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## **WILLINGNESS TO PAY FOR RECREATIONAL LAND USE IN MINNESOTA**

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### **Abstract**

Decision strategy pertaining to discretionary activities such as recreation may have inherently psychological components that are difficult to observe or unobservable. Also, geographical factors may exist when possible recreation site choices are geographically dispersed, whether amenities are similar or not. The choice to visit a recreational facility, then, comes with both a potential utility reward and a potential utility risk. Prior literature has demonstrated that recreational site selection may either be from the perspective of utility maximisation or regret minimisation. Minnesota, USA, is a well-known recreational destination year-round, with recreational consumers coming from all over the state itself and from around the US and Canada. The major regions of the state each have recreational sites making use of their countryside capital, but they differ in population as well as distance from major population centres, such as Minneapolis and Duluth. This study considers various easily observable traits of recreational consumers in the psychological framework of decision strategy to determine their influence on preferences for recreation in Minnesota overall and in its several distinct regions. Such decisions may point to efforts to hedge against emotional risk in the process of utility maximisation and regret minimisation. That information can be used to make better-informed recreational policy in the state of Minnesota, as well as improve local regional policy and corporate efforts to maximise benefit from countryside capital.

**Keywords:** *Land use, ecotourism, economic behaviour, decision strategies, environmental economics*

**JEL Codes:** *Q15, Q58, Q26*

### **1. Introduction**

Consumer decision strategy has inherent psychological components that are not always directly observable or even observable at all (Lysonski & Durvasula, 2013). This is certainly a key set of factors in such discretionary activities as recreation (Schreyer, Knopf, & Williams, 1985; Hailu, Boxall, & McFarlane, 2005). Various approaches to analysing consumer decision strategy have been developed in an attempt to incorporate such psychological components for the purpose of enhancing analytical accuracy, including techniques such as the travel cost model, the choice wave probabilistic model, and others. Likewise, geography often plays a role in consumer decision strategy and can interplay with behavioural factors (De Valcka, Broekx, Liekens, De Nocker, Van Orshoven, & Vranken, 2016). This becomes particularly true in the selection of recreational sites since such sites are geographically dispersed and also

typically geographically separated from the consumer's residential area (De Valcka et al., 2016). As consumers make choices regarding visiting a recreational site, issues of site amenities are reasonably considered to be evaluated by the consumer concurrently with issues of geography and psychology. With additional geographical distance between the consumer and a recreational site, e.g., a city-based consumer traveling to a rural recreation area, comes additional utility risk. That is, there is a cost in time and money traveling to the site, coupled with an inherent uncertainty in payoff. That is an inherent element of consumer psychology that may cause different outcomes than would otherwise be predicted by simple market factors and valuation approaches (Boeri, Longo, Doherty, and Hynes, 2011). Thus, the decision strategy in cases of countryside capital may be indeed one of utility maximisation, but also may be of regret minimisation or some combination of both approaches (Boeri et al., 2011). It is reasonable, then, to consider that recreation sites with more desirable amenities from the perspective of the consumer base would be expected by consumers to have a greater potential to satisfy both the utility maximisation and regret minimisation goals and thus be a better/more acceptable risk even in the face of costs of time and money in trouble. Similarly, it is also reasonable to assume that consumers in preference of the significantly closer site since that mitigates risk even further will differentiate two different sites with roughly equivalent recreational amenities, other things being equal. Thus it is also reasonable to assume that recreational sites that are further away from population centres from which recreational consumers are drawn must have significantly different amenities from those of the recreational sites near the population centres, or else find some other form of draw in order to increase competitiveness.

The state of Minnesota is a well-known recreational destination year-round, with recreational consumers coming from all over the state itself and from around the US and Canada. The major regions of the state each have recreational sites making use of their countryside capital, but they differ in population as well as distance from major population centres, such as Minneapolis and Duluth. This study considers various easily observable traits of recreational consumers in the psychological framework of decision strategy to determine their influence on preferences for recreation in Minnesota overall and in its several distinct regions. Such decisions may point to efforts to hedge against emotional risk in the process of utility maximisation and regret minimisation. That information can be used to make better informed recreational policy in the state of Minnesota, as well as improve local regional policy and corporate efforts to maximise benefit from countryside capital.

### **1.1. Project Overview**

The EDA Minnesota Use and Recreation Sustainability Survey Project began as an effort to 1) gain a better understanding of land use in Minnesota, particularly related to recreational uses; current and potential consumer interest in recreation in the region and their willingness to pay; and the impact of non-resident American and Canadian recreational visitors to the region; and 2) to analyze that information to help identify any untapped potential and generate suggestions and policy implications to benefit the economy of the region. Overall it uses a behavioural economic and psychological analysis framework to enhance economic and geospatial knowledge of Minnesota regarding both local and tourist recreation in terms of both current activity and potential for future growth. This project is also a continuation of the EDA Northwest Minnesota Land Use and Recreation Sustainability Survey Project, a pilot study that focused on similar questions only in the northwest Minnesota region. By contrast, the current project focuses on the entire state of Minnesota as a whole, subdividing by recreational interest and by recreational activity participation in the different regions of the state. Recreational participants considered in this study are in the categories of Minnesota residents,

area residents (residents of the surrounding states of North Dakota, South Dakota, Iowa, and Wisconsin), visitors from elsewhere in the USA, and visitors from Canada.

