

71-31,326

TUCKER, Thomas L., 1945-
THE 1980 SUPPLY OF OUTDOOR RECREATION
FACILITIES IN MICHIGAN.

Michigan State University, Ph.D., 1971
Agriculture, forest recreation

University Microfilms, A XEROX Company, Ann Arbor, Michigan

THE 1980 SUPPLY OF
OUTDOOR RECREATION FACILITIES
IN MICHIGAN

by

Thomas L. Tucker

A THESIS

Submitted to

Michigan State University

In partial fulfillment of the requirements

for the degree of

DOCTOR OF PHILOSOPHY

Department of Forestry

1971

PLEASE NOTE:

Some pages have indistinct
print. Filmed as received.

UNIVERSITY MICROFILMS.

ABSTRACT

THE 1980 SUPPLY OF OUTDOOR RECREATION FACILITIES IN MICHIGAN

by

Thomas L. Tucker

The growing popularity of outdoor recreation activities has caused a deepening concern among public agencies responsible for providing outdoor recreation facilities for use by the general public. This concern principally surrounds the increasing pressure on existing recreation developments from both local users and users who travel considerable distances to reach prime recreation areas.

The North Central Region^{1/} not only contains a large population of actual and potential intraregional recreationists, but also prime forest and water resources. The homogenous regional population and environment plus the expanding demands placed on public lands and public recreation facilities points to a greater need for co-ordinating efforts to supply recreation facilities by public agencies within the region.

Using Michigan as a representative state, the objective of this study was to construct an outdoor recreation supply model that would allow for the development of recreation facility supply projections and the examination of these projections in the light of their implications for the welfare of the public.

In developing the model, driving and sightseeing, picnicking, hunting, fishing, and camping were identified as the major recreation activities undertaken on forest land. The supply model deals with the inventory, production and consumption of these activities.

Inventory data were obtained from the Bureau of Outdoor Recreation's national survey of 1964 and a subsequent update conducted by Michigan State University for 1968. Existing public agency development plans provided projections to 1975. The data for 1964, 1968, and 1975 were used to estimate the supply of recreation facilities that will be available by 1980.

Budget records, and financial- and engineering reports on recreation facility construction expenditures were used to document the costs of physically providing recreation facilities. Travel expenditure reports and equipment price lists were used to obtain the costs the consumer must bear to utilize a recreation facility.

The results of the study show a large expansion in camping facilities since 1964, the majority of which are designed for recreation vehicle equipment. A shift in emphasis from rural to near urban campground development was also observed. The latter appears to show a rising concern for urban dwellers. The numbers of fishermen and archery deer hunters are rising steadily, while the number of gun deer and small game hunters show signs of stabilizing.

The supply efforts of public agencies affect two groups of people--those currently consuming outdoor recreation activities and those not due to income constraints or lack of desire. The conclusions drawn from this study affect both groups and point in four directions. First, current supply practices inefficiently allocate public funds in the building and maintenance of camping facilities. The main cause is due to the habit of supplying agencies to look at all the different facilities on a developed site as a single unit of supply. Second, agencies are misdirected in

their efforts to make recreation opportunities available to inner-city dwellers by moving recreation developments closer to the city center. This is mainly due to the lack of regard for the urban dweller's taste and most important the lack of recognition of the costs involved in acquiring the equipment necessary to utilize the facilities. Third, there is no evaluation of the alternative uses of public funds now being spent on recreation sites used extensively by non-residents of Michigan. Fourth, on a day use basis the costs of user fees and licenses paid by the average camper, hunter, and fisherman is greater than the cost incurred by the agencies to supply the facilities and services utilized by these recreationists. However, the agency cost is exclusive of administrative costs of the head office personnel in the departmental headquarters. If these costs were included the agency's costs would be higher. Conclusion four should be evaluated in this light.

1/ The North Central Region includes Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, Wisconsin and Kentucky.

ACKNOWLEDGMENTS

The author is indebted to the members of his Guidance Committee, especially Dr. Robert S. Manthy (Chairman), for their advice, guidance, encouragement and help in the preparation, reviewing, editing and completion of this manuscript.

The assistance and co-operation of the Forestry Departments of the University of Minnesota, University of Wisconsin, and the University of Missouri, all contributors to the regional project of which this study is apart, are also acknowledged.

The author extends his gratitude to Michigan State University and the Department of Forestry for financial support in the form of a graduate assistantship, and the Bureau of Outdoor Recreation which provided much of the data used in this study.

He also wishes to give his warmest appreciation to Miss Elizabeth McAuley, Mr. Douglas Ketcheson and Mr. Thomas Mills for their help in reviewing and editing this paper.

Finally he would like to express special thanks to God who provided strength and fortitude making this report possible.

CONTENTS

	<u>Page</u>
ACKNOWLEDGMENTS	ii
CONTENTS	iii
LIST OF TABLES	v
LIST OF FIGURES	vii
LIST OF APPENDICES	viii
INTRODUCTION	1
Scope of Model	4
Procedures	6
MODEL OF RECREATION SUPPLY	8
Nature of The Resource Base	8
Land Features	11
Activities Plus Environment	12
Supply Model	13
Production	14
Consumption	15
Inventory	18
Usefulness of Model	21
MICHIGAN'S OUTDOOR RECREATION FACILITIES	23
Camping	23
Inventory	24
Projections	28
Hunting and Fishing	33
Inventory	33
Projections	38
ECONOMIC SUPPLY AND THE CONSUMER	41
Camping	42
Direct Cost	42
Associate Cost	44
Hunting and Fishing	54
Direct Cost	54
Associate Cost	56
Price Projections for Camping, Hunting and Fishing . . .	61

CONTENTS

	<u>Page</u>
SUMMARY AND CONCLUSIONS	67
Summary	67
Inventory of Facilities	72
Camping	72
Hunting and Fishing	73
Supply	75
Camping	75
Hunting and Fishing	76
Conclusions	80
LITERATURE CITED	93
BIBLIOGRAPHY	95
APPENDIX I	96
APPENDIX II	100
APPENDIX III	110

LIST OF TABLES

<u>Table</u>		<u>Page</u>
1	Percent of total land acreage in each Bureau of Outdoor Recreation land classification for public lands in the North Central Region, 1964	10
2	Land features classified as important by public forest ownerships, in the North Central Region, 1964	11
3	Michigan public agencies providing recreation facilities, by total acreage and number of campsites, 1964 and 1968	24
4	Current and projected numbers of public agency provided campsites in Michigan 1964, 1968 and projected to 1975 and 1980	31
5	Acreage acquired by public agencies providing forest-based outdoor recreation in Michigan, 1964 and 1968	34
6	Number of participants per hundred of population by type of hunting, and fishing in Michigan for 1958 through 1968	36
7	Population and number of resident licensed hunters and fishermen in Michigan for the years 1958 through 1968	39
8	Capital improvement and average annual operating expenditures associated with the provision of camping facilities by public agencies in Michigan, 1968	43
9	User fees charged by the public agencies in Michigan for one night of camping, 1968	45
10	Average cost for the types of recreation vehicle equipment used in modern campgrounds in the United States, 1968	48
11	Associate cost per day for the household camping in Michigan, 1968	51
12	Total supply cost for one family camper day in Michigan, 1968	53
13	Direct cost to the agencies providing the hunting and fishing packages in Michigan, 1968	57

LIST OF TABLES

<u>Table</u>		<u>Page</u>
14	Associate cost for the participant consuming hunting and fishing packages in Michigan, 1968	59
15	Total supply cost for one day of participation in hunting and fishing in Michigan, 1968	60
16	Construction cost and consumer price index for selected years	63
17	Direct and associate costs in units of cost per family day use for camping, and cost per day use for hunting and fishing in Michigan, 1968 and 1980	64
18	Direct and associate costs for camping, hunting and fishing package combinations in Michigan, 1968	66
19	Camping visitations for state park and state forest campgrounds in Michigan, 1968	110

LIST OF FIGURES

<u>Figure</u>		<u>Page</u>
1	Outdoor Recreation Supply Model	9
2	Number of State Park campsites in the three regions of Michigan in 1964, 1968, and projected to 1975	26
3	Michigan map showing Region I, II and III	27

LIST OF APPENDICES

<u>Appendix</u>	<u>Page</u>
I Inventory, classification, and evaluation of existing outdoor recreation areas and facilities, Bureau of Outdoor Recreation Questionnaire 1964	96
II Computer output questionnaires for 1968 reinventory . .	100
III Camping visitations for state park and state forest campgrounds in Michigan, 1968	110

THE 1980 SUPPLY OF OUTDOOR RECREATION FACILITIES IN MICHIGAN

Chapter 1

INTRODUCTION

Leisure time activities have become increasingly more important over the past several decades in the United States. Households are spending large portions of their leisure time and money in outdoor recreation activities. To find out just how important outdoor recreation was and is likely to become in the United States the President and Congress established the Outdoor Recreation Resources Review Commission in 1958. Reports from the commission predicted that a larger share of public land and capital resources will have to be channeled into recreation if the leisure time needs of our nation's population are to be met. This is particularly true in those states which have a large population along with abundant water and forest resources, to meet their recreation needs.

The North Central Region ^{1/} is such an area. It contains over 50 million people or approximately 28 percent of the nation's population and a like percentage of the nation's income (Bureau of the Census, 1968). The major population centers: Detroit, Chicago, Cleveland, Minneapolis-St. Paul and St. Louis--are located in an east-west band across the center of the region while the prime forest areas are in the northern reaches of the Lake States. Despite the northern location of the forest

^{1/} The North Central Region includes Illinois, Indiana, Iowa, Michigan, Missouri, Minnesota, Ohio, Wisconsin and Kentucky.

land, many of the recreation visits to non-urban sites within the region involve interstate travel ^{2/}. One day's driving time is usually the limiting factor on distance travelled. Therefore much of the region is reachable from the major population centers.

