

RECREATION SPECIALIZATION AND THE ANALYSIS OF ANGLER DIFFERENCES ACCORDING TO AGE COHORT

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We segmented a sample of sport fishermen into six unique age cohorts for the purposes of determining if significant differences existed on four recreation related dimensions. No significant differences for activity or non activity-specific elements of the experience were found. Some differences were found for mediated interaction and resource dependency, and clear differences were found for support of various management rules and regulations. Predictions and results were framed in terms of recreation specialization.

Introduction

Determining the current and future levels of demand for any given recreational activity or experience has been an important and ongoing task for managers and researchers. Most early efforts at forecasting future participation levels used simple straight-line extrapolations (Loomis and Ditton, 1988; West 1983). However, such work was limited in that it lacked a detailed demographic component (Murdock et al., in press). As such, they could not take into account the effects of demographic forces (such as age, race or gender).

In response to this limitation, cohort-based projection models have been developed (Loomis and Ditton 1988; Murdock et al. 1990). The use of these cohort component models allows demographic characteristics to be accounted for in calculations of demand projections. The demographic characteristic receiving the most attention has been age. Projections of future demand have taken into account how the population age structure will shift over time, and consequently how the demand structure will shift over time as well. Results show that demand is not evenly distributed across age cohorts, and that the distribution of demand by cohort will shift over time as the population age structure shifts (Loomis and Ditton 1988; Murdock et al. 1990).

These studies have provided greater insight into the level of demand for certain activities, its distribution by age and how it will shift over time. However, these studies are still limited in that they provide only an understanding of days of demand by a given age cohort. It forces one to assume that a day of participation by a sixty-year old is the same as a day of participation by a twenty-year old. As such, demand projections using a cohort-component model have limitations in their usefulness as currently applied. The effort to understand other key factors relating to demand for recreation

opportunities, such as user characteristics, motivations, expectations, and preferences, for example, has not yet been made.

The first purpose of this paper is to extend our current understanding of demand as based on cohort component models by testing for differences between five distinct age cohorts on a variety of recreation-related dimensions. Specifically, we will examine activity and non activity-specific motivations, level of resource dependency, level of mediated interaction and support for rules, regulations and management policies. We will not be determining demand, but instead determining differences between cohorts on these dimensions, which could subsequently be attached to demand projections and thus provide a better picture of the actual demand for experiences.

Our conceptual framework is recreational specialization, as reconceptualized by Ditton et al. (1992). This will provide us an opportunity to test several propositions of this recent version of specialization, which is the second purpose of this paper.

Conceptual Framework

Our conceptual framework is based on recreation specialization, as reconceptualized by Ditton et al. (1992). Building upon the social world/social subworld literature, Ditton et al. define specialization as:

- 1) A process by which recreation social worlds and subworlds segment and intersect into new recreation subworlds, and
- 2) the subsequent ordered arrangement of these subworlds and their members along a continuum.

"At one end of the continuum is the least specialized subworld and its members, and at the other end of the continuum is the most specialized subworld and its members. Between these two extremes are any number of subworlds having intermediate levels of specialization" (Ditton et al., 1992).

From this definition and the related literature, Ditton et al. (1992) state eight propositions. We will test propositions four, six, seven and eight (see Ditton et al., 1992, for further details).

Ditton et al. (1992) subjected propositions six, seven and eight to empirical testing, and found strong support for all three. Results showed that high specialization anglers have a higher level of resource dependency, a higher level of mediated interaction, and attached less importance to activity-specific elements and more to non activity-specific elements of the fishing experience than do low specialization anglers.

In their study, Ditton et al. (1992) segmented their sample (or social world) of sport anglers into four ordinal subworlds based on total days fished during the previous twelve months. Anglers who fished the most were defined as the most specialized, and those who fished the least were the least specialized. Ditton et al. (1992) suggest that "participant's age" or "number of years of participation" should also be considered as a means of classification, with the older or more experienced anglers being more specialized.

We too will use a single dimension for categorizing and ordering our specialization subworlds. Based upon our purpose for this paper, and the work of Ditton et al. (1992), we will use age as our classification variable. More specifically, we will segment our study sample into five unique age cohorts. The ages contained within each of the five cohorts are consistent

with the age cohorts used in previous work (Loomis and Ditton, 1988). The youngest age cohort will anchor the least specialized end of the specialization continuum, and the oldest age cohort will anchor the most specialized end.

Hypotheses

- Ha1: Anglers in older age cohorts attach greater importance to activity-specific elements of the fishing experience than do anglers in younger age cohorts.
- Ha2: Anglers in younger age cohorts attach greater importance to non activity-specific elements of the fishing experience than do anglers in older age cohorts.
- Ha3: Anglers in older age cohorts will have a higher level of mediated interaction than will anglers in younger age cohorts.
- Ha4: Anglers in older age cohorts will have a higher resource dependency than will anglers in younger age cohorts.
- Ha5: Anglers in older age cohorts will agree more strongly with rules and regulations than will anglers in younger age cohorts.