This study investigated observable respondent traits and their potential correlation with willingness to pay (WTP) for recreational activities throughout the state of Minnesota as elicited through a survey instrument. Since this study sought to investigate factors from a psychological and behavioural framework, the magnitude of WTP was not of immediate interest, but rather the significance and direction of effect. That is, was a particular observable trait correlated with a general increase or decrease in WTP, or was it uncorrelated? That information was then used to provide insight for general policy recommendations regarding state recreation, and especially to determine disproportionality in outdoor recreation benefits among the various regions in the state.

### 1.2. Project Framework

In order better to understand recreational land use in Minnesota, the various relationships among the factors playing a role in such land use must be considered. McClinchey and Carmichael (2010) provides a visual representation of this relationship based on the evaluation of a framework for countryside capital in Ontario, Canada. In that framework, “agricultural resources” refer to the use of land for agricultural purposes separate from any other use of the land, “tourism resources” refer to any means used by a community to attract visitors, and “tourists and visitors” refer to the people traveling to the area. To provide a simple definition, countryside capital refers to any investment in capital resources in a rural area (Garrod, Wornell, and Youell, 2006). Some examples cited by McClinchey and Carmichael (2010) include tax incentives for upkeep of Bed and Breakfast owners’ homes, creating attractive gardens, or other land use opportunities that would attract visitors to the region. This investment could also include local landowners “investing” in countryside capital by making all or some of their land available for public use to the community and visitors during certain times of the year. As McClinchey and Carmichael’s model in Fig. 1 below shows, there is a reciprocal relationship among all four components in the theoretical framework.

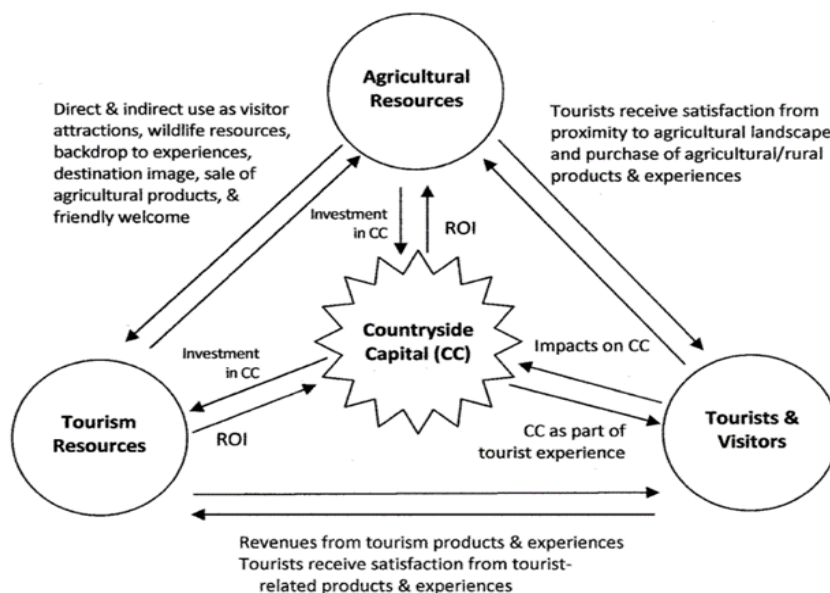


Figure 1. McClinchey and Carmichael’s 2010 Countryside Capital Model

### **1.3. Project Summary**

This study used a survey instrument administered to randomly selected volunteer respondents in the US and Canada who self-indicated that they had traveled to Minnesota at least once in order to gain insight into various potential influencing factors on willingness to pay (WTP) for outdoor recreation in the state of Minnesota. Because of the underlying emotional investment and psychological factors of the consumer that could impact decision strategy, an absolute measurement of WTP was deemed impracticable and likely to be inaccurate and misleading. Therefore, again, the study sought only to investigate the specific question of direction and significance of effect on WTP.

It was posited that those who made the decision to travel to Minnesota under conditions that are more conducive to participation in outdoor recreation would have a higher emotional investment in the trip and therefore likely seek utility maximisation. However, it was also acknowledged that the original decision to travel to Minnesota, if that decision was made specifically for recreation, may have been made from the standpoint of regret minimisation. It was also expected that those who live either in Minnesota or in neighbouring states or provinces would find travel to Minnesota for recreational purposes a better risk in terms of regret minimisation. Similarly, it was also expected that those who live in major population centres such as Minneapolis are more likely to travel to nearby recreational sites rather than travel to more distant areas of the state if the countryside capital offerings are similar, which could result from a strategy of utility maximisation, regret minimisation, or both.

## **2. Methodology**

The surveys used in the present study provide a representation of the three points of the triangle in the model depicted in Fig. 1 above, viz., recreational use (tourists & visitors), land use for recreation (agricultural resources), and eco-agritourism (tourism resources). By maintaining a statewide system of public and private recreation that focuses on triple bottom line accounting, i.e., an accounting method that includes the financial bottom line, as well as social and environmental impact, a sustainable tourism and outdoor recreation infrastructure may be maintained that benefits both the Minnesota economy and Minnesota society, as well as preserves Minnesota natural resources. The goal of this study is to provide insight into the outdoor recreation infrastructure in Minnesota in order to help facilitate triple bottom line accounting practices that will promote a long-term sustainable outdoor recreation industry in the state.

The project utilized a single survey instrument administered via the internet using Qualtrics software. The survey asked questions primarily on Willingness to Pay (WTP) for recreational activities in Minnesota. Unlike the previous pilot study that focused on northwest Minnesota, this survey only collected data from respondents who lived in Minnesota or who had actually been to Minnesota. More specifically, this survey collected information on resident and non-resident visitors to NWMN on their willingness to pay for a wide variety of recreational activities, travel information, demographics, and other factors.