The large number of people, and a similar physical and social environment within the region all point to a rather homogeneous outdoor recreation environment with similar intraregional problems. Because of these factors there is an apparent need for coordinating the efforts of outdoor recreation suppliers within the individual states and between the states of the region. Federal financing programs, such as those available from the Land and Water Conservation Fund, currently seem to be the only cementing factors coordinating the activities of the states.

This study is one of a series undertaken cooperatively by the major universities ^{3/} of the region in order to provide data needed for coordinated recreation planning within the region. The central focus of these studies is the public agencies that provide the majority of forest-based outdoor recreation opportunities within the region. The agencies in question are Federal, state, county and local and it is to them, and their problems as outdoor recreation suppliers, that this study is directed.

^{2/} Based on fragmentary data and discussions with Dr. Robert C. Lucas, Principal Geographer and Project Leader, Recreation Research, North Central Forest Experiment Station, St. Paul, Minnesota.

^{3/} Michigan State University, the Universities of Wisconsin, Missouri, Indiana, Illinois, Iowa, Kentucky and Ohio State University.

Michigan State University's principal role in the regional study has been to direct and coordinate studies of current and potential future supply of regional outdoor recreation. In the exercise of this responsibility the state of Michigan was used as a representative state for which a supply model could be developed for application to the entire region. This report presents the developed model, as applied to Michigan conditions, and develops the policy implications of the results obtained by use of the model. The specific objective of this study is to develop a supply model of outdoor recreation facilities found on public forested land in Michigan. The purpose of the model is the development of projections and the examination of the implications of these projections in the light of current and proposed public policy.

The model developed is based on two major assumptions. First, it is assumed that a need exists for a better decision method which would allow for more coordinated action and planning procedures that recognize diverse uses of public forest land for recreation. The concern is therefore for forest-based outdoor recreation. Forest land comprises the majority of land under public ownership in the region and the majority of current and proposed public outdoor recreation facility development and household participation is on forest land. Forest acreage also comprises the bulk of public land available for future development.

Second, it is assumed that public agencies usually supply a unique type of facility not supplied by other agencies. However, it is recognized that the private sector does provide forest-based outdoor recreation and can overcome small deficits in supply not met by the public sector. The model is therefore restricted to a study of forest-based outdoor recreation on publicly owned lands.

When using the model to analyze Michigan data four major conclusions were reached. First, it was shown that existing forest-based outdoor recreation facilities on Michigan's public lands are provided principally for use by middle and high income families. Second, it appears that public agencies are misdirected in their efforts to provide outdoor recreation opportunities to the urban poor not currently consuming the recreation product. Third, a substantial portion of current and planned inventories of state and local government recreation facilities are being provided to non-residents with little analysis of the resulting welfare implications for Michigan residents. Finally, the user and license fees paid by users of government built facilities exceed the direct cost of building and maintaining these facilities.

Scope of Model

Forest-based outdoor recreation is defined as a set or package of activities which take place in a forest environment. The model developed in this study expands this definition into theoretical and applied areas of economics with explicit recognition that the recreation facilities publicly provided in Michigan are public goods 4/.

The supply model recognizes that public agencies which provide recreation facilities bear only a portion of the cost associated with the supply of these facilities to recreationists. The public agency that provides land and facilities for outdoor recreation users bears the cost of development and improvement, and operating and maintenance expenditures. Collectively these costs are termed "direct cost"

4/ In this study a "public good" is defined as a good produced by a public agency for public consumption but not necessarily a good that once produced is free to all people.

throughout this paper.

The consumer of publicly owned outdoor recreation facilities also bears a portion of the supply cost. His portion of the total supply cost are those costs he must assume in order to consume available recreation opportunities. He must travel to the recreation site and possess equipment necessary to utilize the facilities. The total of the trip and equipment expenditures and user fees are identified as the "associate cost" component of the total supply cost for recreation goods.

The model developed is used to estimate the total supply cost by "direct and associate" cost components for five separate packages of recreation activities which take place on forest land. These packages of activities are: picnicking, driving and sightseeing, hunting, fishing and camping. A corresponding set of secondary activities are unique to each of these primary activities. Their nature and importance are discussed in Chapter 2.

Any decision model for the planning of a public good should embody some measure of the public's well-being. Since the cost of a public good is sustained in varying proportions by the public agencies through taxes (direct cost) and by the private citizen or the household (associate cost), public well-being may be evaluated by a comparison of the size of the direct cost with respect to the associate cost and the comparison of the minimum and average associate cost for each of the packages, which gives a measure of what portion of the public is being favored and to what extent, thereby giving an index of the welfare of one group as compared to another.

Procedures

The physical inventory and cost information needed for the development of this model were obtained from a number of sources. The best currently available inventory data are those obtained from the Bureau of Outdoor Recreation's survey of public recreation facilities in 1964 ^{5/}. The information from the BOR 1964 data were used as a base upon which a reinventory was conducted. Personal interviews with individual state, Federal and local agencies supplying outdoor recreation on forest land provided an update of the 1964 survey to 1968, the last full fiscal year for which applicable data were available.

Because most agencies have established five year plans for future construction activities, information was obtained at the time of the personal interview on planned construction programs to 1975. The collected inventory data for 1964 and 1968 and the planned 1975 inventory provided the statistical base for projecting Michigan's public agencies' available inventory of outdoor recreation facilities to 1980.

Financial data were also obtained from several sources. The data for direct cost came from interviews with the engineering divisions and financial budget reports of various public agencies.

Consumer expenditure data (associate cost) were derived from equipment price lists, travel and trip expenditure studies and other secondary sources. All financial data were projected to 1980 by using the trends found in the national consumer price and construction cost-indexes.

^{5/} Unpublished records of the Bureau of Outdoor Recreation. Information on magnetic computer tape.

The physical inventory and financial data collected during the study are used to develop and exercise the supply model.

Chapter 2

MODEL OF RECREATION SUPPLY

Most models or concepts are an expansion of some formal or informal definition that a researcher has formulated about a segment of the real world. In this study the segment of the area of concern is forest-based outdoor recreation, and is defined as a definite set or a definitive package of recreation activities which take place in a forest environment. The above definition is both simple and general, containing social, inventory, and environmental aspects which need explanation.

The setting or environment to which this model pertains is forest land. Within this setting are found the social sector within which production and consumption activities take place, and the inventory sector which is concerned with the numeration of existing and planned recreation facilities. Production, consumption and inventory of the recreation packages comprise the supply model (Figure 1).

Nature of The Resource Base

To better understand the environmental make up of forest land it would be beneficial to look at the percentage of acreage found in each of the six Bureau of Outdoor Recreation land classifications for the North Central States (Table 1). Approximately 91 percent of the total acreage in the ownerships of concern fell into the third classification, Natural Environment Areas, another 5.5 percent fell into Primitive Areas. Therefore over 96 percent of the acreage were lands of attractive natural settings or lands in their natural or wild condition. The ordering of the six land classifications in this study corresponds to the ordering found in a recent study for the Public Land Law Review Commission, concerning all forest land in the United States, (Manthy, and James, 1969).

