

DOCUMENT RESUME

ED 058 124

SO 002 207

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TITLE An Exegesis of Outdoor Recreation Research.
INSTITUTION Texas A and M Univ., College Station. Texas
Agricultural Experiment Station.
PUB DATE Jul 71
NOTE 49p.
EDRS PRICE MF-\$0.65 HC-\$3.29
DESCRIPTORS Bibliographies; *Environmental Research; Geographic
Location; Human Engineering; Leisure Time; Models;
Natural Resources; *Parks; Psychological Design
Needs; *Recreation; *Recreational Facilities;
Research Needs; *Site Analysis; Site Selection

ABSTRACT

The objective of this paper is to explore the state of recent recreational research by U. S. Geographers and social scientists. This report views the importance of recreationalists behavior patterns and describes the use of simulation models to predict demand data. Four research phases constitute the main organization of this paper: 1) Anticipation and 2) Recollection phases discuss and question the psychological needs of recreation. Attitudes, facilities, spacial relationships, cost, and distance traveled are identified as predictive factors for recreational attendance. 3) The Travel Phase looks at the distance that people will travel depending upon other factors such as site attractiveness. Research indicates that beyond a certain number of miles distance is not predictive. 4) On the Site Phase considers site attractiveness (perceptual environment) as a major allurement which gives the greatest satisfaction to visitors. Findings of this research report raise questions regarding the nature and goals of recreation which need to be answered and suggest that a fruitful area for study may be conceptualization of the decision-making process in recreation. Included are 386 bibliographic citations, and an outline of current research topics in outdoor recreation. (SJM)

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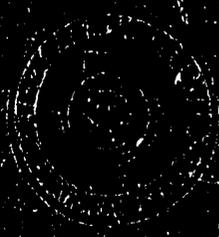
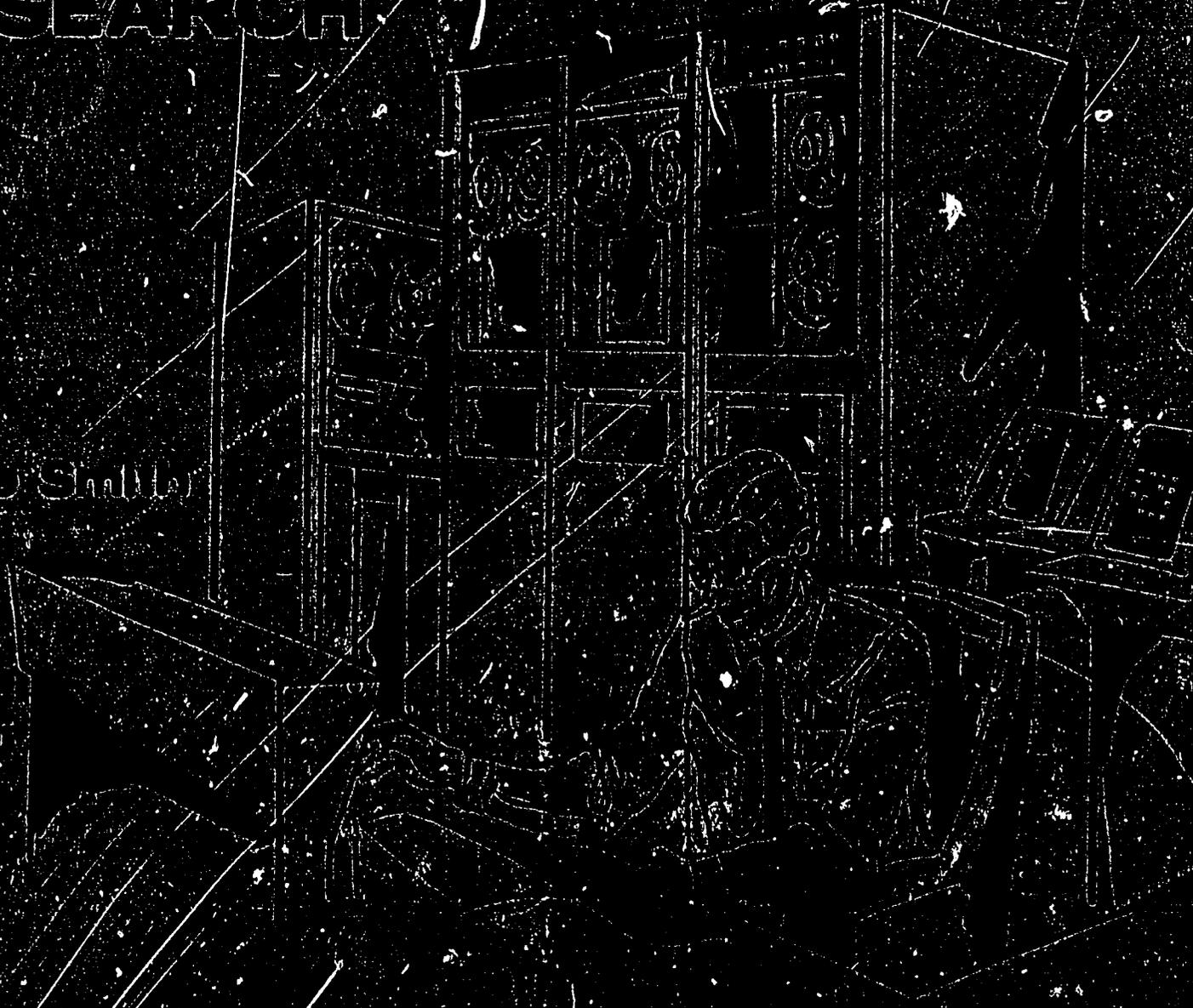
SPECIAL RESEARCH REPORT

