	0.9 (2)	0.0 (0)	0.5 (1)	1.1 (9)
Other	.4 (1)	0.0 (0)	.5 (1)	0.0 (0)	0.2 (2)
Totals	208	201	202	201	812

Source: Volume 1, Interview Situation Section, VAR004

Table 3 Sample by Income and County

Income	Wilmington	New Castle	Kent	Sussex	Total
Less than \$5000	39.7% (60)	6.5% (10)	8.2% (12)	5.4% (8)	15.1% (90)
\$ 5000 to 9999	23.2 (35)	22.2 (34)	24.7 (36)	22.3 (33)	23.1 (138)

Table 3 (continued)

\$10000 to 14999	22.5 (34)	23.5 (36)	25.3 (37)	27.7 (41)	24.7 (148)
\$15000 to 19999	7.3 (11)	23.1 (35)	24.7 (36)	18.9 (28)	18.4 (110)
\$20000 to 24999	3.3 (5)	12.4 (19)	11.6 (17)	14.2 (21)	10.4 (62)
\$25000 or more	4.0 (6)	12.4 (19)	5.5 (8)	11.5 (17)	8.4 (50)
Number	151	153	146	148	598

Source: Volume 1, Family Statistics Section, VAR229

Thus, the data for each geographic subdivision are a probability sample for that area. It is also possible to use these data to make projections for the entire state. This is accomplished by weighting each subdivision according to its population relative to the total state population, as follows:

	Occupied Housing Units	Weight
Wilmington	25,855	.1493
New Castle	92,630	.5348
Kent	26,580	.1535
Sussex	28,124	.1624
State Total	173,189	1.0000

Raw percentages are then multiplied by the weight to obtain weighted percentages for each subdivision. Weighted percentages are then summed to obtain projected state percentages.

Recreational Patterns of Delaware Residents

One major goal of this study was to determine the recreational

activities of Delaware residents. Twenty of the most popular leisure-time activities were specified in the interview. Individuals were asked to indicate active participation by any member of the household. These are listed in order of use in Table 4, column 1. Three different activities are clearly most popular; enjoyed by one or more members of one-half of the households -- ocean/pond swimming, picnicking and pool swimming. It should be noted that these three activities require no special equipment, and facilities are generally widely available.

At the other extreme are the activities of canoeing, sailing, and overnight hiking -- each of which attract less than 10% of the households. The two boating items require some degree of skill and specialized equipment, and overnight hiking which requires some outdoor specialized equipment apparently appeals to a very small group of people.

Table 4 Actual and Potential Participation in
Recreational Activities by Household

	Actual Participation ^a	Average Annual Rate of Participation ^b	Potential Participation ^c	Non- Participation ^d
Ocean/pond swimming	59.1% (479)	19.5	12.3% (100)	28.7% (233)
Picnicking	54.9 (445)	20.0	8.8 (72)	35.3 (286)
Pool swimming	48.0 (389)	52.6	19.4 (157)	32.6 (264)
Boat fishing	36.4 (295)	20.9	18.6 (151)	45.0 (365)
River/stream fishing	27.7 (225)	26.8	14.8 (120)	57.8 (468)

Table 4 (continued)

Bicycling	26.0 (211)	91.6	14.9 (121)	58.4 (473)
Nature Walks	25.5 (207)	101.6	12.3 (100)	61.5 (498)
Motorboating	24.0 (195)	27.9	28.1 (228)	47.8 (387)
Trailer/tent camping	23.0 (187)	12.7	22.2 (180)	54.6 (442)
Rabbit/squirrel hunting	20.9 (170)	21.8	10.9 (88)	67.8 (549)
Surf fishing	19.7 (160)	21.4	16.4 (133)	64.2 (520)
Deer hunting	16.2 (132)	6.4	11.1 (90)	72.6 (588)
Duck hunting	15.0 (122)	24.7	11.1 (90)	73.8 (598)
Horseback riding	14.4 (117)	88.9	19.5 (158)	65.9 (534)
Goose hunting	13.0 (106)	29.3	11.2 (91)	75.4 (611)
Pheasant hunting	12.2 (99)	18.9	11.6 (94)	75.3 (610)
Water skiing	11.6 (94)	18.0	22.3 (181)	66.4 (538)
Canoeing	8.6 (70)	11.7	27.5 (223)	63.3 (513)
Sailing	6.0 (49)	19.5	28.5 (231)	65.0 (527)
Overnight hiking	4.5 (37)	7.5	13.4 (109)	81.1 (657)

^a Actual participation means some member of the household engages in the recreational activity named. (Derived from the number of respondents that gave a location where they participate in the activity, see Volume 1, Recreation Participation Section.)

^b Average annual participation of households in which some member participated during the past year (taken from Volume 4, Summary Section).

^c Potential participation means respondent expressed interest but did not participate due to factors such as costs, access problems, lack of facilities, etc. (taken from Volume 1, Non-Use Reasons Section).