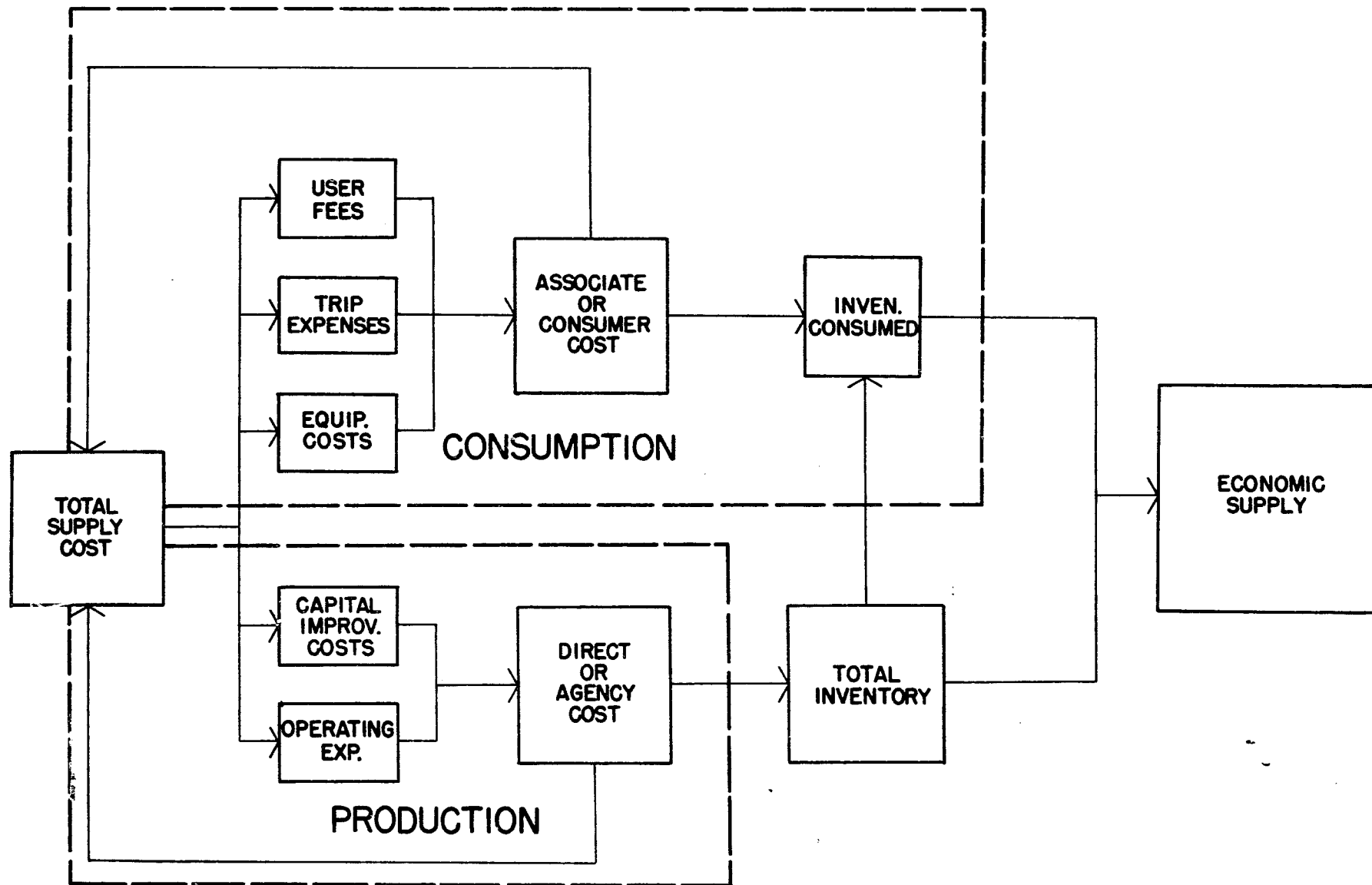


Figure 1. Outdoor Recreation Supply Model

Table 1 Percent of total land acreage in each Bureau of Outdoor Recreation land classification for public lands in the North Central Region, 1964

BOR Class	Percent of total acreage
I ^{a/}	.05
II ^{b/}	3.20
III ^{c/}	90.90
IV ^{d/}	.30
V ^{e/}	5.50
VI ^{f/}	.05

a/ High density recreation area. Intensively developed and managed for mass use.

b/ General outdoor recreation area. It is subjected to substantial development for a wide variety of recreation uses. Generally less intensive facility development than Class I.

c/ Natural environment area. Attractive natural setting. The area is suitable for recreation in a natural environment and there may be other compatible uses.

d/ Unique natural area. Area of outstanding scenic splendor, natural wonder, or scientifically important.

e/ Primitive area. Undisturbed roadless area, characterized by natural, wild conditions, including "wilderness areas".

f/ Historic and cultural sites. Sites of major historic or cultural significance, either local, regional, or national.

Source: Bureau of Outdoor Recreation Survey, 1964, unpublished data.

Land Features

To better understand the composition of the forest environment it would be wise to find the important land features found on the majority of ownerships characterizing their holding as forest land. Question 18 of the 1964 Bureau of Outdoor Recreation questionnaire was utilized to obtain this information (Appendix I). A check was made of all ownerships to see what they listed as the major features of forest land. Table 2 presents the results of this tabulation.

Table 2 Land features classified as important by public forest ownerships, in the North Central Region, 1964

Features	Ownerships Listing Features
	(Percent)
Rivers & Streams	20.2
Flora	19.2
Fauna	18.7
Lakes & Ponds	17.5
	Total 75.6

Source: Bureau of Outdoor Recreation, unpublished data, 1964.

Both Table 1 and Table 2 show that outdoor recreation lands, managed by regional public agencies are principally in natural settings and are usually found some distance from urban areas. Rural lands having trees as their major flora and some form of surface water as their major physical feature characterize the acreage under consideration.

These lands are used for more than one purpose. The ownerships contain areas set aside strictly for recreation use as well as areas

managed under a multiple use principle ^{6/}. In Michigan the greatest acreage is under some form of multiple use management, 6.6 million acres in 1968. In the same year only 733,000 acres were managed exclusively for recreational use, with 69,000 mixed between the two types of management. Ranked in the order of importance by the owners interviewed in the North Central Region by the Bureau of Outdoor Recreation in 1964 (Appendix I, question 28), timber, residential, industrial, and transmission line right-of-ways are the major current non-recreational or other potential uses, and they should remain as a potential limiting factor to the expansion of recreation use of forest land.

Activities Plus Environment

A further clarification of the concept of forest-based outdoor recreation is provided by the recreation activities that take place within the forest environment. The packages of recreation activities do not take place divorced from the physical land features or the competing land uses. Certain land features are important with respect to various types of recreation use.

A cross tabulation of the five recreation use categories or "packages" and the major land feature classes identified in the 1964 Bureau of Outdoor Recreation survey (Appendix I) shows that lakes and ponds, and rivers and streams are by far the most important land feature associated with outdoor recreation on forest land.

A similar tabulation was made for the packages and the other potential uses to show the connection between the individual recreation

^{6/} Michigan's Forestry Division and the U.S. Forest Service are multiple use managers. U.S. Park Service and Michigan's Parks Division are recreation use management agencies. County and local agencies are mixed multiple use and recreation use managers.

packages and the potential non-recreation uses. This tabulation comprises the other potential uses which the local land managers felt were important. The results of the tabulation are given below.

<u>Recreation Package</u>	<u>Other Potential Uses</u>
Picnicking	a. Timber b. Residential c. Industrial
Driving & Sightseeing	a. Timber b. Residential c. Transmission Line Right of Way
Hunting	a. Timber b. Residential c. Industrial
Fishing	a. Timber b. Residential c. Industrial
Camping	a. Timber b. Residential c. Transmission Line Right of Way and Industrial

Timber is by far the most important actual other or potential other use on those areas now providing the fine recreation packages. The other two uses are second and third in importance. Timber, as listed by local managers, is by far the most important actual or potential use of acreage now developed or considered for recreational development on the ownerships dealt with in this study.

Supply Model

The supply model developed in this study deals with the production, consumption and inventory of the packages or sets of recreation

activities which occur in the forest environment described above. For our purposes the model pertains only to publically provided outdoor recreation facilities.

Public agencies produce most of the outdoor recreation opportunities consumed by households in Michigan. Seventy percent of the recreation facilities were on public lands and 40 percent of the forest land was under public ownership in 1968 ^{7/}.

Recreation goods are produced and consumed in the same units. In our case the product produced and consumed is a recreation experience. A production unit and a consumption unit consist of one visitor day for the good produced or consumed regardless of the recreation experience. Therefore production and consumption will both be measured in units of one visitor day.

Production

Public agencies incur production costs which include land acquisition and facility construction collectively known as capital improvement expenditures plus the maintenance and other operating costs collectively called operating expenditures. The total cost of capital improvements plus operating expenditures will be called "direct cost" throughout this paper.

Direct cost will be measured in units of the cost to the agency for providing one recreation day to a consuming household, and the dollar value represents the amount that must be charged to each participating household in order for an agency to just meet its expenses.

^{7/} Information obtained from the data gathered at interviews with the individual public agencies.

Consumption

The consumer of outdoor recreation facilities as well as the public agency bears a portion of the supply cost in order to participate in or consume available recreation opportunities. He must travel to the recreation site and possess the equipment necessary to utilize the facilities. Supply is only completed when the consumer can utilize the commodity.

Most commodities are transported to or near the place of consumption. Outdoor recreation is a unique good because it is stationary. The consuming unit, the household, must go to the site of production to consume the product. Utilization can only take place if the consumer can move from his place of residency to the recreation site with the equipment necessary to consume the recreation experience. Therefore the cost of participation puts limits on who can participate and who cannot. The concept of associate cost shows outdoor recreation to be a publicly provided good which costs different groups different amounts to consume.

The idea of including the cost of consumption as a factor in supply is not a normal practice in economics. It is done in this study for three reasons. First, the goods in question are publicly produced, therefore forcing the producers (public agencies) to consider social well-being, namely the welfare of the public. Second, as stated previously, recreation goods are unique in that they must be consumed at the production site and the household, not the agency, is responsible for paying the cost of consuming the available recreation opportunities. Third, consumers' costs for outdoor recreation are usually high relative to other commodities.

The following variables included in consumption cost will collectively be called "associate cost" through the remainder of this paper: user fees, equipment costs, and trip expenditures ^{8/}.

Some of these variables are traditionally thought of as demand variables.

The economic principle of identity summarizes the difficulty. Identity problems arise when exogenous variables are really endogenous and when they are hard to separate into those belonging to different mathematical functions. Supply and demand are both functions of price and quantity. In our case price and quantity are difficult or impossible to separate into those belonging to supply and those belonging to demand. The analysis in the following chapters recognizes that an identity problem exists and that some aspects of demand are inherent in the study. User fees, equipment costs and trip expenditure will be treated as supply variables.

User fees are charges for use of a campsite or entrance to a park or use of other facilities. They are paid at the time of or just prior to consumption and are usually flat fees per family day use.

Equipment costs are the dollars spent on equipment which the household needs in order to use the facilities or to consume the recreation experience. The average dollar value of the average amount of equipment used by the average size camping family for the different activities families participate in is the cost of major concern in this study. The lump sum dollar value of the equipment is reduced to a cost per day of use by depreciating the equipment over its average

^{8/} Trip expenditure includes food, gas and oil, and other services.

life in years to get a cost per year. The yearly figure is then depreciated further by the average number of days the equipment is used per year.

Equipment costs will also be viewed in the light of the dollar expenditure needed to obtain the minimum amount of equipment necessary to become a participant. The expenditures outlined above are for average amounts of equipment. The minimum amount of equipment is the absolute minimum needed to participate in the recreation activity. It includes the essentials which must be purchased by a non demander in order for him to become an effective demander. The dollar value of this minimum amount of equipment will be known as the "threshold cost" in this study.