ED058124

AN EXECUTIVE SUMMARY OF
OUTDOOR RECREATION
RESEARCH

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BY
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AN EXEGESIS OF OUTDOOR RECREATION RESEARCH

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AN EXEGESIS OF OUTDOOR RECREATION RESEARCH

In 736 BC Isaiah (5:8) wrote: "Woe unto them who add house to house and join field to field until everything belongs to them and they are the sole inhabitants of the land." Due perhaps to prior and conflicting advice ("Multiply, fill the earth and conquer it," Genesis 1:28) with this divinely inspired initiation of the field of open space planning and outdoor recreation, little was done until the eighteenth century AD when Thoreau lamented the frittering away of man's energy and spirit by too much work and too little leisure.¹ The following century saw an increase in the number of outdoor recreation advocates, most notably John Muir, Theodore Roosevelt, Frederick Law Olmstead and John McLaren. Olmstead and McLaren were largely instrumental in establishing Central Park and Golden Gate Park, respectively. Subsequently, this country has witnessed the growth of various city, county, state, regional and national park systems as well as an increase in private parks, resorts and like facilities.

For a variety of reasons the study of parks, recreation and tourism was never vigorously pursued by geographers and other social scientists. Observing this fact, R. E. Brown, in 1935, wrote:

From the geographical point of view the study of tourism offers inviting possibilities for the development of new and ingenious techniques for research, for the discovery of facts of value in the social implications in what is virtually a virgin field.²

Again in 1949 an invitation was raised, this time by George Deasy.

. . . because of the inadequate attention to the tourist industry by geographers, there exists a concomitant dearth of techniques, adaptable to the collection, analysis, interpretation and cartographic representation of geographical data of the subject.³

In 1954 C. McMurry contributed a section on recreational geography to Preston James' American Geography: Inventory and Prospect. McMurry notes that most recreational writing began in the 1930's, among the first of such studies being his own paper on the land use types significant to hunters and fishermen in northern Michigan. Commenting on the contributions of other geographers, he cites only ten other articles in the field, in the United States and Canada, between 1930 and 1947. These dealt, primarily,

with studies of specific areas.

Between 1947 and 1951 McMurry finds that five surveys were initiated by state agencies to identify recreational travel patterns and expenditures. Four other studies were undertaken by individuals dealing with various facets of recreational behavior in specific states.

Campbell (1963), Wolfe (1964) and Mercer (1970) upon reviewing various areas of the recreation field have also commented on the relative lack of relevant literature in geography but have noted its abundance in other fields.

With these comments in mind, it is the purpose of this paper to explore a sampling of the research that has been done, not only in geography, but in other social sciences primarily in North America, and in doing so, to suggest some areas of additional research.

One theme common among many recreation geographers is that a most important consideration should be the behavior patterns of recreationists and their perception of the recreation experience. Marion Clawson⁴ has developed a model of the recreation experience that consists of five parts: (1) anticipation and planning, (2) travel to the site, (3) on-site activity, (4) the return trip, (5) recollection. To provide a structure for the selection and organization of this paper will consider research themes that are related to these stages of the recreation experience. The first and last stages will be considered together, however, in a discussion of some of the psychological aspects of recreation and the second and fourth stages will be combined into research in travel.

The Anticipation and Recollection Phases

It has been suggested by some sociologists and psychologists that man has a deep-rooted need for outdoor recreation--which, of course, manifests itself in a desire and anticipation of an "experience." While the feeling that an absence of outdoor recreation may lead to mental and physical pathologies has been questioned by many scholars, little actual research has been done into the social, psychological, moral and religious ends and value of recreation. Wolfe⁵ has observed that "it is precisely those whose city environment is the greenest, those who live on tree-lined streets and carefully tend their generous gardens, who are most likely to summer in the

greenest countryside." This is also argued by Gans⁶ who notes that there is no proof of mental and physical strain being caused by a lack of recreation and open space. Wingo,⁷ on the other hand, has supported a slightly opposing view by arguing that "the popularity of the low density suburban dwelling probably reflects the surging demand for more private forms of recreation among middle-class, child-oriented families, suggesting that metropolitan scatteration is as much a recreation as a housing phenomenon."