Table 4 (continued)

^d Non-participation means respondent indicated "no interest" in named activity (taken from Volume 1, Non-Use Reasons Section).

Sources: Volume 1, Recreation Location Section
Volume 1, Non-Use Reasons Section
Volume 4, Summary Section

Ranged between these two extremes are a variety of specific types of hunting and fishing which attract between 11% and 36% of the households in the sample.

In column two are the average number of times members of the household engaged in the activity. It must be remembered that this is the average for those who participated, not for all respondents. The most general conclusion which can be drawn is that those who participate do so on a fairly regular basis. For two more or less common activities (bicycling and walking), the average is nearly twice a week. Horseback riding is also frequent. For most other activities participation averages more than once a month. These are also activities which tend to be available on a year-round basis.

The third column represents potential participation. This enumerates those households in which some preference for the activity was expressed, although they did not now actively participate. Reasons offered for nonparticipation included such factors as cost, access, time constraints, lack of equipment, etc. Thus, it can be seen that some member of 20% of the households expressed interest in motorboating, trailer camping, water skiing, canoeing, and sailing. Overall, at least 10% of the households expressed interest in all the items mentioned, except picnicking for which actual participation is already high. These potential participants represent a group which must be considered in recreational planning.

The final column reflects the proportion of households with no expressed interest in the named activities. For 15 of the 20 activities we find that a majority of sample residents do not participate simply because of a lack of interest. Unfortunately, we have no way of knowing if interest might be stimulated by better or more accessible facilities.

The effect of factors such as race and income upon leisure activity has been found in other studies. In Delaware we find only minor differences. The participation of the lowest income group (< \$5,000) and non-whites is, on the average, about 10% below that of other income or racial groups.

Another way of looking at recreational potential is to focus on vacation periods. In this case the first question is how much vacation time people have available. People were asked how much vacation time the family has available to it. As shown in Table 5, 75% have at least one week of vacation. Two or three week periods are most typical (the modal categories), and approximately 25% have a month or more. There are, in addition, some 8% who have no vacation period

Table 5 Weeks of Vacation Available

Weeks of Vacation	Wilmington	New Castle	Kent	Sussex	Total
None	10.2% (21)	10.6% (21)	4.6% (9)	8.4% (16)	8.2% (65)
1	9.3 (19)	7.4 (14)	8.2 (16)	8.9 (17)	8.4 (66)
2	20.0 (41)	26.6 (53)	26.7 (52)	32.6 (62)	26.4 (208)
3	16.0 (33)	18.6 (37)	11.8 (23)	15.3 (29)	15.5 (122)

Table 5 (continued)

4	7.3 (15)	10.6 (21)	22.9 (47)	16.3 (31)	14.4 (114)
5 or more	5.9 (12)	11.2 (23)	15.4 (30)	10.5 (20)	10.8 (85)
Unemployed	6.3 (13)	1.0 (2)	3.1 (6)	.5 (1)	2.8 (22)
Retired	24.9 (51)	13.7 (28)	6.2 (12)	7.4 (14)	13.3 (105)
Number	205	199	195	190	789

Source: Volume 1, Trips & Vacations Section, VAR209

Of those people who took vacations, 26% spent them "at home" during 1974 (Table 6). Those who did leave home traveled in many directions, and in some cases traveled long distances. Approximately one family in ten stayed in Delaware. Another 15% visited one of the adjacent states of New Jersey, Pennsylvania, or Maryland. Next in popularity are Florida, New York, and Virginia. The remaining 22% were scattered in different states and countries as far as Hawaii, Germany and South America.

Table 6 Locale of 1974 Vacation Period

	Wilmington	New Castle	Kent	Sussex	Total
At home	32.7% (68)	22.1% (42)	19.1% (37)	31.2% (62)	26.4% (209)
Delaware	5.3 (11)	13.2 (25)	11.9 (23)	12.6 (25)	10.6 (84)
New Jersey	11.6 (23)	7.9 (15)	2.6 (5)	4.0 (8)	6.4 (51)
Pennsylvania	3.8 (8)	2.6 (5)	6.2 (12)	5.0 (10)	4.4 (35)

Table 6 (continued)

Maryland	4.8 (10)	4.2 (8)	4.1 (8)	3.0 (6)	4.0 (32)
Florida	5.3 (11)	9.5 (18)	9.8 (19)	11.6 (23)	9.0 (71)
New York	3.8 (8)	1.1 (2)	5.7 (11)	3.0 (6)	3.2 (25)
Virginia	2.9 (6)	6.3 (12)	6.2 (12)	8.6 (17)	5.9 (47)
Other	19.7 (41)	22.6 (43)	30.9 (60)	17.1 (34)	22.8 (180)
None	10.6 (22)	10.5 (20)	3.6 (7)	4.0 (8)	7.2 (57)
Number	208	190	194	199	791

Source: Volume 1, Trips & Vacations Section, VAR211

The reasons behind these travels are complex, but certain patterns are evident. One family in three (35%) went to visit relatives and/or friends in another locale. Approximately 15% were drawn by some specific tourist attraction such as Disney World, and 20% traveled to reach some beach or swimming area. The other reasons cited included "quiet", the climate, education, sports, parks, shopping and a variety of other points.