The average equipment cost in reality represents the dollars spent by the average household now consuming recreation goods, while the threshold cost represents the least one must spend to become a participant. As such it represents the initiation fee for the non participants and will be used in the comparison of consumers and non consumers. An agency's decision to construct a facility will force the non consumer to initially spend (threshold cost) a particular sum of money if he desires to use that facility.

The social and welfare implications of the agency's decision can be seen by reviewing the threshold cost. Once a recreation good is provided by an agency it will cost one group less to use or consume it than another group. Therefore, once a recreation good is supplied to one person it is not a free good to all other members of society, as a recent study suggests (Cicchetti, Senaca and Davidson 1970).

Trip expenditures include the costs of transportation, food, and lodging. Transportation costs consist of gas, oil, and repairs bought in the consumer's home area, in transit and in the local community where the recreation site is located. Food is also purchased at home and at the recreation site. Lodging can be purchased in either location, but generally is purchased at or near the recreation site.

No matter where the money is spent, the total dollar value of expenditures is considered in the total associate cost. However, local governments and state agencies are interested in the impact on the local economy of expenditures by recreationists. Therefore the amount of each trip expenditure variable which is spent in the local community will be looked at together for their effect on the economy of that community.

Thus far this discussion has centered on the production and consumption sectors of the model. The activities actually produced and consumed, and an enumeration of the facilities connected with each activity have not as yet been discussed in detail, but must be at this point in order to complete the development of the model.

Inventory

The family or household seeking an outdoor recreation experience goes to a recreation area in order to participate in one primary activity but they also experience other activities. The primary activity plus a host of other activities comprise the total recreation experience. These secondary activities are highly important to the total experience and combined with the primary activity form the product produced by the public agencies and consumed by the household.

Forest lands provide a base for many types of activities. Each

major type has its own unique set of associated or secondary activities, therefore providing a different recreation experience. To better understand what comprises this experience one must identify the important recreation packages found on forest land.

In 1964 the Bureau of Outdoor Recreation undertook a questionnaire survey of all recreation facilities found on public ownerships. Question 19 in Appendix I gives 29 activities found in all types of outdoor recreation settings. A tabulation was made of all ownerships listing themselves as having land characterized by woodland or forest features (Appendix I, question 16g). A check of question 19 also showed which of the 29 activities were of primary importance. At the same time a check was made of the secondary activities associated with each primary activity. This cross classification and tabulation made it possible to identify the primary activities and their corresponding set of secondary activities. As a result five packages or sets of primary plus secondary activities stand out as characterizing the goods and services agencies produce and households consume on forest land:

Primary Activity (Package Name)	Secondary Activities
1. Picnicking	Driving & Sightseeing Hiking & Walking Swimming Fishing
2. Driving & Sightseeing	Picnicking
3. Hunting (small-game, big-game & waterfowl)	Camping
4. Fishing (warm & cold water)	Camping
5. Camping	Picnicking

These five packages are not only the set of activities mentioned in the definition of forest-based outdoor recreation but they comprise the principal commodities supplied and consumed. Where picnicking is found as a secondary activity the package does include or contain the related activities for picnicking.

Agencies require an inventory of acres and facilities as a base upon which to efficiently allocate resources for the adequate provision of the outdoor recreation activities that consumers desire. The majority of the available inventory data again comes from the Bureau of Outdoor Recreation survey. These data were updated to 1968 through personal interviews with the agencies involved.

During the process of gathering data it was found that even though the model logically presents an organized way of looking at outdoor recreation supply, recreation planners do not currently operate in the framework of this model. Public agencies involved in supplying recreation services and facilities in Michigan presently plan in terms of the primary activity, aggregating all secondary activities and looking at them as standard equipment found with the primary equipment. In addition the agencies do not separate the items within the area. They integrate all facilities: roads, beaches, campsites, trails etc... into a total unit of supply whether they comprise facilities for the primary activity or the facilities for the secondary activities.

Agencies' planning is tied to facilities and/or land area under their administration. They cannot plan for the driving and sightseeing experience because much of it takes place on the way to and from the recreation site, not on the acreage under the agency's control. In general they cannot consciously plan for the supply of the picnicking,

and driving and sightseeing packages because these packages either have no facilities connected with them or they do not take place entirely on the agency's lands.

No common denominator exists for either activity whether it is primary or secondary. Recreation planners normally consider these along with all other secondary activities as spin-offs from the principal facilities provided. And in most cases this is true. Because agencies plan in this manner, the available data are also in this form. Therefore only supply costs and inventory data are available on those packages which are consciously planned for by the agencies and for which consumers spend money to utilize. The other packages are consumed but not deliberately planned for and the consumers do not always mindfully spend money to utilize them.

At this point it should be noted that approximately 80 percent of all recreation visits are attributed to primary and secondary activities classed as day use. For the reasons stated above, many of these activities are not a part of the current analysis. However, they are an important part of the total outdoor recreation experience.

Because of these limitations camping, hunting, and fishing are the three packages consciously planned for by the agencies. They are the only packages for which financial and inventory data are readily available. Therefore the study is limited to these recreation packages.

Usefulness of Model

The concept of supply presented here is highly appropriate only when the goods are publicly produced. It will help us discover better ways to spend public funds to lower the total supply cost for that group now consuming the recreation goods produced. Hopefully the model will

not only allow the recreation planner to accomplish greater efficiency but will provide him with a better decision method which will replace the decision making techniques of the past. The model also allows a planner to see ways of lowering the threshold cost, thereby expanding the opportunity for the non-consuming public to become effective participants. He can further use the concept to evaluate trade-offs between the consumer and non-consumer.

In summary, the concept of social supply embodies the summation of direct and associate costs. As such it provides an indirect measure of public welfare and is appropriate and relevant to use in judging the merits of a public program of recreation supply. Through the balance of this paper the model will be used to evaluate the results of current and planned expenditure programs.

Forest-based outdoor recreation quite clearly involves the physical environment and the five packages of activities. As outlined and described above they define the recreation products produced and consumed. The remainder of this paper will deal with the production, consumption and inventory of these packages along with the implications and conclusions which the analysis brings to light. Inventory will be covered in the next chapter followed by production and consumption in Chapter 4. The summary and conclusions including policy implications will follow in Chapter 5.

CHAPTER 3

MICHIGAN'S OUTDOOR RECREATION FACILITIES , '

Agencies maintain a pool of data which allows them to plan for only three of the five recreation packages: camping, hunting, and fishing. Because planning is done in this manner, all inventory data and participation rates used in this study will be based on these three packages.

Michigan contains in excess of 7.3 million acres of public land devoted either exclusively or partially to outdoor recreation activities. Approximately 6.7 million of the total is divided between Federal lands and state forests with the ownership split 40-60 respectively. Within this large acreage there are a variety of recreation facilities, the most numerous of which is the campsite.

Camping

Camping facilities range from a modern campground specially designed for recreation vehicles to the primitive campground designed for use by tent campers. As a general rule, the type of facilities found in Michigan campgrounds correspond to the agency providing them. State parks provide modern camping facilities while state forests provide primitive facilities.

The physical improvements usually found with camping sites include roads, toilets, electricity, beaches, boat launching site, trails, campsites, parking areas and water pumps. Not all of these items are found in every campground; boat launching sites, trails,

beaches, electricity, and parking areas are optional in the sense that they are not always found on developed sites. In modern campgrounds located near natural bodies of water all of these amenities are available.

Inventory

The agencies vary in the number and type of facilities they provide on developed areas. The rate of increase in the construction of campsites also shows a marked difference between agencies in Michigan over the 1964-68 period (Table 3).

Table 3. Michigan public agencies providing recreation facilities, by total acreage and number of campsites, 1964 and 1968

<u>Item</u>	<u>Total acreage in ownership 1968</u>	<u>Number of Campsites</u>		<u>Percent Increase 1964-68</u>
		1964	1968	
Federal ^{a/}	2,889,362	1,458	1,857	27.4
State parks ^{b/}	194,038	10,611	13,394	26.2
State forests ^{a/}	3,751,816	1,500	2,360	57.3
State game ^{a/}	498,702	12	12	
County ^{c/}	49,936	3,557	5,484	54.2
Local ^{c/}	19,824	1,200	1,564	30.3
Total	7,403,678	18,338	24,671	34.5

^{a/} Primitive Campgrounds

^{b/} Modern Campgrounds

^{c/} Mixed Primitive and Modern Campgrounds

Sources: Data for county and local agencies from, Bloemendaal, Dirk C., Michigan Pictorial Campground Guide, 1969. All other data from the unpublished reports of the respective agencies.

The data for each agency in Table 3 are aggregated. As such, they have lost much of their meaning. The meaning and implications that can be drawn from less aggregated figures will help in understanding the role of individual agencies as suppliers of camping.

The two largest land administering agencies in Michigan are the United States Forest Service and the Forestry Division of the Michigan Department of Natural Resources^{9/}. These two institutions control over 90 percent of the total acreage available for public recreation, and all of it is in the Upper Peninsula or the Northern Lower Peninsula. The only agencies providing camping in close proximity to the population centers in the Southern Lower Peninsula are local and county agencies and the Parks Division of the Michigan Department of Natural Resources. The Parks Division is the single largest supplier of camping, 55 percent of the facilities in the state, and the only major supplier near population centers. In 1968 they had slightly over 34 percent of their campsites in the southern part of Michigan. Local and county agencies controlled just under 29 percent of the campsite in Michigan in 1968 and approximately 28 percent of these were also in the southern part of Michigan.

The expansion program for state parks indicates a changing emphasis in the location of camping facilities. Figure 2 shows the number of state park campsites found in the three regions of the state for the years 1964, 1968 and projection for 1975. Region I is the Upper Peninsula; Region II, the Northern Lower Peninsula and Region III, the Southern Lower Peninsula (Figure 3).