Betty van Der Smissen⁸ cites examples of the use of summer camps to treat mentally retarded children but urges more and different research programs to see what role recreation plays in mental health, both from the aspect of improving it and in maintaining mental, emotional and intellectual well-being. H. Douglas Sessoms⁹ lists various functions that recreation may perform for the individual and thus contribute to the demand for recreation: (1) sense of personal mastery, (2) increases self-regard, (3) reduction of tension, (4) affiliation (in group activities), and (5) identification. Herbert J. Gans as mentioned earlier has contributed a section on "Outdoor Recreation and Mental Health" in Volume 22 of the Outdoor Recreation Resources Review Commission Study Reports. Other researchers including Dubos,¹⁰ Milgram,¹¹ Nagashima,¹² and Wolpert¹³ have observed that dissatisfactions and tensions created by the present urban environments does provide a "push" away from the work-a-day routine to some types of leisure activity. Recreation, to them is a necessity, a need that forces men to leave home and the normal routine in order to satisfy it.

Anticipation is closely related to demand, and perhaps not too surprisingly, demand studies in geography, economics and planning are a frequent research theme. Projections of demand can be accomplished by one of two general methods: (1) extrapolation of past trends and (2) use of simulation models. The first has often been used by state and local planning agencies and by the federal government in such well-known programs as "Mission 66" and "Operation Outdoors," undertaken by the National Park Service and the U. S. Forest Services, respectively. These are particularly valuable for short-run projections, but often, as in the case of Mission 66 and Operation Outdoors they can seriously under predict recreation growth.

Of more interest and sophistication are the various types of simula-

tion models; one of the better known of which is the gravity model. A simulation model is particularly useful in areas where there are no past trends to rely on for predicting future attendance. Working in such an area, Ullman and Volk¹⁴ obtained attendance data for interaction between various counties and lakes. From this they were able to plot distance regression lines (a version of the gravity model). Considering the various county-lake pairs as geographical analogs of a specific region in which a major reservoir was proposed they were able to predict attendance at the reservoir from a major city, given its population and the distance to the reservoir.

Van Doren¹⁵ in his work in Michigan also developed a gravity model to predict the attendance of recreationists at the various state parks. In this work and that of others such as Lucas¹⁶ the facilities at a recreation site were considered to be the critical variables in determining attendance at that site.

Other studies by Lucas,¹⁷ Hecock,¹⁸ Lentnek, Van Doren and Trail,¹⁹ and Van Doren and Lentnek²⁰ consider the effects of recreationalists' attitudes, perceptions and specializations on the distribution of activity. The role of leisure in society and its expression on the landscape is largely determined by group or aggregate perceptions of leisure opportunities, motivations, values and the aggregate individual awareness spaces expressed as the mean information field.

In "Spatial Behavior in Recreation Boating" the authors examine how the effects of activity specialization in boating (pleasure cruising, fishing, waterskiing, sailing or nonspecialization) are reflected in the distance traveled and the time spent in the activity. House²¹ and Swigel²² have examined the role of various socio-economic factors in affecting recreation patterns.

If the phrase "awareness space" is understood to mean that region including all those recreation sites the individual has knowledge of, it follows that the results of the anticipation stage decision-making process are limited to those sites with the awareness space that he further perceives to have some minimum threshold utility and associated time and money costs that are not prohibitive. This utility has been defined by Harvey²⁵ to mean the "symbol" given to the individual exper-

fencing the site. The nature of "symbols," "signals" and "images" of environmental quality has been carried on by a large number of researchers including Wolpert, Gould, White, Adams, Brown and Moore. Most have addressed themselves to residence changes and travel to work rather than to recreation. Most of what recreation research that has been carried out has been directed towards the nature and structure of perceptions due to on-site activity and will be discussed later. Mercer²⁶ (Australia), O'Riordan²⁷ (Canada) and Deasy and Griess²⁸ (Pennsylvania) are the only researchers to the author's knowledge that have considered the question of the role of mental maps and a priori awareness in affecting recreation travel patterns.

The Travel Phase

The second stage of the recreation experience, travel, can be approached in a variety of ways. One such method is the expression of recreational travel in terms of migration theory. The gravity model is a traditional model used in migration theory. It was mentioned briefly above in terms of the "push" (in a psychological sense) in a push-pull dichotomy. Before, it was suggested that some inner human need generated flow away from a residence to a recreation site; some models look at, not the psychological needs of recreationists, but rather at the site attractiveness as the flow generating mechanism ("pull"). With this in mind, researchers attempted to develop a relationship between attendance, distance and some measure of site attraction or utility.

One of the first recreational travel models for replicating traffic flow was Crevo's²⁹ gravity model. In this study he replicated recreation trips from southeastern Connecticut to two parks located on Long Island Sound.

Boyd Wennergren and Darwin Nielsen³⁰ developed a simple conceptual model and applied it to lakes in Utah, Idaho, Wyoming, Montana and Nevada. The probability of selecting one specific site from a list of possibilities by a recreationist is equal to the "utility" of that site divided by the sum total utility of all the possible sites:

$$P_{ik} = \frac{U_k}{\sum_{k=1}^n U_k}$$

where P_{ik} is the probability of attending alternative site k from location

i , U_k is the utility of site k , and n is the number of alternatives. The utility function is, in this study, directly proportional to the surface area of the boating site and inversely proportional to the travel distance between the point of origin (boater's residence) and the site being considered. The probability of a boater at origin i attending lake k is thus given by:

$$P_{ik} = [S_k^a / D_{ik}^b] / [\sum_{k=1}^n S_k^a / D_{ik}^b]$$

where S_k is the surface area of the k^{th} boating site, D_{ik} is the distance between origin i and site k , a is a parameter which reflects the effect of the surface area on attendance and b is also a parameter which reflects the effect of distance on attendance.