Examining these data from the point of view of recreation potential for Delaware, it is possible to suggest the following: approximately 50% of sample used their vacations to engage in some activity such as visiting friends or kin or seeing some specific non-Delaware tourist site. On the other hand, at least some of the remaining 50% might be encouraged to spend their vacations in Delaware if more varied facilities were available. This is potentially a very large number of people.

To determine willingness to utilize recreational facilities in Delaware, respondents were asked the distance they would be willing to travel for a day (Table 7) and then a weekend trip (Table 8). If the relative distances from one part of the state are considered, it appears that a majority of people in New Castle and Kent Counties could generally reach any part of the state within these mileage restrictions for a day trip. However, only about one-quarter of Wilmington residents and 15% of Sussex County residents would reach all other parts of Delaware. For weekend trips, mileage restrictions would exclude only a small percentage of the population.

Table 7 Distance Willing to Travel for Day Trip

Mileage	Wilmington	New Castle	Kent	Sussex	Total
Less than 25	47.1% (98)	22.2% (44)	13.6% (27)	42.0% (84)	31.4% (253)
25 to 50	14.9 (31)	8.5 (17)	18.6 (37)	22.0 (44)	16.0 (129)
50 to 75	11.5 (24)	14.6 (29)	30.1 (60)	21.5 (43)	19.4 (156)
75 to 100	9.1 (19)	24.2 (48)	10.5 (21)	4.0 (8)	11.9 (96)
More than 100	17.3 (36)	30.3 (60)	27.1 (54)	10.5 (21)	21.2 (171)
Totals	208	198	199	200	806

Source: Volume 1, Trips & Vacations Section, VAR188

Table 8 Distance Willing to Travel for Weekend Trip

Mileage	Wilmington	New Castle	Kent	Sussex	Total
Less than 25	21.2% (43)	7.0% (14)	5.5% (11)	9.2% (18)	10.8% (86)
25 to 50	9.3 (19)	2.0 (4)	5.5 (11)	5.1 (10)	5.5 (44)
50 to 75	7.9 (16)	6.0 (12)	6.5 (13)	9.7 (19)	7.5 (60)
75 to 100	14.3 (29)	15.5 (31)	12.5 (25)	13.3 (26)	13.9 (111)
100 to 150	16.2 (33)	13.6 (27)	12.5 (25)	17.9 (35)	15.1 (120)
150 to 200	6.9 (14)	11.0 (22)	6.5 (13)	13.3 (26)	9.4 (75)
More than 200	24.1 (49)	44.7 (89)	51.0 (102)	31.3 (61)	37.8 (301)
Number	203	199	200	195	797

Source: Volume 1, Trips & Vacations Section, VAR189

Next respondents were asked to indicate their reasons for not taking more trips within the state. As shown in Tables 9 and 10, time and interest are the major factors. However, cost and traffic are also significant problems. Thus, it appears that the state might well have greater resident use if consideration were given to access problems, and the existing fee structures.

Table 9 Reasons for Not Taking More
Day Trips in Delaware

Reason	Most Important Reason	Second Most Important	Third Most Important
Not enough time	45.1% (354)	9.5% (49)	7.8% (9)
Facilities overcrowded	6.9 (45)	15.5 (80)	14.7 (17)
Facilities inadequate	4.3 (34)	6.6 (34)	7.8 (9)
Facilities unclean, unsafe	1.0 (8)	2.1 (11)	3.4 (4)
Distance too great	3.1 (24)	3.3 (17)	3.4 (4)
Costs too great	10.8 (85)	17.0 (88)	7.8 (9)
Traffic congestion	3.6 (28)	23.2 (120)	30.2 (35)
Lack proper equipment	1.3 (10)	2.9 (15)	8.6 (10)
Lack of interest	12.1 (95)	9.7 (50)	8.6 (10)
Lack of information	1.4 (11)	3.9 (20)	4.3 (5)
Other	2.8 (22)	6.4 (33)	3.4 (4)
Number	785	517	116