^{9/} Michigan Department of Natural Resources was formally known as the Michigan Department of Conservation. Both names are used throughout this paper.

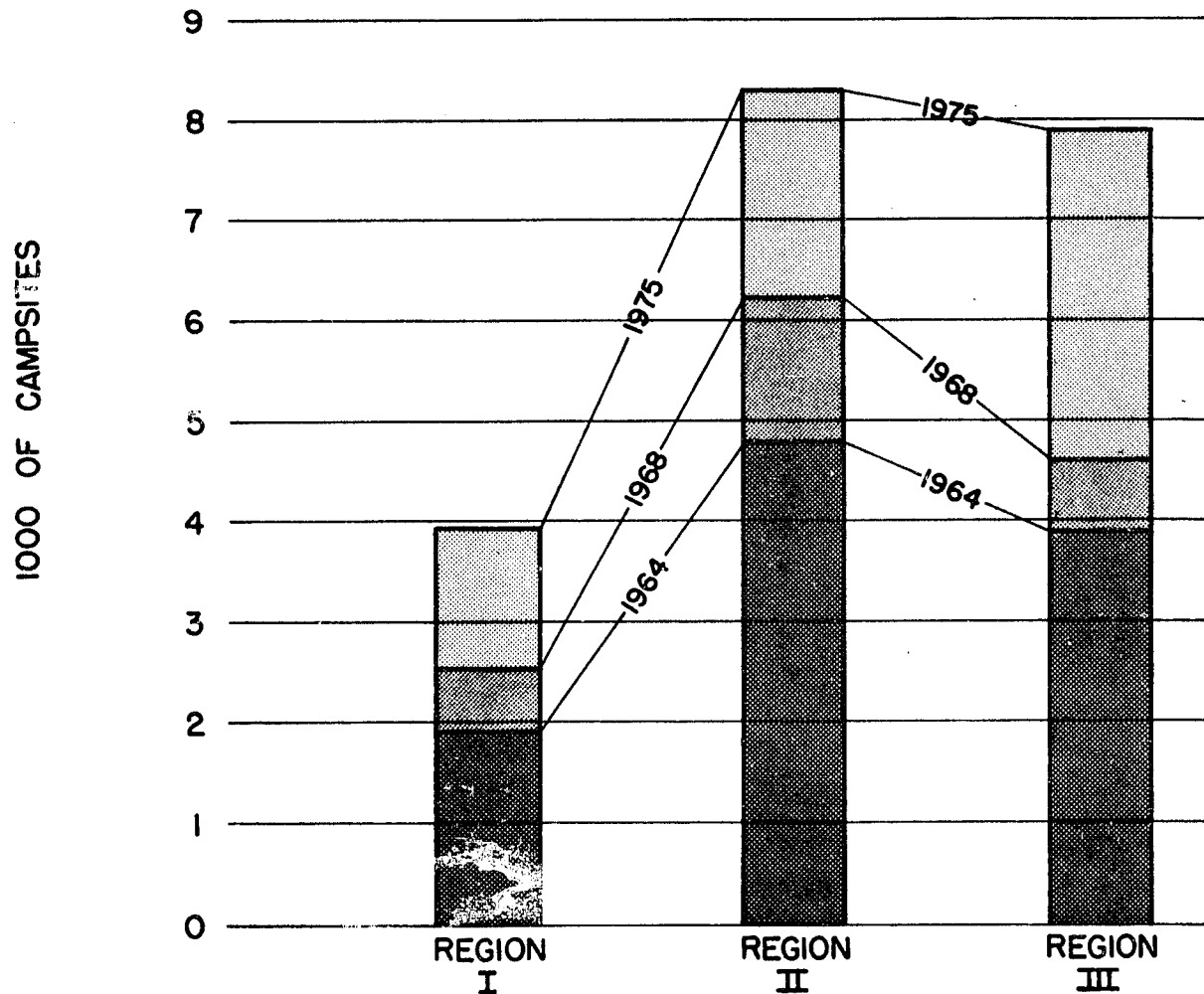


Figure 2. Number of state park campsites in the three regions of Michigan in 1964, 1968, and projected to 1975

Sources: 1964 and 1968 data from the unpublished records of the Parks Division of the Department of Natural Resources, State of Michigan. 1975 data from, Recreation Resources Planning Division, "Michigan Outdoor Recreation Plan Preliminary Draft", March 1, 1967.

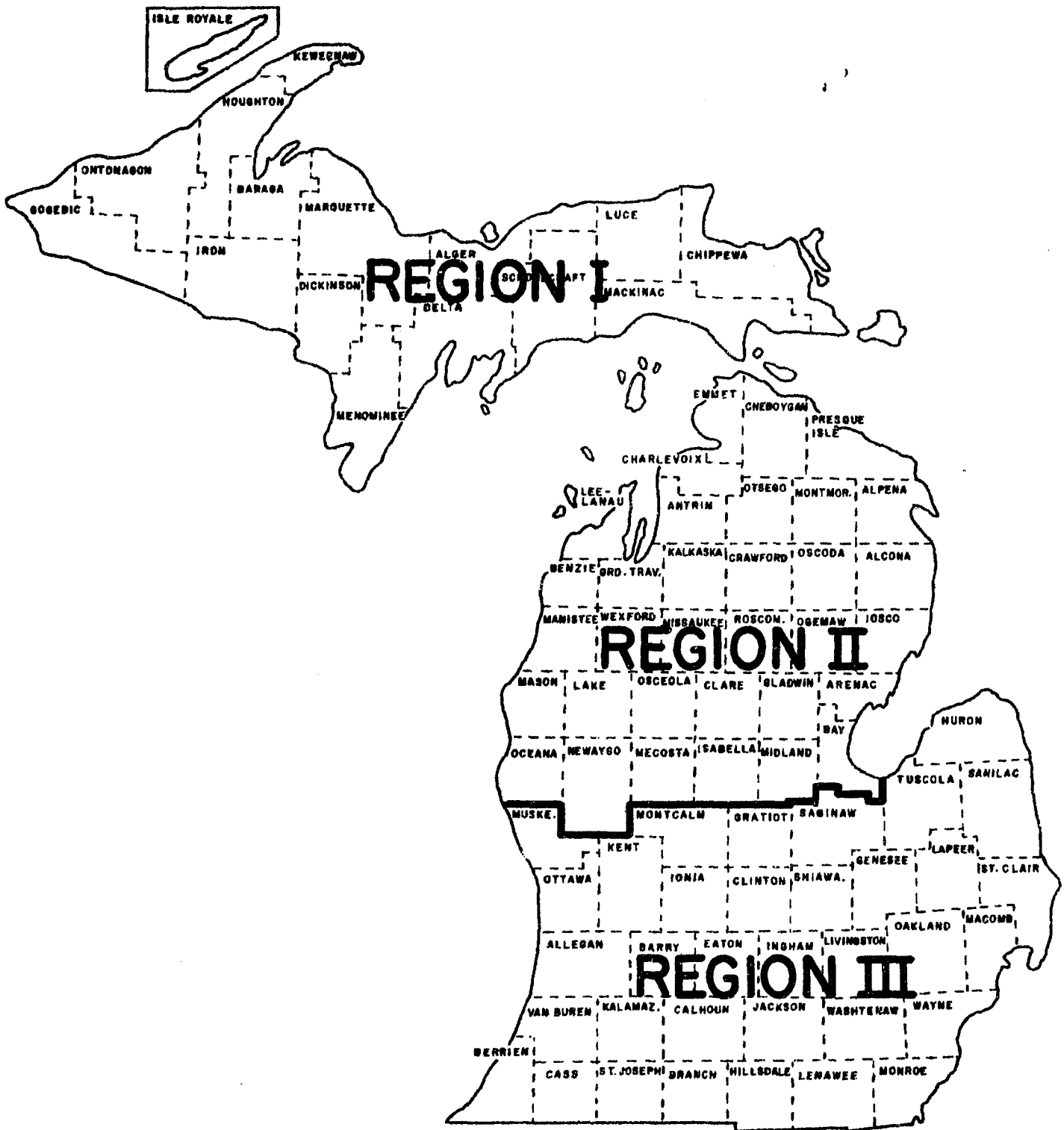


Figure 3. Michigan map showing Regions I, II, and III

In Figure 2 we see that Region I maintained its relative share of the campsites for the state while Region III is projected to increase from 36.7 to 39.1 percent of the total between 1964 and 1975 at the expense of Region II. This shift shows a definite change in emphasis from rural to urban areas.

Also a \$100 million outdoor recreation development bonding issue passed by Michigan voters in 1968 will lead even further in this direction. Approximately 70 percent of the bonding money will be directed to developments which are located within a one-half hour driving time from urban centers. This will put much more emphasis on the urban centers at the expense of rural recreation areas. The new direction appears to be a significant policy change for state agencies, as will be discussed later.

Projections

The 1964 and 1968 data given in Table 3 are inventories of actual facilities. The 1975 figures show what the agencies plan to have available if expected funding is forthcoming. The basis of the 1975 figures are planning documents describing what facilities the agencies feel will be of greatest need.

Most agencies have written plans which revolve around the campground as the planning unit. Roads, toilets, beaches, trails, campsites, boat launching sites, picnic areas and parking lots are grouped together and called a campground. As a consequence agencies collect and maintain the majority of their data in an aggregate manner.

