WILDLIFE-ASSOCIATED RECREATION IN THE NORTH CENTRAL REGION: PARTICIPATION PATTERNS AND MANAGEMENT IMPLICATIONS

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Abstract: The North Central Region (IA, IL, IN, MI, MN, MO, WI) is a diverse area of the United States. Compared to the remainder of the country, the region as a whole is demographically similar in terms of mean age, education, household income, and gender. However, the North Central region has a higher proportion of Whites and a slightly lower proportion of people residing in urban areas. Compared to the remainder of the United States, residents of the region are more likely to have hunted and/or fished during their lifetime and are more likely to have hunted and/or fished in 1995, the year of the latest National Survey of Fishing, Hunting, and Wildlife-Associated Recreation. Residents of the region are also more likely to participate in nonconsumptive wildlife-associated recreation activities such as observing, feeding, photographing, and maintaining natural areas for wildlife around the home; and taking trips for the purpose of observing, feeding, and photographing wildlife. Thus, residents of the region are more likely to participate in all wildlife-associated recreation activities addressed by the survey. Within the region, there is considerable diversity. Household income differs by about 25% among states in the region and ethnic diversity differs considerably as well. States within the region range from predominately white rural to ethnically diverse urban. Wildlife-associated recreation participation differs considerably among states. Some of the differences are easily explained while others are not. Easily explained is that the highest proportion of hunters resides in the most rural state while the lowest proportion of hunters reside in the most urban state. This pattern does not apply to fishing or any of the nonconsumptive activities. Participation differences within the region are probably attributable to combinations of population characteristics and available natural resources. The diversity of participation patterns within the region affects public natural resource managers and suggests treating the region as subunits to more effectively address resource management issues.

Introduction

States in the North Central Region (IA, IL, IN, MI, MN, MO, WI) are diverse in terms of demographic characteristics and wildlife-associated recreation participation levels. This presents challenges for managers who must allocate funds and manage the natural resources of these states. The purposes of this paper are to examine participation in wildlife-associated recreation in the region and in each state, to compare the region to the remainder of the United States, and to compare states within the region in order to provide managers with some insight into the patterns and challenges in the region. The activities examined are hunting, fishing, and wildlife watching. Wildlife watching consists of observing, feeding, photographing, and maintaining natural areas for wildlife within one mile of the home (residential activities) and taking trips of one mile or more for the purpose of observing, feeding, and/or photographing wildlife (nonresidential activities). First, the region is compared to the remainder of the U.S. in terms of participation. Then, states are compared demographically and in terms of participation. Finally, because of space limitations, one activity (hunting) is examined in greater detail, including the relationship between hunting participation and available natural resources.

Methods

The 1996 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation was used in this analysis. The survey has been conducted by the Census Bureau for the US Fish and Wildlife Service approximately every 5 years since 1955 (U.S. Dept. of Interior, 1997). The survey actually consists of three surveys that result in three data sets. The screening survey consists of demographic and limited participation data and is considered to be representative of the population of the United States in general. The sportsmen survey consists of detailed participation and expenditure data about hunting and fishing and is considered to be representative of hunters and anglers residing in the United States. The wildlife watching survey consists of detailed participation and expenditure data about nonconsumptive wildlife associated recreation activities and is considered to be representative of wildlife watchers residing in the United States. The screening survey was the primary source of data used in this analysis. Although the screening survey contains only limited participation data, it permits comparisons of participants with nonparticipants as well as participation among participants in all activities (fishing, hunting, and wildlife watching). Participation data collected using the screening survey are for 1995 and most of the data presented in the summary publication (U.S. Dept. of Interior, 1997), which are collected using the detailed surveys, are for 1996. Because of the methodology used by the Census Bureau to select and adjust the weights for the detailed surveys, and the fact that the data are collected for different years, the total numbers of participants calculated using the screening survey differ from the total numbers of participants calculated using the detailed surveys.

Results

Comparison of the Region to the Remainder of the U.S.