Source: Volume 1, Trips & Vacations Section, VAR193 - VAR195

Table 10 Reasons for Not Taking More
Weekend Trips in Delaware

Reason	Most Important	Second Most Important	Third Most Important
Not enough time	36.7% (282)	11.3% (53)	6.1% (6)
Facilities overcrowded	7.4 (57)	12.6 (59)	11.1 (11)
Facilities inadequate	4.3 (33)	6.2 (29)	8.1 (8)
Facilities unclean, unsafe	.5 (4)	1.3 (6)	3.0 (3)
Distance too great	3.0 (23)	2.6 (12)	3.0 (3)
Costs too great	13.5 (104)	18.6 (87)	14.1 (14)
Traffic congestion	4.4 (34)	25.4 (119)	25.3 (25)
Lack proper equipment	1.3 (10)	2.1 (10)	12.1 (12)
Lack of interest	12.9 (99)	10.5 (49)	11.1 (11)
Lack of information	2.1 (16)	2.6 (12)	2.0 (2)
Other	13.1 (107)	6.8 (32)	4.0 (4)
Number	769	468	99

Source: Volume 1, Trips & Vacations Section, VAR198 - VAR200

New Recreational Activities

Expanding the utilization of present facilities is, of course, only one option. There is also the potential for developing new recreational activities. This includes both the expansion of present facilities, and the introduction of facilities not presently available in the state. For the present study, the emphasis was upon environmentally-based recreation facilities, and seven such activities were selected for detailed analysis. Each is currently in use in some other state, and has some potential for being developed in Delaware. Some are presently available on a limited scale in the state.

These activities were: nature bicycle trails; motorcycle trails; primitive camping areas; dune buggy areas; a park for the handicapped; marshland hydroplaning; and boat landings. Economic and ecological considerations were not taken into account at this point. (The pre-test revealed that people were very concerned about the availability of rest areas and comfort stations.) Thus, this eighth item was included in the final version of the interview. The high level of agreement on the need for additional rest areas and comfort stations reveals that there is great demand for these support facilities.

Table 11 Percent Endorsing Development of
Selected Recreational Options

	Percent Endorsing					State Projection
	Wilmington	New Castle	Kent	Sussex	Total	
Nature Bi- cycle Trails	90.4% (189)	86.6% (174)	83.0% (166)	80.3% (159)	85.1% (688)	85.5%
Motorcycle Trails	63.6 (133)	45.5 (92)	47.8 (96)	28.1 (56)	46.5 (377)	45.7
Primitive Camping Areas	73.2 (153)	54.9 (111)	48.7 (98)	56.0 (111)	58.4 (473)	56.9
Dune Buggie Areas	43.0 (90)	25.7 (52)	32.0 (64)	28.9 (57)	32.5 (263)	29.7
Nature Park for the Handicapped	96.6 (202)	94.5 (190)	84.4 (168)	69.7 (136)	86.6 (696)	89.2
Hydroplaning	38.5 (80)	18.9 (38)	16.0 (32)	12.3 (24)	21.7 (174)	20.3
Boat Landing Areas	54.0 (113)	51.5 (104)	63.4 (128)	63.0 (126)	57.9 (471)	55.5
More Rest Stations	91.9 (192)	88.0 (177)	86.6 (174)	87.4 (174)	88.5 (717)	88.3

Source: Volume 1, New Developments Section, VAR177-VAR184

As shown in Table 11, there is apparently significant demand for nature bicycle trails to supplement the urban bike paths now being developed in Newark and other communities. The same is true for a nature park specifically designed for the handicapped. Both these items were endorsed by over 85% of the sample.

More than half of the people in the sample also supported the idea of primitive camping areas and boat landing facilities. Just under 50% felt that motorcycle trails should be developed. Again,

this would suggest a meaningful level of demand.

The remaining two activities -- dune buggy areas and hydroplaning facilities -- received endorsement by smaller proportions of the respondents.

There are variations by geographic regions in the state. For example, urban residents of Wilmington generally expressed greater support for the development of almost all types of facilities. This probably reflects their greater distance from existing environment-based recreation facilities.

Obviously, the development of new recreational facilities will require revenues. Such revenues can be generated from a number of different sources. One method is the reallocation of funds within the existing state budget. This implies no increase in taxes. A second is the implementation of new revenues from taxes and other sources. The third major source of financing are "user fees" in which those who utilize a given facility are charged for the privilege.

Respondents were asked to indicate which of the three methods of financing they preferred. The results are tabulated in Table 12. It is evident that there is not much support at all for a redistribution of existing state funds. Only about 15% favor this method. It must be remembered that this option implies that some other state services will be reduced by the amount which is redirected into recreational development.