### **2.1. Definition of the Regions**

To profile the activities and WTP across the state of Minnesota, counties were separated into logical regions and respondents were then directed to list their activity preferences and WTP within each region (Figure 2). The counties in northwest Minnesota that were used in this study to define the region are Kittson, Roseau, Lake of the Woods, Marshall, Beltrami, Polk, Norman, Pennington, Red Lake, Mahnomen, Clearwater, Hubbard, Cass, Becker, Clay, and Wilkin. The counties in northeast Minnesota are Koochiching, Itasca, Saint Louis, Carlton,

Pine, Lake, and Cook. The counties in the Metro region are Anoka, Carver, Dakota, Hennepin, Ramsey, Scott, Chisago, Isanti, Wright, and Washington. The counties in the central Minnesota region are Aitkin, Crow Wing, Mille Lacs, Morrison, Todd, Wadena, Otter Tail, Grant, Douglas, Stevens, Pope, Stearns, Benton, Sherburne, Meeker, and Swift. The counties in the southern Minnesota region are McLeod, Kandiyohi, Traverse, Big Stone, Lac qui Parle, Chippewa, Renville, Yellow Medicine, Lincoln, Lyon, Redwood, Brown, Pipestone, Murray, Cottonwood, Rock, Nobles, Jackson, Martin, Watonwan, Blue Earth, Waseca, Sibley, Nicollet, Le Sueur, Rice, Goodhue, Wabasha, Steele, Dodge, Olmsted, Winona, Faribault, Freeborn, Mower, Fillmore, and Houston.



**Figure 1. Map Showing the Regions Analyzed in this Study**

## **2.2. Recreation Survey Design**

The recreation survey was designed to be given to respondents, who either lived in the Minnesota or who had visited Minnesota, to determine their interest in and WTP for recreational services within Minnesota, as well as the mix of activities both currently taking place and in which there is interest. As previously stated, the respondents were subdivided by their own location, i.e., Minnesota resident, area resident (North Dakota, South Dakota, Iowa, Wisconsin), other-US resident, or Canadian resident. Regional locational questions regarding where the activities are taking place were also asked in order to determine geospatial distribution of recreational activity and perhaps determine areas of untapped potential (Fleming, Johnson, and Pagoulatos, 2005; Blackwell, Pagoulatos, Hu, and Auchter, 2009). That untapped potential may be in the form of land use, commercial enterprise, government and public service, and/or the hospitality industry.

A series of relevant demographic questions were asked at the end of the survey. Demographic information collected includes age category, gender, marital status, household size, household annual income, occupation, race/ethnicity, and education level. The specific

logical path of the subsequent survey questions varies based on the answers by the respondent to preceding questions. Questions are asked regarding current recreational activities of the respondent in Minnesota.

Depending on the activity, a variety of questions are subsequently asked regarding the specific location or locations where the activity is done. A willingness to pay per day for each activity that the respondent chose was asked. The survey had a series of initial bids that the respondent will be given to accept or reject. Initial bids within this study were based upon the initial bids used in the pilot study. If the respondent accepts the bid, a follow-up question is asked regarding how much more they are willing to pay, if anything. If they reject the bid, then they are asked how much they would be willing to pay. A pre-survey was not done since this survey was based on the pilot study that was done for northwest Minnesota.

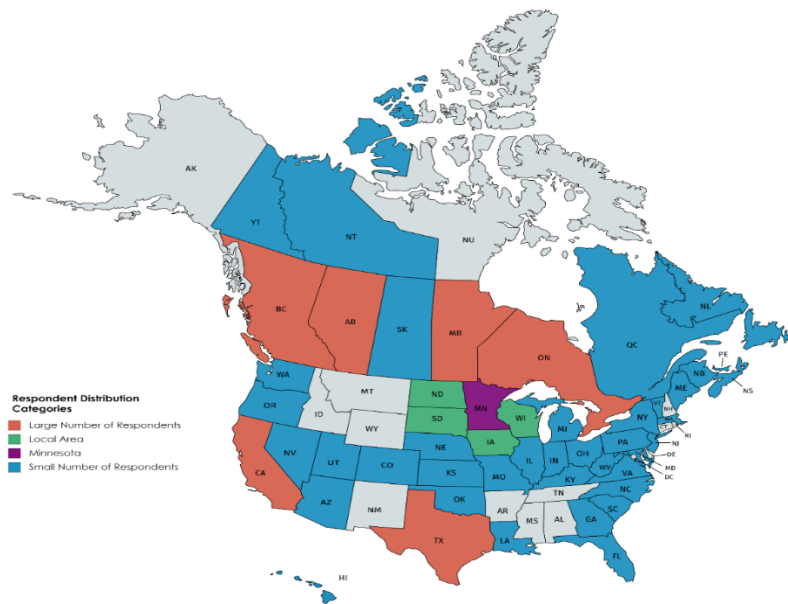
### 3. Results

#### 3.1. Overall Descriptive Statistics

Survey respondents indicated if they resided in Minnesota, the local area (identified as residing in Iowa, North Dakota, South Dakota, or Wisconsin), or another state within the United States/Canada. The distribution of overall respondents is listed in Table 1 below.