Van Doren,³¹ in his study on Michigan State Parks developed an attraction index based on the location of the park in terms of water (inland lake or Great Lake); various man-made features such as boating facilities, trails, beaches, number of campsites; and natural features such as vegetation, climate, and topography. This index was then used in an interaction model with the population of 77 centers of origin and a time-distance measurement between each of the 77 origins and 55 parks.

Another approach was taken by Jack Ellis³² in a study on the same park system. In this work Ellis used a system theory model which can be thought of as an electrical analog where the origins act like sources of current (flow of campers). The current "perceives" various paths of differing resistances and distributes itself in the system to achieve a state of minimum energy. The flow at each park is thus a function of the "resistances" of the parks, linkages, and the current strengths at the origins. The origin data was the measured flow of user-units (camper-days) from each origin at any park. The first step was the formation of a destination component equation:

$$F_j = A_j P_j$$

where F_j is the flow of camper-days entering park j in one season, A_j is the attraction index (determined by Van Doren in the model discussed previously) and P_j is the pressure of user demand at the park gate. The flow through any link is given by:

$$R_k = CTD_k^b$$

where C is a constant for all links, TD_k is the time to traverse link k and b is a fixed exponent.

A related statewide systems model called RECSYS has grown out of the work by Van Doren and Ellis. Chubb³³ has improved this model by developing a more realistic carrying capacity measure and by employing a computer graphic technique, SYMAP. The RECSYS - SYMAP combination was then utilized to predict future demand for recreational boating in Michigan.

Similarly, Wolfe³⁴ and Ellis^{35,36} have adopted the systems approach to simulate and predict recreation traffic flow to and between provincial parks.

One alternative method of looking at interaction over a distance is Stouffer's concept of intervening opportunity.³⁷ Basically this suggests that the probability of interaction or migration between origin i and place j is reduced by the number of other opportunities for interaction between i and j . One study that has utilized this notion of intervening opportunities is Ullman and Volk's study in the Meramec Basin.³⁸ In an attempt to calculate the benefits from the development of a large reservoir closer to a major city than present existing reservoirs (an intervening opportunity), they conducted a survey which included the question "If a lake similar to this one were built half as far from your home, would this decrease your visits to this lake?" to the extent of "eliminate completely, reduce greatly, reduce slightly, no effect, don't know." The result was one-third diversion. From this they could determine the number of visitor miles saved which were converted into dollars of benefit. In this particular study it should be noted that intervening opportunities were used to determine benefits derived and not primarily for predicting attendance at a lake. Catton,³⁹ on the other hand, felt that for some recreation trips that Stouffer's intervening opportunities do not provide competition for more distance destinations, but provide "stepping stones" for recreation migration, much as a series of islands in an archipelago provide stepping stones for animal migration.⁴⁰

A general review of interaction models including those mentioned here can be found in Gunnar Olsson's Distance and Human Interaction.⁴¹ Several basic conceptual modifications have been suggested by various researchers. In examining patterns of visitors to parks and resorts, Wolfe has "found that beyond a certain quite considerable distance . . . the friction of

distance not only disappears but becomes, as it were, reversed; the exponent for D is no longer negative but positive, and the further people go, the further they want to go."^{42,43} Lentnek⁴⁴ and others discovered that different activity specializations result in different distance decay curves; specifically, that recreational boating was actually a conglomerate of a number of different component activities such as sailing and fishing. Wolfe foretold this necessity by suggesting that "the stream of recreation travel . . . must be broken down into its component parts, and each part studied separately."⁴⁵

Rengert,⁴⁶ Webber,⁴⁷ and Lansing⁴⁸ rather than considering distance as a constant and relating interaction to this constant, have all treated distance as a function of various socio-economics and behavioral variables.

Referring to work previously mentioned on mental maps, Mercer⁴⁹ has found that distances are perceived shorter for recreation travel (1) in the direction away from the CBD and (2) along more familiar routes.

Still another approach to travel research was urged by Colin Campbell.⁵⁰ He suggested:

that a framework of thought will be acquired only when this order [traditionally research emphasis has gone first to the recreation site, then the recreationist and lastly to the city or source of market] and the geographer focuses his attention specifically on the spatial relationship between the city and the recreational area.⁵¹

The model he then proposes has four underlying points:

1. The city generates a demand for recreation.
2. There should be a distinction between the recreationist (activity-oriented) and a vacationist (trip-oriented). They are at opposite ends of a continuum.
3. Attention should be focused on the spatial relationships involved as a consequence of the patterns of movement of the recreationists and vacationists.
4. Both recreation and vacation industries are highway oriented.

Data collected should be used to delineate an urban hinterland used for recreation, vacation service regions and a vacation complex. In addition to these hinterlands one can determine traffic flow patterns, recreational forms and activity characteristics for recreationists, vacationists and recreational vacationists.