Table 12 Preferred Method of Financing Recreational Development

Financing Method	Geographic Division					Total	Projection
	Wilmington	New Castle	Kent	Sussex	Total		
User fees	47.58 (96)	53.58 (106)	59.28 (116)	74.78 (145)	58.68 (463)	56.98	
Reallocation of existing revenues	22.7 (46)	14.6 (29)	13.2 (26)	7.7 (15)	14.7 (116)	14.5	
New revenues	29.7 (60)	31.8 (63)	27.5 (54)	17.5 (34)	26.7 (211)	28.4	
Taxes	10.4 (21)	2.0 (4)	1.0 (2)	2.6 (5)	4.1 (32)	3.3	
Bonds	1.0 (2)	.5 (1)	1.5 (3)	1.0 (2)	1.0 (8)	.8	
Lottery	12.9 (26)	20.7 (41)	8.7 (17)	5.1 (10)	11.9 (94)	15.1	
Other	5.4 (11)	8.6 (17)	16.3 (32)	8.7 (17)	9.7 (77)	9.3	
Totals	202	198	196	194	790		

Source: Volume 1, New Developments Section, VAR190

Clearly the preference of Delaware residents is for some type of user fee. Over one-half of the respondents choose this method. Sussex County residents favored this option by 3 to 1 over all other possibilities combined. In contrast just under one-half the Wilmington residents favored this, with Kent County and New Castle (outside Wilmington) being closer to the state-wide average.

The idea of new revenues receives the endorsement of the remaining one-quarter of respondents. However, only 3-4% favor new general taxes; the most frequently mentioned option is a lottery. It is evident that new general taxes or a bond issue do not receive much support. Opposition to new revenues is greater among the lower income groups, as can be seen in Table 13.

Table 13 Method of Financing by Family Income

	<\$5000	\$5000- 9999	\$10000- 14999	\$15000- 19999	\$20000- 24999	≥25000
User fees	55.2% (48)	68.4% (91)	57.2% (83)	63.3% (69)	61.0% (38)	52.0% (26)
Reallocation	24.1 (21)	12.0 (16)	13.8 (20)	10.1 (11)	11.3 (7)	18.0 (9)
New Revenues	20.7 (18)	19.5 (26)	28.9 (42)	26.6 (29)	27.4 (17)	30.0 (15)
Taxes	4.6 (4)	3.8 (5)	6.2 (9)	2.8 (3)	3.2 (2)	6.0 (3)
Bonds	1.1 (1)	0.0 (0)	1.4 (2)	0.0 (0)	0.0 (0)	0.0 (0)
Lottery	11.5 (10)	12.0 (16)	13.1 (19)	10.0 (11)	8.1 (5)	10.0 (5)
Other	2.2 (2)	3.8 (5)	8.3 (12)	13.8 (15)	16.1 (10)	14.0 (7)
Totals	87	133	145	109	62	50

Source: Volume 2, New Developments Section, VAR190

Opposition to greater spending to support recreational development is also evident in responses to a related question. Residents were asked to indicate how much additional money per family they would be willing to see allocated to recreational development. As shown in Table 14 only 28% allocate any money at all, and most of the responses were under \$25. Only 7.5% were willing to allocate anything over this amount. Twenty-seven percent had no answer, and 44.7% specified no additional money. This figure would be 38.8% on a state-wide projection.

Table 14 Amount of Additional Money (per Delaware family) to be Allocated to Recreational Development

Amount	Wilmington	New Castle	Kent	Sussex	Total	State Projection
None	44.0% (92)	28.7% (58)	39.6% (80)	66.8% (135)	44.7% (365)	38.8%
\$10 or less	16.7 (35)	14.8 (30)	6.9 (14)	1.9 (4)	10.2 (83)	11.8
\$11 to \$25	11.5 (24)	12.9 (26)	13.9 (28)	3.0 (6)	10.3 (84)	11.2
\$26 to \$50	1.9 (4)	6.4 (13)	6.9 (14)	.5 (1)	3.9 (32)	4.9
\$51 or more	2.8 (6)	1.5 (3)	6.9 (14)	3.0 (6)	3.6 (29)	2.8
No answer	22.9 (48)	35.6 (72)	25.7 (52)	24.7 (50)	27.2 (222)	30.3
Number	209	202	202	202	815	

Source: Volume 1, New Developments Section, VAR192

There are significant differences among the four geographic areas. A full two-thirds of Sussex County people did not want to allocate any money, as compared to those in New Castle County (outside

Wilmington) where only 28.7% opposed any allocations. The amount allocated is also influenced by income; lower income groups are less likely to allocate any money.

The Future of the Marshlands

An issue which has received a good deal of attention over the last several years is the question of industrial development of the Delaware marshlands. (The marshlands generally extend along the bay coast from the canal to Lewes.) A number of different uses have been suggested ranging from preservation in its present form to development for heavy industry. To assess public opinion on this matter, two questions were included in the study.

The first asked people to choose their own preference for marshland development. There were five specific options, plus the opportunity to volunteer an alternative of their own. The results are tabulated in Table 15. There can be little question about the results, two out of three Delawareans favor the preservation of the marshlands as a natural area. Sussex County residents were most favorable to this option, while only one-half of Wilmington's residents favored preservation.