Residents of the North Central Region were more likely than residents of the remainder of the U.S. to hunt, fish, and participate in all wildlife watching activities (Table 1). A higher percentage of residents of the region (28% vs. 22%)

Table 1. Participation Comparisons of North Central Region and Remainder of Country: Age 16 and Older

Characteristic	North Central Region Mean	Not North Central Region Mean	Ratio NC/Not NC
% ever hunted	28%	22%	1.25
% of above who hunted in 1995	42%	32%	1.33
95 hunting expenditures-category	3.23	3.38	0.95
95 hunting days-category	3.18	3.10	1.03
% ever fished	58%	51%	1.14
% of above who fished in 1995	50%	45%	1.10
95 fishing expenditures-category	2.54	2.57	0.98
95 fishing days-category	3.28	3.06	1.07
% observed wildlife	33%	25%	1.30
% feed wildlife	38%	29%	1.29
% photo wildlife	12%	9%	1.29
% wildlife plantings	14%	11%	1.23
% taking wildlife trips	17%	14%	1.23
95 trip expenditures-category	2.02	2.22	0.91
95 trip days-category	2.50	2.49	1.00

have ever hunted and a higher percentage of those who have ever hunted (42% vs. 32%) continued to hunt in 1995. Expenditures and days of participation are collected as categorical data in this data set and the means of these categories are listed in Table 1. Larger numbers mean higher levels of participation. Because of the limited number of categories, differences in expenditures and days of participation can be expected to be small. Hunters in the region spend slightly less and hunt slightly more than hunters who reside outside the region. The last column in Table 1 is an index derived by dividing the region column by the column for the remainder of the U.S. This is a quick reference to the differences. A number greater than one, indicates the region exceeds the remainder of the U.S. in this respect. A number that is less than one indicates the remainder of the U.S. exceeds the region. The magnitude of the ratio indicates the amount of the difference.

The patterns for fishing were similar to those for hunting. A higher percentage of residents of the region (58% vs. 51%) have ever fished and a higher percentage of those who have ever fished (50% vs. 45%) continued to fish in 1995 (Table 1). Although the patterns are similar, the differences are not as great as for hunting. Again, anglers in the region spend slightly less and fish slightly more than anglers who reside outside the region. The row labeled "% of above who fished in 1995" can be viewed in a loose way as a fishing retention rate. This rate is higher in the region than outside of it. The same was true of hunting. It should be noted that, the retention rate for fishing is higher than the rate for hunting. This may be due, in part, to the more strenuous nature of hunting, which causes people to drop out as age limits activities. In the case of the angler who is also a hunter, there may be some substituting of fishing for hunting as the participant ages.

The data set does not contain the same type of participation data for wildlife watching activities as for hunting and fishing. Data exists only for 1995 participation. Expenditures and days of participation are given for nonresidential wildlife watching activities only (i.e., for "% taking trips" in Table 1). Residents of the region are considerably more likely to participate in all of these activities than residents of the remainder of the U.S. They spend slightly less and participate about the same number of days as residents of the remainder of the U.S.

Thus, residents of the region appear to be more active than residents of the remainder of the U.S. by almost all participation measures presented in Table 1. Although the differences are small, residents of the region spent less in 1995 on all activities than residents of the remainder of the U.S. This is interesting because they spent at least as many days participating in the activities.

Comparison of States within the Region

Demographics -- States within the region differ considerably in terms of key demographic characteristics (Table 2). Residents of IA have the lowest income ($39,535) while residents of WI have the highest at $49,788, a difference of over $10,000 (over 25%). There are also considerable differences in racial/ethnic diversity and residence (urban/farm) among states. IA has the least diversity (98% white) while IL has the most (82% white). IA is the least urban (55%) while IL is the most urban (82%). Most of the extremes (highs or lows) occur in IA and IL. The three states with the lowest incomes have with the highest proportion of residents living on farms. There are considerable differences between states in demographic characteristics that can affect probability of participation as well as participation levels. The more rural nature of IA, for example, can provide more opportunities for certain kinds of recreation while the relatively low income can affect types and levels of participation.