In commenting on Campbell's concern over the "lack" of geographic

research into recreational hinterlands, Mercer,⁵² cited several articles and studies dealing with just that topic. Buerle presented a paper at the 62nd annual meeting of the Association of American Geographers on the "Social Hinterlands of New York City and Boston in Southern New England."⁵³ A similar study was exacted by LaPierre⁵⁴ for the city of Montreal. Mercer also lists a number of similar studies for the United States, Canada, Great Britain and Australia. A common but significant finding in all these studies is that the recreational hinterland is relatively restricted for both day and overnight weekend trips. Sixty per cent of weekend trips terminated within a two-hour drive of the city center and the most frequently traveled one way distance was seventy-five miles. These findings prompted Cracknell to write:

This suggests that the car is used more for flexibility in timing and route rather than to extend the distance travelled: it enables the recreational belt to be more intensively used but has not noticeably extended its radius.⁵⁵

One problem facing a researcher in recreational hinterlands is that many people utilize driving as a form of recreation unto itself. Traffic volume counts can, to a degree, alleviate this problem and possibly provide more information about the size and shape of the hinterland. One such study was the 1964 Melbourne Metropolitan Transportation Study.⁵⁶

As for traffic volume counts themselves, the Automotive Safety Foundation of Washington, D. C. has aided most U. S. states and Canadian provinces to develop a plethora of highway volume, capacity and needs studies, in which recreational travel is given more than adequate coverage. Just one such example is Wolfe's Parameters of Recreational Travel in Ontario.⁵⁷ As other researchers have noted, Wolfe remarked on the variations in traffic patterns between a recreational and a nonrecreational highway. A recreational highway shows one peak daily (either at midday or in the early evening); a weekly maximum during Saturday and Sunday; and a yearly maximum in the summer. A non-recreational highway has two daily peaks -- one in the morning and one in the late afternoon; relatively uniform traffic volumes Monday through Friday, with a minimum over the weekend; and relatively uniform volumes in all months of the year. One preliminary conclusion that is stated tends to "complicate" research into recreational travel:

There is no such entity as recreational travel. To gain a just idea of how our recreational highways are used, the stream of

recreational travel on those highways must be broken down into its component parts, [origins, links, nodes] and each part studied separately. Even that is only the beginning.⁵⁸

In addition, Wolfe suggests that the patterns of highway use differ significantly for cottagers, campers, commercial guests and day visitors. This will complicate the problem of prediction even more since different proportions of these various recreationists will create different highway patterns.

Another approach to the problem of recreation travel is that of considering distance and time as transport costs and the recreation experience as an economic good. The effect of distance is discussed by Tiedmann:

Distance can usually be viewed as having a negative effect on the desirability of a good. That is, the greater the proportion of the total expenditure for a good which goes into travel, the less likely one is to procure the good. If we recognize the fact that procurement cost is composed of (1) the purchase cost, (2) background costs such as license fees and other prior investments and (3) travel or transport costs, then it is easy to arrive at the consideration that for a given amount of total investment money available to the individual, a reciprocal relationship exists between travel and other costs for a given purchase cost.⁵⁹

The same theme can be found in the work of many researchers such as Clawson and Knetsch,⁶⁰ Van Doren,⁶¹ Ullman and Volk,⁶² Lentnek, Van Doren and Trail⁶³ and Wingo.⁶⁴

By combining a distance measure, user fees, license fees, food and lodging costs above those normally accrued at home and the cost of equipment into a measure of the total costs and plotting this against participation rates one can develop demand schedules for specific studies. Similarly, time that could be devoted to increased work hours (and thus income) is often devoted to the pursuit of recreation. The amount of time thus given up is a cost the recreationist is willing to pay for his leisure and fun. As such it is possible to draw curves relating the workweek in hours to the number of days spent in recreation per year. This can be further refined to measure such demand tradeoff for various socio-economic groups.⁶⁵ One measure of the average relationship of participation and cost is the elasticity of demand for a given activity. This can be expressed as the percentage change in participation (quantity) divided by the percentage change in cost (price). An elasticity less 1.0 indicates a percentage change in participation less than the change in cost; unitary

elasticity reflects equal percentage changes in participation with cost; and an elasticity greater than 1.0 results when the change in participation is greater than the change in price. Owens⁶⁶ has determined elasticities for [ranked in decreasing elasticity] hunting, snow skiing, camping, power boating, fishing, sightseeing, golf, picnicking and swimming and found the elasticity of hunting to be greater than 1.0 and that of all the others between 0.0 and 1.0. He concludes that the higher cost activities have the higher elasticities in response to a price decrease.

At a scale larger than is traditionally considered, Williams and Zelinsky⁶⁷ have attempted to examine some patterns in international tourism. They did discover certain regularities that may be explainable by mental maps, historical events and economic relationships. While their initial attempt failed to produce much of substance, they did point out some areas for future study and some serious gaps in data. They suggested that some researcher follow up the tempting isomorphism between recreation travel and residential migration.

Clawson, in developing his recreation experience model, separated trips to and from the site. This author knows of no study that has addressed itself, not to characteristics of recreation travel vis-a-vis other forms of travel, but to a systematic study of variations between the trip-to and the trip-from or the variations among the legs of a multi-destination trip.