Table 15 Opinion About the Future of Marshlands

Opinion	Wilmington	New Castle	Kent	Sussex	Total	State Projection
Preserve as Natural Area	50.0% (88)	68.2% (135)	68.5% (133)	76.6% (154)	66.3% (510)	66.9%
Develop for Public Recreation	31.2 (55)	19.5 (38)	15.7 (31)	12.9 (26)	19.5 (150)	19.6

Table 15 (continued)

Develop for Residential Use	4.0 (7)	3.0 (6)	1.0 (2)	1.0 (2)	2.2 (17)	2.6
Develop for Light Industry	6.2 (11)	3.6 (7)	6.6 (13)	4.5 (9)	5.2 (40)	4.5
Develop for Heavy Industry	1.1 (2)	4.6 (9)	2.0 (4)	.5 (9)	2.1 (16)	3.1
Other	7.4 (13)	1.0 (2)	6.1 (12)	4.5 (9)	4.6 (35)	3.2
Number	176	195	197	201	768	

Source: Volume 1, Marshlands Section, VAR203

Development of the marshlands for public recreation was the only other option which received much endorsement. Approximately 20% choose this. No other option drew support from more than about 5% of the sample. Thus, a clear majority of citizens favor the retention of the coastal area of Delaware Bay in its present form, with only small numbers favoring any type of industrial or residential development.

This finding was confirmed by a subsequent question. This second question asked people to indicate if there were any circumstances under which they might approve use of the marshlands for oil, steel or chemical industry. As noted in Table 16 over 60% report there are no circumstances which would convince them to permit heavy industry in this area. The state projection makes it 66.1%. Another 16% were undecided. Less than 20% mentioned reasons for favoring industrial development. Respondents were allowed to give up to three conditions under which they would permit such

Table 16 Circumstances Under Which Marshlands Should Be Used For Oil, Steel, or Chemical Industries

	Wilmington	New Castle	Kent	Sussex	Total	State Projection
Under no circumstances	61.8% (118)	70.2% (139)	62.5% (125)	60.3% (120)	63.7% (502)	66.1%
Undecided	26.7 (51)	14.6 (29)	11.5 (23)	14.1 (28)	16.6 (131)	15.9
Yes, under certain circumstances (see below)	11.5 (22)	15.2 (30)	26.0 (52)	25.6 (51)	19.4 (155)	18.0
Need for Oil, Steel, Chemicals	1.1 (2)	4.6 (9)	4.0 (8)	18.1 (36)	6.9 (55)	6.2
Create Jobs	7.9 (15)	4.6 (9)	8.0 (16)	2.0 (4)	5.5 (44)	5.2
Pollution Control	2.1 (4)	3.0 (6)	7.0 (14)	1.5 (3)	3.4 (27)	3.2
Other Reasons	3.1 (6)	6.1 (12)	11.5 (23)	5.5 (11)	6.5 (52)	6.4
Number of Reasons	27	36	61	54	178	
Number of respondents	191	198	200	199	798	

Source: Volume 1, Marshlands Section, VAR205 - VAR208

development. Hence the number of circumstances exceeds the number of "YES" responses in Table 16. Most frequently mentioned were the demand for these products, or the potential for jobs created by industrial development. Considered together these answers reveal that a solid majority (over 6 out of 10 in the sample) oppose heavy industrial development of this section of the coastal zone, and that preservation as a natural area is the most desirable option.

Conclusions

The major accomplishment of the recreation survey is the establishment of rates of participation for various recreation activities in the State of Delaware. This improves upon the information base provided in previous studies where regional or other state participation rates are used. Also since participation rates cannot accurately forecast demand for new and or improved recreational facilities, included in the survey were questions which makes it possible to discuss the potential increase in demand caused by various improvements and innovative changes in facilities. Since the data were collected on a state and county-wide basis, the results of the survey are readily adaptable to a discussion of individual counties as well as the entire state.

Several traditional activities were found to have high participation by state residents. Those receiving the greatest utilization are boat fishing, picnicking, motorboating, camping, pool swimming, ocean/pond swimming, bicycling, nature walks, and river/stream fishing. These nine activities received the greatest rates of participation and are all potentially applicable to Delaware.

The new activities listed in general received some support from

state residents, particularly a nature park for the handicapped and nature bicycle trails. In addition, strong public support for more rest stations was indicated.

Finally, by considering major barriers to recreation participation such as time and financial constraints, the survey should aid planners in investigating options which will reduce the significance of these barriers.

APPENDIX
SURVEY INSTRUMENT

COASTAL ZONE RECREATIONAL SURVEY

INTRODUCTION:

Here is a list of things that people do for recreation. HAND F*LIST
 Please look at the list and check those activities that you or a
 member of your family do for recreation. Include all those activities
 both within and outside the state of Delaware. PAUSE Would you please
 read me the letters of those activities you checked. CODE R'S RESPONSES
ON LIST BELOW

Now I would like to find out where the activity is done. The first
 activity you mentioned was: _____. Where is this done? Any place
 else? IF THE R HAS DIFFICULTY PROVIDE THE SIX CODES ; OTHERWISE TRANS
 LATE R'S RESPONSE INTO APPROPRIATE CODE.