**Table 1. Geographical Distribution of Survey Respondents by Area**

Area Designation	n	%
Minnesota	45	12.9
Iowa, North Dakota, South Dakota, or Wisconsin	7	2.0
Other U.S. or Canada	271	77.4
Total	350	100.0



**Figure 3. Geographical Distribution of Respondents**

**Table 1. Geographical Distribution of Survey Respondents Outside of Minnesota, Iowa, North Dakota, South Dakota, and Wisconsin**

State/Province	<i>n</i>	%
United States		
Arizona	8	3.1
California	16	6.2
Colorado	6	2.3
Florida	5	1.9
Georgia	2	0.8
Hawaii	1	0.4
Illinois	8	3.1
Indiana	1	0.4
Kansas	7	2.7
Kentucky	2	0.8
Louisiana	1	0.4
Maine	1	0.4
Maryland	4	1.5
Massachusetts	3	1.2
Michigan	3	1.2
Missouri	2	0.8
Nebraska	2	0.8
Nevada	1	0.4
New Jersey	4	1.5
New York	6	2.3
North Carolina	7	2.7
Ohio	1	0.4
Oklahoma	1	0.4
Oregon	3	1.2
Pennsylvania	5	1.9
South Carolina	1	0.4
Texas	12	4.6
Utah	3	1.2
Vermont	1	0.4
Virginia	2	0.8
Washington	2	0.8
West Virginia	1	0.4
Canada		
Alberta	25	9.7
British Columbia	20	7.7
Manitoba	13	5.0
New Brunswick	1	0.4
Newfoundland	3	1.2
North West Terr.	1	0.4
Nova Scotia	2	0.8
Ontario	59	22.8
Prince Edward Is.	1	0.4
Quebec	7	2.7
Saskatchewan	4	1.5
Yukon	1	0.4
Total	259	100.0



In Table 2, the largest number of respondents outside of Minnesota and the local area were found in California, Texas, Ontario, Manitoba, Alberta, and British Columbia. Within that category, the states or provinces with the highest numbers were Ontario (59), Alberta (25), and British Columbia (20). In figure 3, the geographical distribution of respondents is depicted.

**Table 3. Sociodemographic Characteristics of Respondents**

Characteristic	<i>n</i>	%
Gender		
Female	43	30.9
Male	92	66.2
Prefer not to answer	4	2.9
Marital Status		
Single, Never Married	18	12.9
Married	106	76.3
Divorced	7	5.0
Widow/Widower	3	2.2
Other	5	3.6
Age Category		
18-22	1	0.7
23-27	6	4.3
28-32	8	5.7
33-37	13	9.3
38-42	9	6.4
43-47	13	9.3
48-52	20	14.3
53-57	26	18.6
58-62	16	11.4
63-67	14	10.0
68-72	9	6.4
73-77	5	3.6
Highest educational level		
High School Graduate/GED	6	4.4
Some College	10	7.3
Vocation Training (non-degree, professional certification)	6	4.4
2-year College Degree (Associate's Degree or equivalent)	6	4.4
4-year College Degree (Bachelor's Degree or equivalent)	54	39.4
Some graduate school.	6	4.4
Master's Degree (or equivalent)	30	21.9
Specialist Degree	2	1.5
Doctorate "ABD" (All-But-Dissertation)	4	2.9
Professional Doctoral Degree (e.g., MD, DMD, JD, DPharm)	4	2.9
Academic Doctoral Degree (e.g., PhD, DSc)	9	6.6
Race/ethnicity		
White, not Hispanic	120	87.0
Hispanic	3	2.2
Latino	1	0.7
African/Black	1	0.7
Asian	1	0.7
Other:	3	2.2
Identify by two or more races/ethnicities	3	2.2
Prefer to not answer	6	4.3
<i>Note. N = 350</i>		

All respondents were required to be at least 18 years of age. The largest number of respondents was found in the category of 53-57. However, all age categories were nicely represented. Regarding marital status, 76.3% were married. Only 12.9% were single, never married, and only a small percentage were divorced, widowed, or in another relationship category. This suggests that the results in this study are primarily applicable to married persons and traditional families. From a different perspective, this suggests that the majority of people taking part in recreational activities in Minnesota are married and in traditional family circumstances. However, even in this sample, there was a substantial portion of the respondents who did not fall into that category and therefore should not be ignored in policy decisions. Yet, the overwhelming majority is suggested by the data to be in the married/traditional family category, which is useful information for recreational policy and decisions. Table 3 provides the available demographic information of the respondents.

Table 4 provides the distribution of household size, including the respondent and household income among respondents.

**Table 4. Household Information of Respondents**

<b>Characteristic</b>	<b><i>n</i></b>	<b>%</b>
<b>Household Annual Income</b>		
\$20,001 - \$30,000	1	0.7
\$30,001 - \$40,000	3	2.2
\$40,001 - \$55,000	4	2.9
\$55,001 - \$70,000	12	8.8
\$70,001 - \$100,000	21	15.4
\$100,000 - \$150,000	30	22.1
Over \$150,000	46	33.8
Prefer to not answer	19	14.0
<b>Household Size</b>		
1	17	4.9
2	51	14.6
3	18	5.1
4	22	6.3
5	9	2.6
6	5	1.4
7	1	0.3

**3.2. Willingness to Pay by Activity and Region**

The specific statistics regarding willingness to pay for each activity for which there was a willingness to pay, reported by region, is provided in Table 5. The amount within the column provides the average WTP for each activity within each region in US\$. The number within the parentheses provides the number of respondents who were willing to pay an amount for that activity in that region, whether by accepting the initial bid or stating another amount.