Methods

Data collection was accomplished through a mail survey of licensed Iowa sport fishermen. Using license receipts as a sampling frame, a systematic random sample of 600 licensed anglers was manually selected from state files. The survey was administered during the spring of 1989, following procedures outlined by Dillman (1978). A final return of 434 usable questionnaires was achieved (a response rate of 78.8% when non-deliverable and non-usable questionnaires were excluded).

Classification Procedure

We segmented our sample into five distinct age cohorts (Table 1). These five age cohorts, when arranged from youngest to oldest, form our specialization continuum with the youngest being the least specialized and the oldest being the most specialized. This classification served as the independent variable for analysis purposes.

Table 1. Age cohort categories.

Age Cohort	n	%
15 - 24	50	11.8
25 - 34	115	27.1
35 - 44	111	26.2
45 - 54	72	17.0
55 +	76	17.9
Total	424	100.0

Dependent Variable Measurement

Activity and non activity-specific elements. A total of seventeen items were used to measure the activity and non activity-specific elements of the sport fishing experience. The activity-specific elements of the experience are specific to the sport of fishing, and cannot be pursued or obtained in other activities. Six of the eight items are attitude statements developed by Graefe (1980), with the other two being motive statements (Ditton et al., 1992). All eight items were measured on a five-point Likert-type scale.

The generic, or non activity-specific elements of the fishing experience were measure with nine motive statements. These

motives are common to many outdoor recreation activities, and are not specific to the sport of fishing. Each motive statement is a single-item measure from the following Driver (1977) domains: Family Togetherness, Being with People, Learning-Discovery, Relationships with Nature, Physical Rest and Escape Personal-Social Pressure. As with the non activity-specific elements, these nine motive statements were measured on a five point Likert-type scale.

Mediated interaction. Survey recipients were asked to indicate the extent to which they made use of seven varied sources of information. These sources ranged from Iowa state agencies, to printed information, to electronic media to word-of-mouth. Angler responses were measured on a five-point Likert-type scale.

Resource dependency. Respondents were asked to indicate, on a five-point Likert-type scale, the extent to which they agreed or disagreed with seven attitude statements (Graefe 1980) concerning the catching of fish. These items focus on the size, number and species of fish to be caught. The more they agreed with a statement, the greater their resource dependency.

Support for rules and regulations. Our final hypothesis examines differences between anglers in different age cohorts on the extent to which they support or oppose various rules and regulations concerning sport fishing. Respondents were asked to indicate on a five-point Likert-type scale the extent to which they supported or opposed ten existing or possible management rules and regulations, and three management policies.

Data Analysis

The procedure used to test the null hypothesis of equality of group means for age cohort categories was a one-way analysis of variance (ANOVA). A null hypothesis was rejected at the $p=.05$ level of significance. To identify where specific between-cohort differences existed, a Student-Newman-Keuls post-hoc test was performed, which is considered an appropriate all-around test for this purpose (Kirk, 1982).

Results

Hypothesis One

Results of the ANOVA show significant differences between age cohorts on only one of the eight measures of activity-specific elements of the fishing experience (Table 2). We therefore fail to reject Ho1.

Hypothesis Two

Results of the ANOVA revealed significant differences between age cohorts on only two of the nine items used to measure the non activity-specific elements of the fishing experience (Table 3). We therefore fail to reject Ho2.

Hypothesis Three

Results of the ANOVA revealed significant differences on three of the seven items (Table 4). These results provide some support for our null hypothesis, and we therefore tentatively reject Ho3. Our results relative to the alternative hypothesis were not, however, as predicted. We had argued that anglers in the older age cohorts would have a higher level of mediated interaction than would anglers in the younger age cohorts. Results show, in general, that the opposite occurred. For each of the items having significant results, anglers in the youngest age cohort had the highest level of mediated interaction. As a result, we cannot accept Ha3 as stated.

Table 2. Results of test for differences in mean scores for activity-specific elements of the fishing experience scale items between age cohorts.