Several authors have discussed reasons for the above approach to planning. The camper is easy to study and inventory because he is trapped in one location with equipment that betrays his purpose (Crapo,

Chubb, 1969; Swanson, et al. 1969). Consumption of the camping package is easily confined within the physical boundaries of the planning agency's ownership. Activity packages such as driving and sightseeing, and picnicking take place only partially on the land-holding of one agency therefore making planning difficult. Public recreation planners view activities that do not take place entirely on their ownerships as secondary or supplemental to their planning and supply functions. It is for these reasons that inventories of camping facilities constitute the bulk of available data on recreation use of forest lands.

Three estimates were made in projecting the inventories to 1980. The first or medium estimate is a continuation of the past growth rate for the individual agencies. Federal agencies added about 100 campsites per year to their inventory between 1964 and 1968, and they plan to increase their inventory 60 campsites per year through 1975. This latter rate was used to project the medium estimate to 1980. State park campsites increased at a rate of 698 per year between 1964 and 1968, and are projected to increase at a rate of 962 per year to 1975. Continuing this latter rate of growth to 1980 provides the medium estimate. State forest campsites increased at an annual rate of 215 between 1964 and 1968. They are projected to increase at a rate of 308 annually to 1975. This rate is again used to get the medium 1980 projection. County and local agencies' campsites increased at a rate of 573 per year between 1964 and 1968, and are projected to sustain this increase to 1975. The medium 1980 estimate is a continuation of these growth rates and the assumption is made that it represents the most

likely results to occur by 1980.

The second and third estimates are obtained through a 10 percent increase and decrease in the rates used to obtain the medium trend line for the period 1968 to 1980^{10/}. This will give us a high and low estimate for 1975 as well as 1980. These two estimates give a range of projected values around the medium trend line. The middle value is considered the most likely to occur, while the high and low values indicate the range within which the 1980 outcome will most likely fall.

Table 4 gives medium projected data by agency for 1975 and the high, medium and low estimate for 1980 along with the inventory data previously given in Table 3. Table 4 shows a large projected increase in the number of campsites provided by the Parks Division between 1964 and 1980. This agency is responsible for over one-half of the camping facilities in Michigan. Because state parks control a large portion of the total campgrounds and their numbers are projected to increase sharply, a proportional increase is seen in the total available facilities for the entire state.

The projections would indicate that not only are we going to see a rapid increase in camping facilities in Michigan, but the largest share will be modern campgrounds in the state park system. The Parks Division is placing more emphasis in southern Michigan, therefore a large percentage of the current facilities and proposed construction are and will be located close to large population centers.

^{10/} 10 percent was chosen because it represented what the author felt was an adequate band within which the actual 1980 outcome would most likely occur.

Table 4. Current and projected numbers of public agency provided campsites in Michigan 1964, 1968 and projected to 1975 and 1980

Item	Campsite Inventory		Projections			
	1964	1968	1975	1980		
				Low	Med.	High
Federal	1,458	1,857	2,268	2,540	2,570	2,600
State parks	10,611	13,394	20,130	24,460	24,940	25,420
State forests	1,500	2,360	4,519	5,900	6,060	6,210
County & local	4,757	7,048	11,060	13,640	13,930	14,210
Others	12	12	12	--	--	--
Total	18,328	24,671	37,989	46,540	47,500	48,440

Sources: 1975 data from, Recreation Resources Planning Division--
 "Michigan Outdoor Recreation Plan Preliminary Draft", March 1,
 1967. All other data from the unpublished records of the U.S.
 Department of Interior, Bureau of Outdoor Recreation, and the
 Parks, Forestry, and Recreation Resources Planning Divisions
 of the State of Michigan.

Because all the amenities found in a campground are grouped together as one unit, the number of campsites is a relevant unit of measure. Planners should recognize that an undefined functional relationship exists between the number of campsites and the amount of other amenities they provide. It is assumed that a similar relationship will continue through the 1980's.

Hunting and Fishing

The hunting and fishing packages both have camping as an associated or secondary activity, but the primary activities themselves do not require physical facilities in order for consumption to take place. Since camping is secondary to the experience, both packages are considered extensive land users, with few facilities necessary to capture the recreation experience.

The availability of hunting and fishing opportunities, therefore, does not depend on physical facilities but on the availability of undeveloped rural land covered with some form of natural vegetation. The majority of the land controlled by public agencies in Michigan is undeveloped rural land suitable for hunting and/or fishing.

The public agencies that control the majority of publicly-owned acreage and/or who's sole mission is to provide these activities are also the ones most active as land purchasers. Table 5 shows the change in land holdings by agency in Michigan between the years 1964 and 1968, and also the per cent increase in acreage over this period.

The acre, however, is not a good unit to measure the importance and impact of hunting and fishing in Michigan. The consumer and his rate of participation measures this impact much better.

Inventory

Hunting is an activity in which participants drive one another apart. As such, it uses the forest land extensively rather than intensively. For the above reasons it was hypothesized that a saturation point can be reached for participation in hunting (Swanson et al., 1969). This hypothesis suggests stable or slowly rising numbers of

Table 5. Acreage acquired by public agencies providing forest-based outdoor recreation in Michigan, 1964 and 1968

Item	Acreage		Percent increase 1964-1968
	1964	1968	
Federal	2,874,902	2,889,362	.51
State parks	190,269	194,038	1.98
State forests	3,362,341	3,751,816	11.58
County and local	62,392	69,760	11.80
State game	<u>393,216</u>	<u>498,702</u>	26.83
Total	6,883,120	7,403,678	

Sources: 1964 data for county and Federal agencies from unpublished reports of the Bureau of Outdoor Recreation. All other data from unpublished reports of the respective agencies.

licensed hunters as a sign that the saturation level has been reached. Another indication appears when the population grows at a faster rate than the rate of increase in the numbers of hunters or fishermen. The implicit assumption here is that the declining or stable rate of participation is due to a saturation point or reaching the carrying capacity of the land for hunters. Other possible reasons for hunting stabilization include changes in tastes, increasing urbanization, declining or stable deer herd size, economic conditions, and the possibility that hunting may be an inferior good, popular among low income groups which are becoming relatively smaller. Regardless of the mix of interacting factors causing stabilization, the saturation point will be used to measure current and project future participation rates.

In a 1969 study done for the Public Land Law Review Commission Swanson et al. claim that the East North Central States, including Michigan have experienced a stabilization in both the number of hunters and fishermen. The study goes on to say that although fishing is rapidly accelerating in popularity nationally, some degree of saturation under existing conditions has already been reached in the inland waters in this region. This seems to be true even though fishermen are less reliant on 'elbow room' than hunters.

The above indicates that not only the same factors influence hunting and fishing, but the same trends are seen in both activities.

The broad classes of hunting and fishing can be broken down into the resident small game, gun deer, archery deer and fishing license holders. Participation rates for these classes are given in

Table 6. These rates are obtained by dividing the number of license holders by the total Michigan population in hundreds. A trend can be established by comparing the rates for the years 1958-68.

Table 6. Number of participants per hundred of population by type of hunting, and fishing in Michigan for 1958 through 1968

Year	Small game	Gun deer	Archery deer	Fisherman
1958	9.07	5.95	.46	10.93
1959	8.14	5.92	.47	9.74
1960	8.21	5.77	.42	9.61
1961	7.90	5.31	.37	9.37
1962	8.01	5.76	.39	9.07
1963	7.62	6.30	.46	8.85
1964	7.73	6.76	.51	8.64
1965	7.53	7.11	.58	8.68
1966	7.51	6.61	.56	8.75
1967	6.86	6.57	.62	8.94
1968	6.58	6.97	.63	9.17

Sources: Michigan Department of Conservation--Biennial Reports, 1964, 1966, 1968.

Table 6 shows that the ratios for small game and gun deer have fluctuated over the 11 year period, indicating a trend upward for gun deer and downward for small game. For archery deer the participation rate has risen slowly and steadily over the last 8 years while for fishing it declined and then rose steadily.

The data for small game and gun deer hunting indicate that participation has leveled off and is currently fluctuating within a range of 6 and 7.5 hunters per 100 population. Archery deer hunting appears to be on the rise but slowly, indicating that a saturation point has not

been reached.

The data presented in Table 6 show that the number of licensed fishermen declined and bottomed out in 1964-1965, then rose steadily thereafter. The decline can be partially explained in terms of two factors. First, the Great Lakes had been experiencing a declining population of sports fish due to sea lamprey problems and a replacement of their numbers by undesirable fish species. Second, at the same time the inland waters were becoming saturated with fishermen, water skiers, and swimmers.

From these reasons it appears that the rise in the number of licensed fishermen after 1965 was mainly due to the introduction of the coho salmon to Lake Michigan which renewed interest in Great Lakes fishing but also revived interest in some of the inland waterways used by the salmon as spawning grounds. This not only brought new people into the ranks as participants but also caused many to substitute coho fishing for inland lake fishing. Out of necessity, these effects are presented in general terms, because no information is available which indicates specific cause and effect relationships between the different events. However, the rise in participation did follow closely the initiation of the coho salmon program in Michigan.

The increase in total participation triggered by the coho salmon should continue, but at a progressively slower rate until it levels off by 1980^{11/}.

^{11/} Information obtained from personal interviews with Paul Ellefson, Economist for Recreation Resource Planning Division, Department of Natural Resources, State of Michigan.

The ratios expressed in Table 6 show only the number of participants per 100 population. If these ratio stay constant over time while the population increases the absolute number of participants will increase. Also the ratio could decline while the absolute number of participants increase. The above is possible only if population increases faster than the increase in licensed hunters or fishermen. If the absolute number does increase the agencies will feel the pressure on land and water resources, which may make land acquisition a desirable policy. Because of the lack of a cause and effect, relationship between man land ratios and participation rates, it is not deemed valid to say that if the absolute number of participants increases land acquisition is desirable. Table 7 shows the population levels and the corresponding number of licensed participants in hunting and fishing.