**Table 5. Average WTP by Activity and Region**

Activities	NW MN	NE MN	Central MN	Metro (TC)	Southern MN
Adventure & Amusement Parks	44.62 (26)	47.61 (20)	44.58 (24)	46.20 (25)	40.95 (21)
Biking	25.13 (16)	24.47 (15)	19.17 (12)	17.67 (15)	18.33 (15)
Commercially-Operated Tours	33.00 (5)	28.75 (4)	27.50 (4)	33.00 (5)	25.00 (5)
Cross-Country Skiing	38.75 (4)	31.80 (5)	38.75 (4)	21.25 (4)	38.75 (4)
Downhill Skiing	52.00 (15)	61.43 (14)	40.45 (11)	45.56 (9)	45.71 (7)
Fishing w/Professional Guide	147.50 (4)	275.00 (2)	200.00 (1)	200.00 (1)	200.00 (1)
Golf	36.67 (15)	46.00 (15)	36.29 (14)	40.00 (13)	38.08 (13)
Native American Gaming	39.50 (4)	140.00 (3)	140.00 (3)	140.00 (3)	140.00 (3)
Native American Events	5.00 (1)	7.00 (1)	7.00 (1)	7.00 (1)	7.00 (1)
Shopping Malls & Outlets	211.43 (7)	205.63 (8)	187.22 (9)	185.56 (9)	220.71 (7)
Swimming (Lakes & Rivers)	7.61 (18)	6.94 (18)	7.18 (17)	7.00 (17)	7.00 (17)
Arts & Cultural Events	27.78 (9)	36.00 (10)	33.89 (9)	40.00 (9)	33.33 (9)
Local Events	32.50 (14)	32.92 (12)	32.92 (12)	32.69 (13)	32.50 (12)
Local Festivals	26.88 (8)	26.11 (9)	26.25 (8)	27.22 (9)	25.00 (9)
Sporting Events	45.00 (14)	45.38 (13)	47.50 (12)	75.50 (16)	43.57 (14)
ATV Riding	13.50 (10)	16.40 (5)	11.75 (4)	11.25 (4)	11.40 (5)
Bird Watching	15.00 (2)	15.00 (2)	15.00 (2)	17.50 (2)	15.00 (2)
Boating	12.47 (19)	12.11 (19)	13.94 (17)	13.17 (18)	13.25 (16)
Camping	24.17 (30)	25.54 (28)	23.70 (27)	23.50 (20)	23.13 (24)
Canoeing	22.50 (14)	21.79 (14)	16.67 (12)	19.09 (11)	20.00 (12)
Fishing Self-Guided	10.15 (13)	10.77 (13)	10.83 (12)	10.54 (13)	10.42 (12)
Hiking	11.07 (15)	10.06 (16)	10.53 (15)	9.86 (14)	10.20 (15)
Horseback Riding	30.00 (1)	30.00 (2)	30.00 (2)	30.00 (2)	30.00 (2)
Hunting	15.00 (3)	18.33 (3)	17.50 (2)	20.00 (1)	17.50 (2)
Ice Fishing	7.00 (4)	10.00 (4)	10.00 (1)	10.00 (1)	10.00 (1)
Kayaking	25.91 (11)	25.00 (10)	11.88 (8)	13.50 (10)	16.25 (8)
Snowmobiling	18.20 (10)	20.25 (8)	20.40 (5)	20.33 (6)	20.40 (5)

### 3.3. Regression Analysis

Following the procedures developed in the pilot study in Northwest Minnesota, a Poisson log-linear regression model was utilized. The natural log of WTP was used rather than WTP due to the assumption of an underlying Poisson distribution since the WTP was not continuous, but was inherently discrete due to the manner in which it was determined (a bid followed up by an optional respondent-stated amount).

The independent variables that were included in the final model were male/female, household size, average income, whether respondent trips were typically in warm or cold seasons, whether respondent trips were typically long or short, respondent age category, whether the respondent was married or not, and whether the respondent stayed in a hotel or some other form of accommodation. Additional independent variables related to geography. The Canadian variable captured potential effects of visitors to Minnesota from Canada. The remaining US respondents, then, were subdivided with the variables for local area (those in the neighboring states of North Dakota, South Dakota, Wisconsin, and Iowa) and Minnesota resident, which were necessarily mutually exclusive binary variables. Regional variables for

the five regions in Minnesota were also included in order to attempt to capture the effects of region on respondent willingness to pay (see Equation 1).

$$\begin{aligned}
 \ln WTP = & \alpha + \beta_1 \text{Male} + \beta_2 \text{Canadian} + \beta_3 \text{Household} + \beta_4 \text{Local}_{Area} + \beta_5 \text{Inc}_{Avg_{1000}} \\
 & + \beta_6 \text{Warm} + \beta_7 \text{Long}_{Short} + \beta_8 \text{Age} + \beta_9 \text{Married} + \beta_{10} \text{Hotel} \\
 & + \beta_{11} \text{MNRES} + \beta_{12} \text{REGION1} + \beta_{13} \text{REGION2} + \beta_{14} \text{REGION3} \\
 & + \beta_{15} \text{REGION4} + \beta_{16} \text{REGION5}
 \end{aligned}
 \tag{1}$$

The Poisson log-linear regression was significant,  $R^2 = .16$ ,  $F(16, 333) = 3.831$ ,  $p < .001$ . The descriptive statistics for each variable in the regression are given below in Table 6. The  $R^2$  value for a regression with assumption of Poisson distribution should typically be taken with the proverbial grain of salt and often is not reported. Therefore, it is included here for completeness. Taking it at its face value, approximately 16% of the variation in the natural log of WTP can be explained by the survey independent variables. Considering that willingness to pay in general, and presumably even a particularly for recreation and Minnesota, has significant psychological aspects to it, a low  $R^2$  value for observable traits that were able to be determined by the survey is not surprising. Assuming the  $R^2$  value is approximately correct, this suggests that the majority of the decision is based on psychological factors that either difficult or impossible to observe (at least based on a reasonably-practicable survey). The usefulness of these results remains, though, because it is precisely these observable traits and their potential impact on willingness to pay that can be useful both to industry and policymakers for economic development and improving use of countryside capital.