The On-Site Phase

A major aspect of the on-site stage of the five stage recreation experience model is the attractiveness of the site. This attractiveness seems to be, in part, a function of the "facilities" (natural and man-made) that allow and/or enhance the ability of a visitor to achieve satisfaction. The attraction may be in the form of recreational equipment such as playgrounds, campsites, water or wilderness setting.

Various authors have attempted to quantify the measures of site attractiveness. Wennergren and Nielsen used a measure as simple as the surface area of a lake while Van Doren used a large number of variables and a factor scoring routine to obtain a more sophisticated measure of "drawing power." This latter study dealt with intermediate recreation areas (as defined by Clawson and Knetsch) and met with limited success in

explaining attendance. In examining user oriented areas, Mitchell⁶⁸ devised a facility index based on subjective values assigned to such facilities as a baseball field, fishing, hard-surface area, tennis courts, swimming pool and playground equipment. The greater the attraction of a facility the higher an index number applied. For a park, the individual facilities were totaled. A simple regression analysis indicated the index thus defined to be a significant factor in determining attendance.

Another technique to quantify the attractiveness of an area was developed by Leopold.⁶⁹ The techniques he devised measures the uniqueness, rather than the beauty of a river valley. He uses forty-six factors comprising physical, biological, water quality, human use and interest aspects of a river valley. These factors are then assigned a classification number from one to five, inclusive, according to a series of scales developed in the study. To discover the relative uniqueness of each site in terms of a given factor one determined the number of sites out of the total sample that fall into a given category. The reciprocal of that number is the "uniqueness" ratio of that site for that factor. The ratios can then be totaled for all factors for each river to allow a comparison of uniqueness (in beauty or spoilation) between a number of sites.

Perhaps more important than measures of physical parameters to determine attraction are studies involving how an individual feels about an environment. In a recent article Shafer⁷⁰ examined a few examples of perception measurement. One technique is the direct approach where one asks a sample population how they feel about a given site. This provides some relevant and useful answers for planners, if one keeps in mind the problems of misinterpretation of responses or the fact that an individual may not know why he responded as he did. Some researchers have suggested that, on occasion, respondents have indulged in wishful thinking with the result that the expressed preferences are difficult to translate into concrete actions and reform.

A second method, indirect, is to develop a regression equation based on a set of features the researcher feels is relevant. A study by Shafer and Thompson⁷¹ of Adirondack campers yielded the equation:

$$Y = 3409 - 0.0183(X_1 + X_2) + 0.157(X_3) + 0.0002[X_4(X_3)^2]$$

Where:

Y = total annual visitor days per campground

X₁ = area of land at a developed swimming beach

X₂ = area of water at a developed swimming beach

X₃ = total number of campsites

X₄ = number of islands accessible by outboard motorboat

This equation yields an R² of 0.91.

Shafer suggests that since a rich perceptual environment can lead to a high degree of satisfaction, "the most important question a planner may wish to ask is not 'how do people feel about an environment?' but rather, 'how is the total variation of that environment distributed among its various elements?'"⁷²

To begin to answer this question, to isolate mutually independent sources of variation, a most valuable technique is factor analysis.⁷³ This technique has been used by Van Doren⁷⁴ and by Shafer and Thompson in the Adirondacks.⁷⁵

Lucas' article, "Wilderness Perception and Use: The Example of the Boundary Waters Canoe Area" has become something of a classic in geographic perceptual literature. In his study he concludes, as many others have, that resources are defined by perception. This is particularly true of scenic and recreational resources because of the intimate and subjective nature of their use. Despite the subjectiveness of such resources, and specifically wilderness, the scientist, land manager and park planner can deal rationally and in an orderly fashion with perceptual variations. Through a series of interviews Lucas discovers, in the study area, that there are two main wildernesses -- one "belonging" to the paddling canoeists and one defined by motorboaters, and a subsidiary wilderness defined by the tastes of motor canoeists. A decision must be made, Lucas says, to either limit the use of various areas through zoning and regulation or letting the wilderness vanish from over-use by each activity group. "If research on wilderness perception can identify segments within the range [of wilderness definitions] which are characteristic of certain types of recreationists, it should be possible to increase both the amount and quality of wilderness recreation."⁷⁶

Traditionally studies of site perception have been concerned with wilderness and near-wilderness areas. Earickson and Murton⁷⁷ have examined the nature of perception towards urban open-space and recreation amenities. These results support the theses that the desires and perceptions of populations in an urbanized area are a function of ethnic characteristics and length of residence; and that long-term residential circulation patterns correlate highly with the expressed preferred environment. Sonnenfeld⁷⁸ struck a concordant note by stressing that the separation of natives and non-natives is essential in discussion perceptions of and demands on the environment. His study suggests that natives are less discriminating in their perceptions than the more mobile and experienced non-natives.

The on-site experience of a recreationist is affected to some degree by the planning and ability to predict demand at the site or park before his visit. His response, and that of his recreating comrades, can affect, significantly, future development at that park. Such preference studies, however, should be extended to home interviews so as to determine more accurately the preferences of the vacationer and recreationist and the desires of non-users as well.