Projections

Two of the four types of hunting and fishing in Table 7 show definite signs of an increase in participation: fishing and archery deer hunting. Since 1964, small game hunting shows a decline while gun deer shows an up and down movement.

Utilizing the past trends and considering population increases, both small game and gun deer hunting should maintain a level of participation of between 550-650 thousand licensed small game and gun deer hunters through 1980. Both archery deer and fishing show signs of increases in participation rates as well as the number of licensed holders. This assumes that the environmental conditions, tastes, social institutions and agency planning surrounding these activities

Table 7. Population and number of resident licensed hunters and fishermen in Michigan for the years 1958 through 1968 (Thousands)

Years	Michigan Population	No. of license holders			
		Small game	Gun deer	Archery deer	Fishermen
1958	7,667	695.25	456.03	35.50	837.88
1959	7,767	632.08	459.67	36.67	756.13
1960	7,833	642.93	451.94	32.68	752.81
1961	7,885	623.07	418.46	29.44	739.06
1962	7,923	634.52	457.60	31.04	718.42
1963	8,036	612.56	506.58	37.26	711.33
1964	8,161	630.69	552.01	41.76	705.21
1965	8,334	627.62	592.66	47.98	723.19
1966	8,496	637.93	561.40	47.99	743.49
1967	8,608	590.26	565.47	53.03	769.20
1968	8,739	575.01	609.12	59.04	801.21

Sources: Population data from, Bureau of the Census. Statistical abstracts of the United States, 1968, and Bureau of Business and Economics Research, Michigan Statistical Abstracts Seventh Edition, Michigan State University, 1968. Number of licensed holders from, Michigan Department of Conservation Biennial Reports, 1964, 1966, 1968.

will remain relatively stable over the projection period. Fishing therefore should go from a ratio of 9.17 per 100 of population in 1968 to about 10.75 by 1975 and on up to 11.00 by 1980. This ratio should increase at a decreasing rate until it levels off at about 11.00 in 1980^{12/}. The ratio for archery deer hunting should increase but at a much slower rate. It will go from .63 in 1968 to .85 by 1975 and on up to approximately 1.00 by 1980. This ratio rises constantly over this period and does not show signs of stabilizing by 1980.

These ratio changes represent an increase in the number of licensed fishermen from 801,214 in 1968 to 974,400 by 1975 on up to 1,092,100 by 1980. For archery deer hunters their numbers will increase from 59,039 in 1968 to 76,300 by 1975 on up to 98,300 by 1980.

Because no radical change in tastes or family income is anticipated through 1980, participation rates for all forms of hunting and fishing are assumed to stand as projected.

^{12/}

Information from conversations with staff of Recreation Resource Planning Division, Department of Natural Resources, State of Michigan.

CHAPTER 4

ECONOMIC SUPPLY AND THE CONSUMER

An economist looks at supply in terms of quantities of goods produced at varying prices. Normally he deals with private goods and as such only the costs of production plus distribution are considered as influencing prices and therefore supply. For public goods such as outdoor recreation facilities the consuming household becomes a relevant factor influencing supply. For this type of public good the cost of consumption should be added to production and distribution costs to obtain the supply cost.

Chapter 2 outlined the dual cost of providing outdoor recreation goods for public consumption. Government agencies spend money to build and operate recreation facilities. These costs when combined are known as "direct cost" throughout this study. Before goods or services are supplied the individual must be in a position to consume them, which means that he or she must incur costs in order for consumption to take place. These consumer costs collectively are known as "associate cost" throughout this study.

All costs, both direct and associate, are measured as average expenditures rather than marginal. The state of the arts has not developed to a point where production functions and marginal costs or returns are readily available.

This chapter follows the structure of Chapter 3. The camping package will be covered first, followed by hunting and fishing.

Camping

Direct Cost

To the agency the direct cost of a campsite is the operating plus capital improvement expenditures incurred in managing an area for the camping activity. Capital improvement expenditures consist of land acquisition plus the construction costs. Tables 3 and 5 show that agencies providing the most camping also purchase the least amount of land. Most of the new construction undertaken in the past ten years was done as an expansion of existing campgrounds on acreage already owned. The bulk of public land came to the agencies through grants and tax reversion. Only in isolated cases did public agencies buy additional acreage with the express purpose of immediate development into campgrounds.

Taking into account the guide lines of the recent \$100 million bonding program which earmarks \$70 million for use by state and local government agencies to build recreation facilities within one half hours drive of urban centers, there presently seems to be no great move in the direction of land acquisition.

Much of the projected development in camping facilities will be undertaken by the Department of Natural Resource's Parks Division in Southern Michigan where little public land is presently owned. Therefore to meet future expansion land acquisition will be required and the cost should be added to direct cost.

The capital improvement and operating expenditures for primitive and modern camping facilities were collected and tabulated separately. In depreciating the capital assets of both campgrounds it is assumed that the average life of the capital goods excluding land is twenty years. The direct costs for these two types of camping facilities are given in Table 8.

Table 8. Capital improvement and average annual operating expenditures associated with the provision of camping facilities by public agencies in Michigan, 1968^{a/}

Item	Campgrounds	
	Modern	Primitive
Operating expenditures ^{b/}	\$424.25	\$108.90
Capital improvement ^{b/}	<u>89.35</u>	<u>27.50</u>
Total direct cost ^{b/}	\$513.60	\$136.40
Direct cost/visitor day ^{c/}	\$ 1.34	\$ 0.47

^{a/} Capital assets depreciated over 20 years.

^{b/} In units of cost per campsite per year.

^{c/} Direct cost/visitor day = $\frac{\text{total direct cost per campsite per year}}{\text{av. no. of visits per campsite type per yr.}}$

Where the: average no. of visits per campsite type per year =

$\frac{\text{total visitation per campground type per year}}{\text{no. of campsites in each year}}$; see Appendix III.

Sources: Capital improvement data from unpublished reports of the Engineering Division, Michigan Department of Natural Resources, State of Michigan. Operating expenditures from, Michigan Department of Conservation 24th Biennial Report, 1968.

The costs are average expenditures for state agencies providing the primitive and/or modern facilities exclusive of the administrative cost of the line personnel in the head office of the agency. It is assumed that federal, county and local agencies in Michigan providing similar facilities will incur similar costs.

An agency spends approximately two and one half times more to provide a household with one day of modern camping than it does to provide one day of primitive camping to the same household. But the modern campsite is used one third more often than a primitive site (Department of Conservation, 1968). This indicates that the public is interested more in modern facilities which seems to justify the extra expenditure on camping facilities.

The direct cost given in Table 8 indicates that agencies need to charge \$1.34 and \$0.47 per household per day for modern and primitive campsites respectively in order to just meet expenses. The agencies are currently charging, on the average \$1.10 per household per day to camp (Table 9). This charge is right in line with the cost of using the campsite. Therefore consumers of camping facilities are roughly paying their own way.

Associate Cost

The associate cost paid by the consumer is broken down into three main categories: user fees, equipment costs, and trip expenditures. The last category includes such things as gas, oil, lodging, and food. The portion of trip expenditures which are spent at or near the recreation facilities will also be evaluated in terms of their overall economic

Table 9. User fees charged by the public agencies in Michigan for one night of camping, 1968

Item	Fee	Visitation % of total	Weighted Fee
State Parks	1.15 ^{a/}	85	\$0.98
State Forest	0.00	9	\$0.00
Forest Service	2.00 ^{b/}	<u>6</u>	<u>\$0.12</u>
		100	\$1.10

^{a/} Annual gate pass of \$3.00 divided by 20 days use per year (La Page, 1968) equals \$0.15, when added to the \$1.00 charge for use of campsite per night equals \$1.15.

^{b/} Gate pass of \$1.00 per day in lieu of \$7.00 Golden Eagle pass, then added to \$1.00 charge for use of campsite per night equals \$2.00. The gate pass of \$1.00 per day was used because in Michigan the majority of camper's in Forest Service campgrounds do not purchase a Golden Eagle pass. The opposite is true for state park facilities.

Sources: Visitation data from respective agencies. Fees data from, Michigan State Parks and Recreation Areas, Department of Natural Resources pamphlet and Bloemedaal, Dirk C. 1969. Michigan Pictorial Campground Guide.

impact on the local area.

The user fee varies between agencies. It is \$2.00 for one day of use for campsites managed by the U. S. Forest Service and \$1.15 charge by the Parks Division of the Michigan Department of Natural Resources (Table 9). State forest camping is free, while for county and local agencies there is a mixture of both free and pay usage. On the average most camping involves a flat fee of one dollar, and this fee is considered an appropriate average for most public land camping in Michigan (Table 9).

Equipment costs are not as easily handled as the user fee. Types of equipment and their price vary widely. Also, the equipment itself varies between modern and primitive campgrounds. In order to understand what is involved in equipment cost the purchaser of equipment should be defined.

People currently counted as part of the market for the camping activity already own camping equipment. Those not considered as part of the market have not acquired the equipment due to lack of income or desire. Those not part of the market due solely to economic reasons are considered later in this study.

The purchase price of the equipment ranges from thousands down to hundreds of dollars. Within this range two equipment averages are obtained, one for recreation vehicle camping and one for tent camping. The equipment common to both types of camping are the amount of sleeping bags, stove, lamp, cots, air mattresses, cook set and ice chest that are required to outfit the average camping family in the United States. For tent camping all the above items are purchased, while for recreation

vehicle camping sleeping bags, and cook set are purchased, the other items are generally standard equipment with the vehicle.