**Table 6. Regression Descriptive Statistics**

	Minimum	Maximum	M	SD
Male	0	1	.66	.475
Canadian	0	1	.39	.489
MNRES	0	1	.14	.347
Warm	0	1	.05	.227
Long_Short	1	1	1.00	.000
Educ_Years	12	21	16.47	2.365
Inc_Avg_1000	20.50	125.00	92.9648	30.90450
Hotel	.00	1.00	.1371	.34449
Married	.00	1.00	.3029	.46015
Avg. WTP Northwest MN	3.00	466.67	36.6649	56.56572
Avg. WTP Northeast MN	3.00	466.67	38.5978	57.35222
Avg. WTP Central MN	9.00	466.67	38.6725	58.99461
Avg. WTP Metro (Twin Cities)	5.00	466.67	43.8539	62.84850
Avg. WTP Southern MN	5.00	466.67	37.6819	61.00858
LOCAL_AREA	.00	1.00	.0200	.14020

Note. N = 350

The regression coefficients are provided in Table 7. In considering the results of the regression, of primary interest is significant and, for the significant variables, the direction of effect. The magnitude of effect is, again, of less meaning and interest for the purposes of this study, unless that magnitude happens to be particularly different in scale from the others, which is not the case for any of the significant variables. The variables Male, Canadian, Minnesota resident, Long\_Short, Hotel, and Local\_Area were all statistically significant. Among the regional variables, only Northwest MN, Central MN, and Metro (Twin Cities) were significant.

**Table 7. Regression Coefficients**

Variable	<i>B</i>	$\beta$	<i>SE</i>	<i>t</i>	<i>p</i>	95% CI
Constant	3.031		.154	19.648	.000*	
Age	-.019	-.075	.014	-1.366	.173	[-0.46, 0.008]
Male	.201	.143	.075	2.666	.008*	[0.053, 0.349]
Canadian	.129	.151	.047	2.768	.006*	[0.037, 0.221]
Minnesota Resident (MNRES)	.235	.187	.095	2.484	.013*	[0.049, 0.421]
Warm	-.067	-.036	.125	-.539	.591	[-0.312, 0.178]
Long_Short	.158	.115	.075	2.111	.036*	[0.011, 0.306]
Inc_Avg_1000	.001	.039	.001	.745	.457	[-0.001, 0.002]
Hotel	-.224	-.185	.079	-2.818	.005*	[-0.38, -0.068]
Married	-.026	-.029	.053	-.492	.623	[-0.131, 0.078]
Household Size	.028	.056	.029	.983	.326	[-0.028, 0.085]
Local_Area	.390	.131	.167	2.333	.020*	[0.061, 0.718]
Northwest MN	-.448	-.424	.122	-3.665	.000*	[-0.688, -0.207]
Northeast MN	-.098	-.093	.146	-.674	.501	[-0.385, 0.189]
Central MN	.587	.526	.187	3.138	.002*	[0.219, 0.955]
Metro (Twin Cities)	.253	.227	.124	2.043	.042*	[0.009, 0.497]
Southern MN	-.175	-.153	.205	-.855	.393	[-0.578, 0.228]
<i>R</i> <sup>2</sup>		.155				

Note. *N* = 350. CI = confidence interval; \**p* < .05

#### 4. Discussion

The results suggest that male visitors to Minnesota have a higher willingness to pay for recreation than females, Canadians have a higher willingness to pay for recreation in Minnesota, and similarly, Minnesota residents have a higher willingness to pay for recreation within their own state than those from out-of-state. Residents of the Local Area (the states of North Dakota, South Dakota, Iowa, and Wisconsin) were more willing to pay for recreation as well. The magnitude of effect was somewhat higher than that of Minnesota residents and of Canadians, but again, extreme caution should be taken in reading too much into the magnitudes. Although the local area residents could indeed have higher willingness to pay than even Minnesota residents, that should not be inferred from these results. In any case, it is not the goal of this study necessarily to determine absolute magnitude, given the many potential psychological effects that may impact willingness to pay, especially for such a discretionary purchase as recreation, but rather to suggest influencing factors and the direction of their influence. That said, it is not surprising that Minnesota residents are more willing to pay for recreation within their own state and that residents of the neighboring states or Canada are more willing to pay than other visitors from the US (Gorodnichenko and Tesar, 2009).. Minnesota remains a popular destination for people from around the US, but the potential geographical effect of proximity is not surprising. Since individual decisions are frequently influenced by one's social group (Calvó-Armengol and Jackson, 2009) and by those perceived by individuals and society to be experts (Loeper and Steiner, 2014), a social learning-based marketing campaign detailing various recreational activities available in Minnesota and in Minnesota regions might increase the incidence of selection of those activities by both residents and non-residents (Cai, Chen, and Fang, 2009).