REPEAT FOR EACH ACTIVITY CHECKED.

Now I would like to talk about those activities you didn't check. Could
 you please tell me why you or no one in the household goes: _____?
 Any more reasons?

TRANSLATE R'S RESPONSE INTO APPROPRIATE CODE OR CODES BELOW

CODES: LOCATION

- 1 - Right around here
- 2 - Rehobeth area
- 3 - Bay area
- 4 - Neighbor state (Pa,MD,NJ)
- 5 - Other state
- 6 - All over

CODES: NON-USE

- 1 - Not enough time
- 2 - Present facilities too crowded
- 3 - insufficient facilities for preferred
activities
- 4 - Facilities unclean, unsafe, or polluted
- 5 - Distance too great
- 6 - Costs too great
- 7 - Traffic or access problems
- 8 - Do not have proper equipment
- 9 - No interest
- 10 - Lack of information

ACTIVITY	LOCATION						NON-USE									
	1	2	3	4	5	6	1	2	3	4	5	6	7	8	9	10
a. Pool Swimming																
b. Ocean or Pond swimming																
c. Motor boating																
d. Sailing																
e. Canoeing																
f. Water skiing																
g. Surf fishing																

*respondent

ACTIVITY	LOCATION						NON-USE									
	1	2	3	4	5	6	1	2	3	4	5	6	7	8	9	10
h. Boat fishing																
i. River/stream fishing																
j. Trailer/tent camping																
k. Nature walks/bird watching																
l. Overnight hiking																
m. Bicycle hiking																
n. Picnicing																
o. Horseback riding																
p. Goose hunting																
q. Duck hunting																
r. Deer hunting																
s. Pheasant hunting																
t. Rabbit/squirrel hunting																

Now, I would like to go through the activities once more and have you answer a couple of questions. What I would like to know is how frequently you or a member of your family engages in the activity, whether you would like to engage in the activity more frequently, and what improvements are needed if any in the facilities for the activity.

Now, about frequency. How many times each _____ (week or month or year) do you or a member of your family engage in (swimming) _____? For how many _____ (weeks or months) each year? Would you like to do more? (REFERS TO R OR FAMILY). What kind of improvements for (swimming) _____ do you think are needed, if any?

ACTIVITY	FREQUENCY		MORE		RECOMMENDED IMPROVEMENTS
	Circle one		YES	NO	
a. Pool swimming	for _____	times per wk. mo. yr. wks. months each yr.	_____	_____	_____
b. Ocean or pond swimming	for _____	times per wk. mo. yr. wks. months each yr.	_____	_____	_____
c. Motor boating	for _____	times per wk. mo. yr. wks. months each yr.	_____	_____	_____
d. Sailing	for _____	times per wk. mo. yr. wks. months each yr.	_____	_____	_____

ACTIVITY	FREQUENCY		MORE		RECOMMENDED IMPROVEMENTS
	Circle one		Yes	No	
e. Canoeing	for ___ times per wk.	for ___ months each yr.	___	___	_____
f. Water skiing	for ___ times per wk.	for ___ months each yr.	___	___	_____
g. Surf fishing	for ___ times per wk.	for ___ months each yr.	___	___	_____
h. Boat fishing	for ___ times per wk.	for ___ months each yr.	___	___	_____
i. River/stream fishing	for ___ times per wk.	for ___ months each yr.	___	___	_____
j. Trailer/tent camping	for ___ times per wk.	for ___ months each yr.	___	___	_____
k. Nature walks/ bird watching	for ___ times per wk.	for ___ months each yr.	___	___	_____
l. Overnight hiking	for ___ times per wk.	for ___ months each yr.	___	___	_____
m. Bicycle hiking	for ___ times per wk.	for ___ months each yr.	___	___	_____
n. Picnicing	for ___ times per wk.	for ___ months each yr.	___	___	_____
o. Horseback riding	for ___ times per wk.	for ___ months each yr.	___	___	_____
p. Goose hunting	for ___ times per wk.	for ___ months each yr.	___	___	_____
q. Duck hunting	for ___ times per wk.	for ___ months each yr.	___	___	_____
r. Deer hunting	for ___ times per wk.	for ___ months each yr.	___	___	_____
s. Pheasant hunting	for ___ times per wk.	for ___ months each yr.	___	___	_____
t. Rabbit/squirrel	for ___ times per wk.	for ___ months each yr.	___	___	_____

THANK YOU VERY MUCH! Now, just a few more questions and we will be done. Here are a few recreational activities which could be developed in the state of Delaware. Could you tell me whether you think the state should provide the facilities and undertake development of these activities? HAND R LIST

How about developing (_____)?