Items	Group Mean Score					F	p
	Student-Newman-Keuls test						
I'm happy if I don't keep the fish	4 <u>2.97</u>	5 <u>3.13</u>	3 3.37	2 3.44	1 3.52	3.065	0.017
For the experience of the catch	5 <u>3.29</u>	3 <u>3.32</u>	4 3.37	2 <u>3.40</u>	1 <u>3.86</u>	2.192	0.069
I'm happy if I release the fish I catch	4 <u>3.07</u>	5 <u>3.30</u>	1 3.34	3 <u>3.42</u>	2 <u>3.50</u>	1.950	0.101
I'm happy if I don't catch a fish	4 <u>2.68</u>	5 <u>2.74</u>	3 2.86	1 <u>2.88</u>	2 <u>2.88</u>	0.724	0.576
Fishing is successful if no fish are caught	5 <u>3.62</u>	2 <u>3.64</u>	4 3.71	1 <u>3.74</u>	3 <u>3.78</u>	0.484	0.747
Fish for eating	3 <u>2.46</u>	4 <u>2.49</u>	5 <u>2.52</u>	2 <u>2.62</u>	1 <u>2.67</u>	0.428	0.788
For sport and pleasure	1 <u>3.10</u>	4 <u>3.11</u>	3 <u>3.21</u>	2 <u>3.27</u>	5 <u>3.27</u>	0.391	0.815
I give away the catch	4 <u>2.25</u>	3 <u>2.31</u>	2 <u>2.32</u>	1 <u>2.36</u>	5 <u>2.37</u>	0.210	0.933

Table 3. Results of test for differences in mean scores for importance to non activity-specific elements of the fishing experiences Scale items between age cohorts.

Items	Group Mean Score					F	p
	Student-Newman-Keuls test						
To be with friends	3 <u>2.89</u>	4 <u>3.09</u>	2 <u>3.11</u>	5 <u>3.13</u>	1 <u>3.84</u>	5.807	0.000
To be close to the sea	2 <u>2.75</u>	3 <u>3.03</u>	1 <u>3.16</u>	4 <u>3.35</u>	5 <u>3.41</u>	4.531	0.001
For family recreation	1 <u>3.35</u>	5 <u>3.35</u>	2 <u>3.49</u>	3 <u>3.69</u>	4 <u>3.73</u>	2.058	0.086
To experience new and different things	3 <u>2.77</u>	4 <u>2.86</u>	5 <u>2.91</u>	2 <u>3.11</u>	1 <u>3.14</u>	1.807	0.127
For relaxation	2 <u>3.99</u>	1 <u>4.04</u>	3 <u>4.13</u>	5 <u>4.21</u>	4 <u>4.31</u>	1.411	0.230
To be outdoors	3 <u>3.96</u>	4 <u>3.97</u>	5 <u>3.99</u>	2 <u>4.07</u>	1 <u>4.26</u>	1.275	0.279
To experience natural surroundings	3 <u>3.46</u>	2 <u>3.61</u>	4 <u>3.61</u>	5 <u>3.71</u>	1 <u>3.84</u>	.159	0.328
To get away from other people	5 <u>3.63</u>	2 <u>3.71</u>	3 <u>3.82</u>	1 <u>3.92</u>	4 <u>3.94</u>	0.906	0.460
To get away from the regular routine	4 <u>3.86</u>	2 <u>3.96</u>	3 <u>3.97</u>	1 <u>4.06</u>	5 <u>4.06</u>	0.484	0.748

Table 4. Results of test for differences in mean scores for mediated interaction scale items between age cohorts.

Items	Group Mean Score					F	p
	Student-Newman-Keuls test						
TV Shows	4	5	3	2	1	5.096	0.001
	<u>2.49</u>	<u>2.55</u>	<u>2.72</u>	3.00	3.22		
Bait Shops	5	4	3	2	1	3.133	0.015
	<u>2.86</u>	<u>3.00</u>	<u>3.21</u>	3.30	3.36		
Magazine Articles	4	3	5	2	1	2.814	0.025
	<u>2.63</u>	<u>2.64</u>	<u>2.66</u>	<u>2.90</u>	3.14		
Newspaper Articles	5	3	4	2	1	1.532	0.192
	<u>2.44</u>	<u>2.59</u>	<u>2.66</u>	<u>2.76</u>	<u>2.78</u>		
Fish Clubs	3	5	2	4	1	1.209	0.306
	<u>1.76</u>	<u>1.78</u>	<u>1.92</u>	<u>1.92</u>	<u>2.08</u>		
Iowa Department of Natural Resources	4	5	3	1	2	1.029	0.392
	<u>2.74</u>	<u>2.79</u>	<u>2.91</u>	<u>2.98</u>	<u>3.03</u>		
Radio Shows	3	4	5	2	1	0.647	0.629
	<u>1.95</u>	<u>2.06</u>	<u>2.08</u>	<u>2.10</u>	<u>2.22</u>		

Table 5. Results of test for differences in mean scores for resource dependency scale items Bbetween age cohorts.