The responses must be carefully assessed for validity and accuracy of expression. Many responses concerning the level of development and cleanliness are highly subjective and relative. Opinions may be couched in terms of the individual's own experiences and short-term personal benefits, a situation which might be at odds with long-term public welfare. The user's knowledge is often woefully inadequate to express opinions and gauge alternatives for situations which may seem as irrelevant abstractions to him. In response to such problems in user preference Reid has proposed a methodology to obtain usable data:⁷⁹

1. Identity of the respondent -- socioeconomic profile
2. Experience -- past participation, frequency, type, etc.
3. Origin-destination -- distance, mode of travel
4. Recreation equipment
5. Preferences for the future -- new activities, equipment, altered time budgets, locational shifts

Conclusions

Having completed this hopefully representative, albeit incomplete, literature review in the social sciences, we can begin to recognize some areas that invite fruitful examination.

Perhaps it is in the anticipation and recollection phases that we find more questions and fewer answers about the nature of leisure and recreation. We briefly questioned whether or not a lack of recreation opportunities leads to a variety of infirmities. The more lengthy answer was essentially, "Who knows." Our general understanding of the goals of recreation is very poor. The conceptualization of the decision-making process in recreation may be a very fruitful area for study. How much does experience, information flows and conscious thought come into play in making a decision? Just how is it done? Presumably individuals operate under the principle of economic optimization -- maximization of satisfactions. In terms of recreation and leisure desires, what does this really mean; how does the individual define satisfaction?

Stepping backwards for a second, what is recreation and leisure, especially to the one doing it. Is it, ideally, a refreshment and a re-creation of the person's mental health, or is it primarily just amusement? If the frame of mind or attitude is important in "defining" a recreation activity, is this attitude not affected by all the experiences and stimuli throughout the individual's life, and to a greater degree by the quality of his physical, biological, social and mental environments at present? Mercer rather forcefully states, "Research into user satisfactions and preferences for recreational areas and facilities must be viewed within the wider context of research into satisfactions with the natural and human environments in general."⁸⁰

This seems to be suggesting that recreation research will require the inquiring into man's tolerance and perception of crowding; air, water, noise and visual pollution; and his needs for living and working space. An easy introduction into this last topic is Hall's The Hidden Dimension.⁸¹ Related questions that might arise would address themselves to the effects of big yards, private pools, second home ownership and backyard playground equipment on demands for similar public and profit facilities. How do urbanized recreationists prefer to use and develop the natural environment

in terms of recreation facilities? Does this propensity for a given type of development, if it exists, differ from that of rural, small-town and suburban residents? Can one group's desire be changed to fit some theoretical ideal standard through environmental interpretation and education? Is it important to do so? A few researchers and a host of writers have speculated on the answers.

Relatedly, in examining the problem of on-site perception at both parks and resorts, Mercer, again, suggests four areas of inquiry:

1. Awareness and attitudes of recreationists to particular sites at all scales
2. The process by which they acquire this information
3. The attitudes of the recreationist to the home environment
4. The relationship between these attitudes and overt leisure behavior

This is another call to the conceptualization of the decision-making process.

As cited earlier in this paper, Wolfe has urged that mobility be accorded a central place in the structuring of recreation study. How does mobility affect participation rates in various specific activities? Are some forms of recreation more dependent on mobility and accessibility than others for a given level of participation (how this level would be determined and measured is another problem entirely). In other words, does there exist a phenomenon that could be called mobility elasticity analogous to price and income elasticities?

A number of researchers have considered distance to be a dependent variable. How does distance and accessibility vary with perception? This question is broadly called the phenomenon of mental mapping. Do mental maps exist and are they operative? How much coherency is there between each individual map and reality and between the individual maps themselves, especially over time? A few have examined the question but more remains to be done. Is there a directional bias in recreational travel that can be explained by the perceived structure of the urban and rural environment and in particular by the perception of the road networks?

The gravity model has been frequently used in developing demand models that have been only partially successful. Wolfe's suggestion of a utility of distance for long-range trips and perhaps for sightseeing may prove to be a very useful concept. He has suggested that the conceptual model of this phenomenon be called a "momentum model." Stouffer suggested

that the gravity model be scrapped for a model relating attraction of a destination to the number of intervening opportunities between the origin of the tourist and the given destination. Perhaps this should be modified much the same way as Wolfe has modified the gravity model. Catton feels that intervening opportunities may act as stepping stones for migration. And while migration has been often considered to be only a change in residence, Zelinsky advises that the study of migration must also include "circulation" or temporary migration such as travel to work, school and play. He has developed a paradigm for the transition in mobility with the modernization process that may have some interesting implications for the future levels of recreation travel. There may be an analogous transition in mobility through an individual's lifetime that could be identified. The possibility certainly urges further examination.

The social scientist who addresses himself to the problem of recreation research has a wide variety of questions to answer. There appears to be several broad intellectual paradigms around which his answers can revolve: (1) the concept of true significance in the spatial patterns of recreation behavior and development, (2) certain laws of migration and circulation theory, some of which involve (3) the principle of economic optimization by the individual and society. This also involves (4) variations and the significance in the perceptions of the utility of sites and their accessibility. Underlying these four is (5) the philosophical and social significance of leisure and recreation and their bearing on and their relationship to all human activity.