	<u>Yes</u>	<u>No</u>	<u>No Opinion</u>
a. Nature bicycle trails?	1	2	3
b. Trails for motorcycles?	1	2	3
c. Areas for primitive camping? (no facilities except drinking water)	1	2	3
d. Beach areas for dune buggies?	1	2	3
e. Nature park designed for handicapped?	1	2	3
f. Areas for hydro planing in the marshes?	1	2	3
g. More areas for boat landings?	1	2	3
h. Additional roadside comfort and rest stations?	1	2	3

Is there anything you would like to see developed for recreation that we haven't mentioned? 1 Yes 2 No What? _____

Now, what is the furthest distance in miles that you would be likely to travel for a day's outing? 1 Less than 25 miles 4 75 to 100 miles
2 25 to 50 miles 5 100 miles or more
3 50 to 75 miles

How about for a weekend trip?

1 Less than 25 miles 5 100 to 150 miles
2 25 to 50 miles 6 150 to 200 miles
3 50 to 75 miles 7 200 miles and more
4 75 to 100 miles

How would you prefer to finance recreational development?

1. User fees _____.
2. Reallocating existing State Revenues _____.
3. New State Revenues _____.
 Taxes _____.
 Bonds _____.
 Lottery _____.
 Other: Write in _____.

How much additional money (per Delaware family) would you be willing to allocate per year to further development of your most preferred recreational activity? 3

We would like to know the major reasons why you don't take more DAY trips to recreational areas in Delaware. What would you say was the single most important reason? (CODE ANSWER OR ANSWERS BELOW)

1. Not enough time
2. Present facilities too crowded
3. Insufficient facilities for preferred activities
4. Facilities unclean, unsafe, or polluted
5. Distance too great
6. Costs too great
7. Traffic or access problems
8. Do not have proper equipment
9. No interest
10. Lack of information
11. Other: _____

What would be the second most important reason: (WRITE IN CODE AS ABOVE.): _____

Are there any other factors: 3rd _____; 4th _____; 5th _____.

We would like to know the major reasons why you don't take more WEEKEND trips to recreational areas in Delaware. What would you say was the single most important reason? (CODE ANSWER OR ANSWERS BELOW)

1. Not enough time
2. Present facilities too crowded
3. Insufficient facilities for preferred activities
4. Facilities unclean, unsafe, or polluted
5. Distance too great
6. Costs too great
7. Traffic or access problems
8. Do not have proper equipment
9. No interest
10. Lack of information
11. Other: _____

What would be the second most important reason: (WRITE IN CODE AS ABOVE.): _____

Are there any other factors: 3rd _____; 4th _____; 5th _____.

Which of the following best describes your opinion about the future of the marshlands along the Delaware coast between the canal and Lewes: (HAND CARD #):

1. Should be preserved as it is as a natural area.
2. Should be developed for public recreation.
3. Should be developed for residential use.
4. Should be developed for light industry (e.g., a button factory, etc.)
5. Should be developed for heavy industry (e.g., a steel plant, etc.)
6. Other(write in): _____

Now, regardless of your preference, are there any circumstances under which you would approve of the use of the marshlands for oil, steel, or chemical industries?

___ Yes ___ No ___ Undecided

IF YES, what are the circumstances which would need to prevail? (WRITE IN)

1. _____
2. _____
3. _____

How many weeks vacation does the family have available? _____

Where was last year's vacation spent? _____, _____
City or area State

What did your family feel was the major attraction of this area? _____

PERSONAL DATA:

How many persons regularly reside in this household, and what are their ages?

Adults, age 21 and over
 High School Age, 16 to 20
 Middle School, 13 to 15
 Elementary School, 6 to 12
 Preschool, 5 and under

 TOTAL

What is the highest education attained by: husband _____; wife _____

EDUCATION CODE: 1. Elementary School
 2. Some High School
 3. High School Diploma
 4. Some College
 5. College Degree
 6. Advanced Degree Work
 7. Holds Advanced Degree(s)

What is the occupation of the: HUSBAND _____
 WIFE _____

What is the income of this family during 1974? (HAND CARD# _____)

Less than 5,000
 5,000 to 10,000
 10,000 to 14,999
 15,000 to 19,999
 20,000 to 24,999
 25,000 to 29,999
 30,000 or more

What is the age of: the HUSBAND; WIFE

<input type="checkbox"/>	under 20	<input type="checkbox"/>
<input type="checkbox"/>	20-29	<input type="checkbox"/>
<input type="checkbox"/>	30-39	<input type="checkbox"/>
<input type="checkbox"/>	40-49	<input type="checkbox"/>
<input type="checkbox"/>	50-59	<input type="checkbox"/>
<input type="checkbox"/>	60 & Over	<input type="checkbox"/>

(estimate age if unwilling to answer)

What is relationship of interviewee to the household?

HUSBAND _____; WIFE _____; OTHER(please specify) _____.