Items	Group Mean Score					F	p
	Student-Newman-Keuls test						
To obtain a "trophy" fish	3 <u>2.65</u>	4 <u>2.75</u>	2 <u>2.99</u>	5 <u>2.99</u>	1 3.26	7.393	0.000
The bigger the fish the better the trip	3 <u>2.85</u>	4 <u>2.93</u>	2 <u>3.11</u>	5 <u>3.13</u>	1 <u>3.51</u>	4.022	0.003
The more fish I catch, the happier I am	4 <u>3.31</u>	5 <u>3.32</u>	3 <u>3.33</u>	2 <u>3.60</u>	1 3.76	2.587	0.036
A successful trip is catching many fish	3 <u>2.77</u>	2 <u>2.96</u>	4 <u>3.01</u>	1 <u>3.14</u>	5 <u>3.16</u>	2.025	0.090
I prefer one or two big fish to ten small fish	4 <u>2.91</u>	3 <u>3.06</u>	2 <u>3.11</u>	5 <u>3.20</u>	1 <u>3.34</u>	1.293	0.272
I like to fish where there are several kinds of fish to catch	3 <u>3.82</u>	4 <u>3.93</u>	5 <u>3.93</u>	1 <u>3.94</u>	2 <u>3.97</u>	0.523	0.719
The type of fish I catch doesn't matter	3 <u>3.19</u>	4 <u>3.20</u>	2 <u>3.27</u>	5 <u>3.30</u>	1 <u>3.38</u>	0.389	0.817

Hypothesis Four

Results of the ANOVA show significant differences between the age cohorts on measures of resource dependency for three of the seven items (Table 5). As in hypothesis three, these results are not conclusive. They do, however, provide tentative support for our argument that the age cohorts would differ in their

resource dependency. We therefore reject Ho4 as stated. The results for the three significant items, however, were again not in agreement with our alternative hypothesis. The younger cohorts were not the least resource dependent, as predicted. They instead were the most resource dependent. As a result, we cannot accept Ha4 as stated.

Table 6. Results of tests for differences in mean scores for agreement with Vvarious rules and regulations.

Items	Group Mean Score					F	p
	Student-Newman-Keuls test						
No fishing in certain restricted areas	1 2.92	2 3.34	4 3.51	3 3.62	5 3.76	5.500	0.000
Prohibiting certain sport fishing gear	1 2.96	2 3.31	4 3.36	3 3.51	5 3.72	4.939	0.001
Banning species during times of the year	1 3.10	2 3.28	4 3.50	3 3.56	5 3.76	4.412	0.002
Prohibiting certain types of bait	1 2.84	2 3.09	4 3.10	3 3.28	5 3.49	3.688	0.006
Maximum size limit	1 2.70	4 2.97	2 3.15	3 3.15	5 3.42	3.387	0.010
Stocking fish not native to Iowa	4 3.50	3 3.56	5 3.62	2 3.81	1 4.00	3.131	0.015
Banning certain species in certain areas	1 3.14	2 3.30	4 3.39	5 3.60	3 3.61	2.945	0.020
A closed season	3.20	3.25	3.51	3.51	3.68	2.591	0.036
A voluntary catch and release program	5 3.46	3 3.47	4 3.57	2 3.71	1 3.86	1.989	0.095
A slot limit	4 2.72	3 2.94	5 2.99	1 3.06	2 3.06	1.394	0.235
A daily bag limit	3.91	3.95	3.95	3.98	4.20	1.002	0.406
A minimum size limit	4.01	4.04	4.14	4.21	4.24	0.816	0.515
Stocking native fish	4 4.21	1 4.22	3 4.22	5 4.25	2 4.27	0.033	0.998

Hypothesis Five

Our fifth hypothesis predicted that anglers in the younger age cohorts would be less supportive of rules, regulations and management policy than would anglers in the older age cohorts. Results of the ANOVA provide substantial support for this prediction (Table 6). Eight of the thirteen items were significantly different between the age cohorts. In addition, for seven of the eight significant items, the ordering of the means were as predicted. Anglers in the older age cohorts were more supportive of various rules, regulations and management policies than were anglers in the younger age cohorts. We therefore reject H_05 , and accept H_a5 as stated.

Discussion and Conclusions

Results of this study indicate that for some dimensions, differences exist between anglers in different age cohorts. For other dimensions, few differences were found. No significant between cohort differences were found on measures of the activity-specific and non activity-specific elements of the fishing experience. There were some significant findings relative to mediated interaction and resource dependency, but the results were not strong or pervasive. The strongest and clearest findings were that anglers in older cohorts were much more supportive of various management rules and regulations. Information of this type can be useful to resource managers as they seek to provide the type of experience sought, and as they seek support for management policies.

These results provided some support for recreation specialization as presented by Ditton et al. (1992). Where results were not significant, and null hypotheses not rejected, questions can be raised. For hypotheses one and two, is the re-conceptualization flawed, or is age cohort an inadequate or inappropriate classification variable? Results from Ditton et al. (1992) suggests that age cohort may not be an adequate classification tool. Continued research is necessary to further develop and understand recreation specialization.

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