Visitors who stayed for longer trips were also more willing to pay for recreation than those who were there on shorter trips. Similarly, those who stayed in hotels were less willing to pay for recreation than those who stayed in other forms of lodging, e.g., lodges, campsites, cabins, etc. It is likely that these two variables somewhat captured the effects of purpose of trip. Those staying in hotels and on shorter trips are perhaps more likely to travel to Minnesota for business or family visitation. Additionally, those staying for shorter time periods may be willing to pay less for recreation simply as a matter of having less time available for recreation purposes. Even a month long visit to visit family in Minnesota, for example, could certainly provide far more opportunity to participate in outdoor recreation than even a weekend trip solely aimed at recreational purposes.

Considering the three significant regional variables, both central Minnesota and the Twin Cities metro area had a positive effect on willingness to pay, while Northwest Minnesota had a negative effect. (Recall that the regional variables show effects of location of recreational activity on willingness to pay for recreation. That is, they do not refer to the origin/location of the respondent.) These results are similarly not surprising, since the Twin Cities area is the most populous of the state, and central Minnesota is widely considered the most popular area for “classic Minnesota outdoor recreation.” Also, central Minnesota is geographically proximal to the Twin Cities area and therefore is far more easily accessible to Twin Cities residents than the other regions in the state. Of course, that is not necessarily true for Canadian visitors coming south over the border from Ontario, the western provinces, or for visitors coming from the northern parts of North Dakota. However, both the Metro area and central Minnesota remain quite accessible to residents of North Dakota, South Dakota, Iowa, and Wisconsin. The negative effect of Northwest Minnesota supports the results found in the earlier pilot study and continues to suggest that, although outdoor recreation year-round is popular and Northwest Minnesota, the region is failing to capitalize on its potential for outdoor recreation, is simply ignored in favour of more geographically proximal options in the state, or both.

## **5. Conclusions**

This study used a survey instrument administered to randomly selected volunteer respondents in the US and Canada who self-indicated that they had traveled to Minnesota at least once in order to gain insight into various potential influencing factors on willingness to pay for outdoor recreation in the state of Minnesota. Given the various psychological factors that can easily impact decision strategy and hence also willingness to pay, it was not the goal of this study to find absolute magnitude of effect, but rather simply whether or not an effect was significant and the direction of the effect. This study followed an earlier pilot study that focused entirely on recreation in Northwest Minnesota and which was used to design the present study.

Recreation across the entire state of Minnesota was considered in the present study. To determine potential regional effects, willingness to pay questions included components regarding the regional location of the recreational activity within Minnesota. In order to determine potential effects of location of visitor, appropriate variables were included. Those variables allowed for the isolation of Canadian visitors, Minnesota residents, and residents of the neighboring states of Minnesota, i.e., North Dakota, South Dakota, Iowa, and Wisconsin. Respondents came from 30 of the states of the USA and nine Canadian provinces. There was a significant geographic diversity represented.

The results demonstrated that those who travel to Minnesota under conditions that are more conducive to participation in outdoor recreation, e.g., longer trips and staying in non-hotel accommodations, are more willing to pay for outdoor recreation. That could result from utility maximisation or regret minimisation. This suggests that government policy and corporate

action on the part of the recreation industry should, first of all, continue to focus on what is working, but also attempts to capture more of the market that is being missed. For example, if opportunities can be provided and marketed to those on shorter trips, even if in Minnesota for business, then it has the potential to expand the Minnesota recreational market through marketing and capital investment strategies that focus on accounting for consumer utility maximisation and/or regret minimisation strategies.

Along those same lines, since staying in a hotel had a negative effect on willingness to pay, hotel operators should consider various marketing approaches to targeting their clients for participation in local recreation, even if on a business trip. This follows the earlier pilot study, which included a hotel and land use partnership component. That is, both for longer trips and shorter trips, there is untapped potential in Minnesota for hotels to partner with local landowners to provide recreation opportunities for hotel clients (Battiston, 2016). The potential for increased social image may help induce land owners into such relationships (Evren and Minardi, 2017).

Minnesota residents, Canadians, and residents of neighboring states are also more willing to pay for outdoor recreation in Minnesota. While that is not surprising, and the state should continue to market to its own residents and its neighbors, the results suggest that there is untapped potential in marketing to residents of other states in the US. Marketing efforts will have to overcome any geographical barriers, i.e., consistent with earlier studies, some individuals may prefer not to bypass recreation in the vicinity to travel longer distances to Minnesota (Blackwell et al., 2009). Such efforts should target both utility maximisation and regret minimisation for the consumer to help enhance experience and induce participation and travel, particularly for consumers who live near other recreation facilities. That is, such marketing should focus on why Minnesota is different and therefore worth the trip. Also, the existing popularity of Minnesota with Canadians should continue to be fostered as much as possible with positive government and business relationships between Minnesota and Canada. Partnerships between Minnesota and Canadian recreation businesses should be considered. Likewise, such partnerships between Minnesota recreation businesses and those in the neighboring states of North Dakota, South Dakota, Wisconsin, and Iowa should likewise be considered.