APPENDIX

RESEARCH THRUSTS IN OUTDOOR RECREATION

- A. Geographic - micro (local and regional patterns) and macro (national and international patterns)
 - 1. Field work (traverse, interview, land-use survey)
 - a. Aesthetics of landscape - perception of beauty in terms of physical environment, wilderness, development
 - b. Site attraction in terms of natural environment
 - 1) Climate
 - 2) Landforms
 - 3) Water - type of body, shores and beaches, pollution
 - 4) Vegetation - general type, "naturalness"
 - 5) Unusual scenery - caves, geysers, waterfalls, cliffs, vistas
 - c. Site attraction in terms of man-made environment
 - 1) Recreation opportunities - sightseeing, boating, camping, fishing, swimming, hiking, playground equipment, picnicking, etc.
 - 2) Location in terms of market - resource - user-oriented or intermediate; hinterlands for vacationists, recreationists, surrounding land-use
 - d. Intensity of participation by inhabitants of cities
 - 1) Type of city - transportation, manufacturing, administrative, etc.
 - 2) Size of city
 - 3) Site and situation
 - e. Intensity of use of various types of facilities - national and state parks, municipal parks, tot lots, resorts, hotels and motels, summer dormitories, privately-owned cottages and camp-sites, etc.
 - 2. Gathering and analysis of statistical data
 - a. Recreational Travel
 - 1) Migration theory - push-pull, interaction models, intervening opp., "stepping stones," mental maps, mean information fields
 - 2) Spatial behavior in recreation
 - 3) Recreational hinterlands
 - 4) Effects of new highways and bridges; changes in any form of transportation; and tolls on patterns and hinterlands
 - 5) Traffic patterns on recreational highways
 - 6) Needs and transportation characteristics of various types of areas with emphasis on trip generating patterns
 - 7) Importance of mobility; future trends in mobility
 - b. Tourist industry
 - 1) Survey of tourism in specific regions
 - 2) Application of location theory to recreational facilities
 - 3) Place of the urbanized summer resort in the central place hierarchy

- c. Projection of recreational needs and demands for specific regions
 - 1) Extrapolation of past trends
 - 2) Simulation models
 - d. Propagation of innovation waves of recreation architecture, easements, the "national park ethic;" surveys of variations in parks and their facilities, in architectural differentiation
- B. Economic, political, sociological
- 1. Obtaining and financing recreational projects - taxes, bonds; deciding priorities in resource allocation
 - 2. Implication of recreational travel across borders, particularly international boundaries
 - 3. Multiple use projects
 - 4. Benefit-cost analysis
 - 5. Planning and administering public and private facilities, especially pricing
 - 6. Optimal roles of public and private recreational facilities
 - 7. Supply-demand studies of recreation
 - a. Considering it a quasi-market situation
 - 1) Effects of distance (transport costs)
 - b. Socio-economic factors affecting demand
 - c. Consideration given to propensity to recreate - plan to satisfy the casual majority or the zealous minority?
 - 8. Effects of recreation on the individual and methods of evaluating it
 - a. Human needs
 - b. Role in mental health treatment and maintenance
 - c. Religious ends
 - 9. Philosophical and ethical considerations (including aesthetics and ecology)
 - 10. Historical development of various facets of the outdoor recreation field
 - 11. Effects of recreation development on regions; economic multipliers
 - 12. Effects of institutional factors such as personal liability, taxes, health regulations, zoning on the use of resources for recreation
 - 13. Economics of scale in private recreation operations which are profit oriented
 - 14. Incentives involved and benefits received by operators of very small recreation operations which are not profit oriented
 - 15. Use of fees and other costs in controlling resource utilization
 - 16. Physical and social accessibility of suburban parks to inner-city residents

17. Encouraging private investors to invest in recreation enterprises
18. Training in appreciation of the environment, especially in preventing vandalism; the use of an appreciation test to limit usage of very heavily used facilities; appreciation in urbanized individuals, especially inner-city residents

C. Miscellaneous

1. Biological studies - requirements in wildlife preserves such as food, presence of man, ranges; species surveys and species of plants that will withstand heavy use; wildlife management; needs of and effects of hunters and fishermen; ecological analysis of a park or proposed development in a park
2. Engineering feasibility studies for various projects (roads, dams, etc.), design studies and studies of site characteristics to optimize user satisfaction
3. Capacity of outdoor areas and facilities - economic, protection of resources, control to achieve goals
4. Nature of aesthetic appreciation of a setting - importance in the initial selection and investing, satisfaction generated by natural and natural-appearing but artificial landscapes, importance in enjoyment and satisfaction, variation among various socio-economic and activity groups, human attitudes towards areas -- analogous to exploitation of timber resources; future cultural shifts -- towards or away from greater privacy (role of recreation and travel in achieving this)

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NOTE: While this list is relatively long, it is not meant to be exhaustive. Many theses and dissertations were not included, many government bills were left out as were a plethora of planning reports for specific cities and counties and foreign language articles. It is hoped, though, that this list will cover many of the studies in recreation up to the middle of 1971.