Hunting -- The most noticeable difference in hunting participation across states (Table 3) is the low proportion of residents who have ever hunted in IL (17%), the most urban state. Not only does IL have the lowest proportion who have ever hunted; it also has the lowest retention of hunters in that only 29% of those who have ever hunted continued to hunt in 1995. This suggests that IL residents are more likely to drop out of hunting than residents of the other states. We cannot state this with certainty because tenure at a specific location is not measured in the survey. It is possible that people lived and hunted in another state and then moved to IL into perhaps, a more urban environment, and stopped hunting at that time. It is also possible that people lived and hunted in a rural area and then moved to an urban area within the same state and then stopped hunting. This is valuable information for managers and marketers concerned with decreases in numbers of hunters.

Table 2. Demographic Comparisons of North Central Region by State: Age 16 and Older

	Means						
Characteristic	**IA**	**IL**	**IN**	**MI**	**MN**	**MO**	**WI**
Age (yrs)	45.9	44.2	45.5	44.4	43.9	46.7	44.3
Education (yrs)	12.8	13.4	12.8	13.1	13.1	12.9	13.3
Household Income	$39,535	$49,481	$42,411	$49,122	$45,696	$41,648	$49,788
% Working	69%	67%	65%	65%	71%	62%	73%
% White	98%	82%	89%	85%	92%	91%	94%
% Black	0%	11%	8%	12%	2%	7%	3%
% Asian	1%	3%	1%	1%	3%	1%	1%
% Hispanic	1%	6%	3%	2%	2%	1%	2%
% Reside Urban	55%	82%	60%	68%	61%	63%	66%
% Reside Farm	33%	14%	32%	28%	26%	35%	29%

Table 3. Participation Comparisons of Hunting in North Central Region by State: Age 16 and Older

	Means						
Characteristic	**IA**	**IL**	**IN**	**MI**	**MN**	**MO**	**WI**
% ever hunted	36%	17%	25%	29%	37%	32%	33%
% of above who hunted in 1995	42%	29%	36%	46%	50%	40%	50%
95 expenditures-category	2.88	3.45	2.86	3.22	3.34	3.20	3.39
95 days-category	3.12	3.20	3.45	3.30	2.74	3.18	3.27

Three of the lower income states with the highest percentage of residents living on farms (IA, IN, and MO) have the lowest expenditures for hunting. The two highest income states have the highest expenditures for hunting. Even though the income is reported as household income for all residents, and the expenditures are reported only for participants, it is interesting to note that there appears to be an association between these variables. Days spent participating do not appear to be related to income. This may be attributable to several factors. Often, higher income individuals have less time available for recreation. Also, because hunting is usually done in a rural environment, proximity of the resource may be an important factor in frequency of hunting.

Fishing -- As is the case for hunting, IL has the lowest proportion of residents who have ever fished (51%) and the lowest proportion of those who have ever fished and who continued to fish in 1995 (Table 4). However, the differences between states do not approximate those seen in Table 3 for hunting. This suggests that fishing appeals to a wider range of individuals and/or that there are more opportunities available to fish than there are to hunt. Certainly, urban residents in the Chicago area of IL have a great lakes fishing opportunity relatively close at hand. MN, with its abundant water resources, has the highest proportion of residents who ever fished and the highest proportion who fished in 1995. Expenditures for fishing across the states have a narrower range than hunting expenditures and do not appear to be strongly associated with income.

Wildlife watching -- The proportion of residents involved in wildlife watching activities in 1995 is given in Table 5. Overall, residents were most likely to observe and/or feed wildlife and least likely to photograph wildlife within one mile of the home. Expenditures and days participating tended to lie in a fairly narrow range. Again, residents of IL were least likely to participate in all wildlife watching activities. Residents of IA ranked second in probability of taking a wildlife watching trip, but spent the least on wildlife watching trips.