Perhaps most striking from the standpoint of policy implications were the results of the regional variables. It is unsurprising that recreation in central Minnesota, often considered the main area for “classic Minnesota outdoor recreation,” received a higher willingness to pay from respondents. Similarly, given its breadth of available activities and that it is the main population center of the state, it is not surprising that that Twin Cities metro area likewise received a higher willingness to pay. There was no significant effect on southern Minnesota or on Northeast Minnesota. As suggested by the earlier pilot study, this study suggests that there is a negative effect on willingness to pay of recreation and Northwest Minnesota. Northwest Minnesota continues to lag behind the rest of the state in terms of revenue and benefits from the state’s vast recreation industry. One possible explanation is one of simple geography. That is, those in the Twin Cities area, i.e., the most populous area of the state, are less likely to drive 5 to 6 hours to Northwest Minnesota when they can participate in outdoor recreation activities in their own region or travel a shorter distance to nearby central Minnesota (Marshall & Pires, 2017). Given that Northwest Minnesota also has a poverty rate that is higher than that of Minnesota, but also above that of the United States, the state should consider as many possible avenues for alleviating that problem as possible. The untapped potential of the recreation industry in Northwest Minnesota is one such avenue that policymakers should strongly consider making a priority. In order to overcome the geographical isolation, Northwest Minnesota must focus on recreation “draws,” i.e., unique activities that can induce households to be willing to drive the longer distance. That may help overcome the possibility of decision making resulting in an increased likelihood of viewing that choice favorably in the future when

faced with a similar choice containing the previously-chosen in order to avoid cognitive dissonance (Mullainathan & Washington, 2009). Also, partnerships between hotels and land owners to align incentives better and better allocate resources to allow greater revenue-generating recreation potential to be realized should be considered and promoted by policymakers (Liu, Fleming, Pagoulatos, and Hu, 2010).

While utility maximisation through the enhancement of consumer experience should continue to be a primary focus of policymakers and of countryside capital, with a particular focus on distinctiveness, the potential for consumers to follow a regret minimisation strategy cannot be overlooked. Taking into account potential regret minimisation suggests that policymakers and countryside capital should consider barriers to consumer participation, whether it be proximity or any other reason, and make overcoming those barriers a priority in order to gain more market share.

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### References

- Battiston, P. (2016). Constrained Network Formation. *Italian Economic Journal*, 2(3), 347-362.
- Blackwell, M., Pagoulatos, A., Hu, W., & Auchter, K. (2009). Recreational demand for equestrian trail-riding. *Agricultural and Resource Economics Review*, 38(2), 229-239.
- Boeri, M., Longo, A., Doherty, E., and Hynes, S. (2011). Site choices in recreational demand: a matter of utility maximization or regret minimization? *Journal of Environmental Economics and Policy*, 1(1), 32-47.
- Cai, H., Chen, Y., & Fang, H. (2009). Observational learning: Evidence from a randomized natural field experiment. *American Economic Review*, 99(3), 864-882.
- Calvó-Armengol, A., & Jackson, M. O. (2009). Like father, like son: social network externalities and parent-child correlation in behavior. *American Economic Journal: Microeconomics*, 1(1), 124-150.
- De Valcka, J., Broekx, S., Liekens, I., De Nocker, L., Van Orshoven, J., & Vranken, L. (2016). Contrasting collective preferences for outdoor recreation and substitutability of nature areas using hot spot mapping. *Landscape and Urban Planning*, 151, 64-78.
- Evren, Ö., & Minardi, S. (2017). Warm-glow Giving and Freedom to be Selfish. *The Economic Journal*, 127(603), 1381-1409.
- Fleming, R. A., Johnson, R., & Pagoulatos, A. (February, 2005). WTA for consumptive and non-consumptive use access to private lands when affirmative responses are Poisson events. *Proceedings of the W-1133 Regional Project*. Salt Lake City, Utah.
- Garrod, B., Wornell, R. & Youell, R. (2006). Re-conceptualising rural resources as countryside capital: The case of rural tourism. *Journal of Rural Studies*. 22(1), 117-128.
- Gorodnichenko, Y., & Tesar, L. L. (2009). Border effect or country effect? Seattle may not be so far from Vancouver after all. *American Economic Journal: Macroeconomics*, 1(1), 219-241.
- Hailu, G., Boxall, P.C., & McFarlane, B.L. (2005). The influence of place attachment on recreation demand. *Journal of Economic Psychology*, 26(4), 581-598.
- Liu, Z., Fleming, R., Pagoulatos, A., & Hu, W. (2010). The supply of private acreage for public recreational use in southern and central Appalachia. *Growth and Change*, 41(4), 540-555.
- Loeper, A., Steiner, J., & Stewart, C. (2014). Influential opinion leaders. *The Economic Journal*, 124(581), 1147-1167.



- Lysonski, S., & Durvasula, S. (2013). Consumer decision making styles in retailing: evolution of mindsets and psychological impacts. *Journal of Consumer Marketing*, 30(1), 75-86.
- Marshall, G., & Pires, T. (2018). Measuring the impact of travel costs on grocery shopping. *The Economic Journal*, 128(614), 2538-2557.
- McClinchey, K. A., & Carmichael, B. A. (2010). Countryside capital, changing rural landscapes, and rural tourism implications in Mennonite country. *Journal of Rural and Community Development*, 5(1), 178-199.
- Mullainathan, S., & Washington, E. (2009). Sticking with your vote: Cognitive dissonance and political attitudes. *American Economic Journal: Applied Economics*, 1(1), 86-111.
- Schreyer, R., Knopf, R.C., & Williams, D.R. (1985). Reconceptualizing the motive/environment link in recreation choice behavior. In: Stankey, George H.; McCool, Stephen F., compilers. *Proceedings--symposium on recreation choice behavior; 1984 March 22-23; Missoula, MT. General Technical Report INT-184. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Research Station. p. 9-18.*