A closer look at hunting -- The previous sections discuss participation from the standpoint of proportion of the population participating. This section reviews this information for hunting and looks at hunting from different perspectives that may be important to those managing the resources and/or marketing the activity. This section shows how this information can be used and interpreted in different ways to facilitate different management/marketing objectives. The lowest proportion participating in hunting (17%) and the

Table 4. Participation Comparisons of Fishing in North Central Region by State: Age 16 and Older

	Means						
Characteristic	**IA**	**IL**	**IN**	**MI**	**MN**	**MO**	**WI**
% ever fished	61%	51%	54%	58%	70%	62%	62%
% of above who fished in 1995	54%	45%	51%	48%	56%	49%	52%
95 expenditures-category	2.47	2.63	2.35	2.44	2.65	2.65	2.52
95 days-category	3.26	3.14	3.45	3.27	3.17	3.59	3.19

Table 5. Participation Comparisons of Wildlife Watching in North Central Region by State: Age 16 and Older

	Means						
Characteristic	**IA**	**IL**	**IN**	**MI**	**MN**	**MO**	**WI**
% observed wildlife	36%	26%	32%	33%	39%	38%	33%
% feed wildlife	40%	30%	41%	41%	39%	40%	42%
% photo wildlife	10%	10%	10%	14%	14%	13%	14%
% wildlife plantings	15%	12%	14%	14%	14%	13%	18%
% taking wildlife trips	21%	15%	15%	17%	23%	16%	18%
95 trip expenditures-category	1.68	2.03	2.11	1.96	2.04	1.98	2.22
95 trip days-category	2.35	2.62	2.63	2.51	2.32	2.35	2.59

lowest retention rate (29%) both occur in IL (Table 3). The highest proportion participating (37%) and the highest retention rate (50%) both occur in MN. Because it has the lowest rates, IL might be targeted as a state in which an effort is to be made to increase hunting and to identify the reasons for the low retention rate. From another perspective, because it has the highest rates, MN might be targeted as a state in which efforts to increase hunting and retention rates might meet with greater success. MN might be seen as having a more solid base on which to build hunting. Or, a manager may wish to study a high participation state such as MN in order to identify reasons for the higher rates. Information from such a study might be of value in increasing participation in a state such as IL.

Managers and marketers are interested in the location of their clientele. An education program or marketing campaign can be implemented more effectively if the location of the clientele can be narrowed down as much as possible. Hunting is usually thought of as a rural activity and hunters might be expected to be likely to live in rural areas. This is true for most states in the region (Figure 1). Once again, however, IL stands out. More than half of the hunters in IL reside in urban areas (using Census urban/rural classifications). This means that campaigns targeting rural areas will miss almost 60% of the hunters in IL. In MI and WI, almost half of the hunters reside in urban areas. Even in IA, the most rural state, almost 40% of the hunters reside in urban areas. In most states, hunters are likely to be found either in urban areas or on farms. Only IA and MN have more than 10% of their hunters residing in rural nonfarm areas.

Residents of IL are unlikely to hunt (Figure 2). Residents of MN are over three times as likely to hunt as are residents of IL. Obviously, a campaign targeting hunters by way of the general population would meet with more success and be more cost effective in MN than IL. Figure 2 can easily be misinterpreted resulting in the erroneous conclusion that MN has the most hunters and IL has the least. This is not true because of the differences in population among the states. Figure 2 shows the probability that an individual in each state is a hunter. It does not quite show the probability that an individual selected at random is a hunter when hunters are not distributed uniformly throughout the state (Figure 1). Figure 2 gives some insight into how education programs and marketing campaigns can and cannot be conducted effectively in each state.

Managers and marketers are also interested in the size of the market. Someone interested in targeting a campaign toward current hunters would do well to look in MI, which has considerably more hunters than any other state in the region (Figure 3). As Figure 3 also shows, IL with its low participation rate has more hunters than IA with its higher participation rate. This is due to the large population differences between these states. The hunters in IL are harder to find than those in IA (Figure 2). This is also due to the large population differences between these states.

Links between the resource and activity are important to managers and marketers. MI contains the largest number of acres and highest percentage of forest land and the largest

Figure 1. Hunter Distribution by Urban/Rural Classification and State (Percent of Total Hunters)

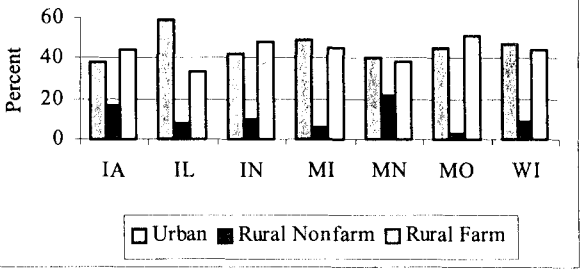


Figure 2. Comparison of Hunting Participation by State: Age 16 and Older

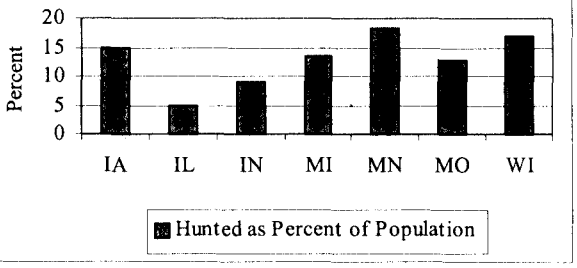
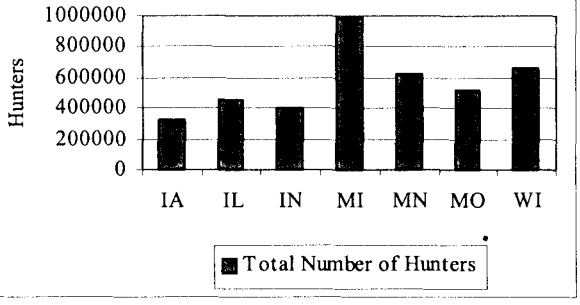


Figure 3. Comparison of Hunters by State: Age 16 and Older



number of hunters in the region. It does not, however, have the highest proportion of hunters (as a proportion of the population). Across these states, the probability of participation is positively correlated with the total amount of forest land (Pearson correlation coefficient .59) and with per capita forest land (.79) (Powell et al., 1993; U.S. Dept. of Interior, 1997). A stronger correlation (.87) was found between the total number of hunters and the total amount of forest land in a state. This could indicate that the abundance of resources in a state has resulted in a hunting ethic in that state. It is possible that the resources had a larger impact on probability of participation in the past which has decreased as interest in hunting in general has decreased. An earlier study by Allen and Dwyer (1978), however, did not find acres of forest land to be a significant predictor of hunting license sales by county in IL. This is an area that warrants further study.

Summary and Conclusions

This study has shown numerous differences between the North Central Region and the remainder of the United States. Probability of participation is greater in the region than in the remainder of the U.S. for all activities considered. Retention rates for hunting and fishing are also greater in the region.

Variation among the states is also considerable. IL ranks last in terms of probability of participation for all activities considered and for retention rates for hunting and fishing. However, due to its large population, IL does not rank last in terms of total number of hunters. These differences present challenges for managers and those interested in identifying and marketing to hunters in these states.

Finally, positive correlations exist between various measures of forest land and measures of participation among the states in the region. Larger amounts of forest land imply more hunters and a higher probability of participation in hunting. This study did not address whether increasing or decreasing the amount of forest land in a state would increase or decrease hunting.

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Literature Cited

Allen, A., & Dwyer, J. F. (1978). A cross-section analysis of hunting, fishing, and boating in Illinois (Forestry Research Rep. No. 78-8). Urbana: University of Illinois, Dept. of Forestry, Agricultural Experiment Station.

Powell, D. S., Faulkner, J. L., Darr, D. R., Ahu, A., & MacCleery, D. W. (1993). Forest resources of the United States, 1992 (Gen. Tech. Rep. RM-GTR-234). USDA, Forest Service.

U.S. Department of the Interior, Fish and Wildlife Service and U.S. Department of Commerce. (1997). 1996 National survey of fishing, hunting, and wildlife-associated recreation (FHW/96 NAT). Author.