The average camping family is larger than the average size household (3.7 members) in the United States due in large to the age class of the head of the camping household. The large majority of camping families have children under 18 years old (Shafer, 1969). The average size camping family is estimated to be 4.0 (Hendee et al. 1968; Jamsen and Ryckman, 1969).

The tent and recreation vehicle are added items depending on which type of camping is of interest. The tent is a single item while the recreation vehicle is a composite of all the types of vehicles used. The average cost of recreation vehicle equipment is obtained by weighting the averages cost of each equipment type by the percent of the total recreation vehicles which that equipment type represents. In order to get the equipment costs in units of family day use each equipment type was depreciated over a ten year period considering that the average use per year is 20 days (La Page, 1968). La Page's work is in the northeastern states but is assumed to apply in the Lake States as well. Table 10 summarizes the results of the consumer expenditures on recreation vehicles.

Based upon interviews with sales personnel of the recreation vehicle industry it was found that approximately ten percent of the use of the camper pickup truck is in camping related activities. The other ninety per cent is for daily transportation needs or other second car uses. The spokesman also pointed out that the camper, like other recreation vehicles is depreciated over a ten year period but the pickup truck is normally traded after three years of use. Therefore the truck

Table 10. Average cost for the types of recreation vehicle equipment used in modern campgrounds in the United States, 1968

Equipment	Total cost	Per cent of total recreation vehicles	Weighted total cost	Cost per year	Cost/family User Day
Travel Trailer	\$3100.00	80	\$2480.00	\$248.00 ^{b/}	\$12.40
Truck camper	1800.00	10	180.00	18.00 ^{b/}	.90
Pickup truck	250.00 ^{a/}		25.00	8.33 ^{c/}	.41
Camper trailer	1100.00	5	55.00	5.50 ^{b/}	.28
Motor home	8625.00	3	259.00	25.90 ^{b/}	1.29
Totals		98 ^{d/}	\$2999.00	\$305.73	\$15.28

^{a/} Total truck cost of \$3600.00 less \$1100.00 salvage value. Only 10 per cent of the use of the truck is allotted to recreation activities.

^{b/} Weighted cost divided by 10, the number of years equipment is depreciated.

^{c/} Weighted cost divided by 3, the number of years the average truck is held before it is sold.

^{d/} The remaining 2 per cent represents a group of other vehicles not representing a significant portion of the market and for which cost figures are not available.

Source: Columns one and two from Recreational Vehicle Institute Facts and Trends, 1969.

cost found in column one row three of Table 10 includes adjustment for the ten per cent recreation use of the truck, and the salvage value after three years of ownership. This adjusted value was then depreciated over the three year period with twenty days of recreation use per year.

Several qualifications must be made to justify the above approach of handling the truck cost. First, the principal motivating factor influencing purchase of the vehicle appears to be camping. Even though ninety per cent of the use is not for recreation, the ten per cent may completely dominate the decision to purchase. This could mean that ninety per cent of the use of the vehicle was incidental to the purpose for buying it. Because only ten per cent of the cost was included as part of the recreation price tag, no attempt was made to evaluate the other ninety per cent of non-recreation use. The bulk of this use is for the purpose of satisfying daily transportation needs that could be satisfied by other vehicles. A comparison of these several alternate means for satisfying daily transportation needs leads to opportunity cost analysis, which might suggest that a truck is a less efficient means of providing the daily transportation needs of a household. If this were true the extra cost should be attributed to recreation. In this study opportunity cost analysis was not incorporated. Therefore the truck cost was allocated only according to its percentage of use in recreation related activities.

To be consistent, some portion of the cost of the automobile's use for pulling a camping trailer or hauling a tent should be allocated to recreation use. This is not done because the per cent of auto usage

attributed to camping is relatively small when compared to the total use of the auto. The dollar value becomes even smaller when it is depreciated over the number of years the car is held considering the auto is used only 20 days of the year for camping activities. Even taking into consideration the discounted costs of the car options dealing specifically with camping (trailer hitch, heavy duty suspension etc...) the contribution to associated costs is insignificant. Unlike the truck the main purpose of purchasing an auto is to satisfy daily transportation needs. Therefore equipment expenses for the automobile are not considered in Table 10 or 11.

The associate cost for both tent and recreation vehicle camping are given in Table 11. The difference between total trip expenditures and expenditure in the local economy (\$5.72) found in this table is made up of two items. A total of \$3.11 of the difference is spent at home before the trip starts, and the remaining \$2.61 is three fourths of the total expenditure for gas, oil, service and repairs. Because we have a lack of information dealing with the percentage of travel expenditures spent at or near the recreation area it was assumed that approximately three fourths of the travel expenditures (gas, oil, and repairs) would be spent at home and on the way to the recreation area while the remainder would be spent at or near the park. Therefore \$9.64 of the daily expenditure per household is spent in the local economy and \$5.72 is spent at home or on the way.

The values given in Table 11 reflect only average expenditures. The minimum or threshold cost is lower. Tent camping comprises the cheapest form of participation in the camping activity and therefore

Table 11. Associate cost per day for the household camping in Michigan, 1968 (In dollars)

Items	Camping Equipment	
	Recreation Vehicle	Tent
Equipment ^{a/}	\$3089.00 ^{d/}	\$303.00 ^{c/}
Equip. per camper day ^{b/}	15.73	1.52
User fee ^{b/}	1.00	1.00
Total trip expenditure ^{b/}	15.36	15.36
Associate cost ^{b/}	32.09	17.88
Trip exp. in local econ.	9.64 ^{e/}	9.64 ^{e/}

^{a/} Average cost for initial investment in equipment.

^{b/} Items in units of cost per family day use. The summation of second, third, and fourth rows gives associate cost.

^{c/} Contains the average cost of tent, sleeping bags, stove, lamp, cots, air mattresses, cook set and ice chest that are purchased by the average camping family of 4.0 members.

^{d/} Contains the average cost of recreation vehicles plus sleeping bags and cook set for average camping family of 4.0 members.

^{e/} Trip expenditures are obtained by using the trends in the consumer price index to inflate the data given in Kearns, et al., 1962 to 1968 and comparing the total values with those found in Jamsen and Ryckman, 1969. Jamsen and Ryckman's paper is for fishing while Kearns et al. contains hunting, fishing and camping. The comparison back and forth after inflation allowed trip expenditure to be enumerated.

Sources: Recreation Vehicle equipment data from Table 10. .

Tent equipment cost from Sears Roebuck and Co., Catalog, Summer 1968.

Trip expenditures in local economy from Kearns, Frank W., James, Lee M., Smith, Norman F., and Ray Pfeifer, An Economic Appraisal of Michigan's State Forests, Forestry Div., Mich. Dept. of Conservation, Tech. Pub. No. 2, 1962. Total trip exp. from Jamsen G., and J. Ryckman, Participation and Socioeconomics of Salmon and Trout Fishermen in Michigan Dept. of Nat. Resources, Res. & Develop. Rept. No. 158, 1969.

contains the threshold cost. Since the threshold cost concept deals only with equipment costs, user fees and trip expenditures should be approximately the same regardless of the type of camping.

The threshold cost or purchase price for the minimum equipment necessary to outfit an average size camping family is \$214. This is \$89 less than the average given in Table 11 for those average sized camping families now owning tent equipment. The \$214 is spent on exactly the same amounts of equipment, sleeping bags, stove, cots, tent, etc., but on the lowest cost new equipment available. The threshold cost will be of major importance when the implications of present public policies are discussed in a later section of this report.

The sum of direct and associate cost comprise the total supply cost. The associate cost for recreation vehicle equipment corresponds to the direct cost for modern campgrounds and the associate cost for tent equipment corresponds to the direct cost for primitive campgrounds. It is recognized that recreation vehicle equipment is not exclusively used in modern campgrounds just as tent equipment is not always used in primitive camping areas. However, the tendency towards mutually exclusiveness is great enough to warrant their separation. Table 12 combines the direct and associate costs, for primitive and modern campgrounds, in units of cost per family day use.

The associate costs of \$32.09 and \$17.88 given in Table 12 represents total consumer expenditure for one day of participation in camping. To gain an understanding of the effect of these expenditures on the local community where the recreation site is located it is

important to know the amount and impact of the expenditure that remain in the state and the local areas.

Table 12. Total supply cost for one family camper day in Michigan in 1968

	<u>Campgrounds</u>	
	Modern	Primitive
Direct cost	\$ 1.34	\$ 0.47
Associate	<u>32.09</u>	<u>17.88</u>
Total	\$33.43	\$18.35

Researchers have found that in Michigan approximately one-half of the dollars spent on all outdoor recreation experiences leave the state (Kearns et al., 1962). This leakage may cause the overall impact of expenditures in the local community to be lessened. Generally the total direct and indirect effect of an expenditure is expressed as a multiplier. Such a multiplier for outdoor recreation expenditures has been suggested to be between 1.74 and 1.81 (Gamble, 1967, Hughes, 1970). Using the lower estimate would mean that for every dollar spent in the local economy on recreation related goods and services, it generates \$1.74 worth of additional income, above the original expenditure, for the local community. The multiplier of 1.74 applied to the \$9.64 (amount spent in the local economy by campers per visitor day, Table 11) generates \$16.77 in additional income for the local people.

Hunting and Fishing

Hunting and fishing both have similar characteristics allowing them to be analyzed together. Few man made physical facilities are necessary in order to participate in either activity, and for both the direct cost is composed of wildlife management plus the cost of game and fish law enforcement. Those public agencies who's sole mission is in the areas of fish and game management and those agencies providing or supplying most of the hunting and fishing, with the exception of Federal agencies, also are the ones acquiring the most land (Table 5, page 34).

Direct Cost

Land is the only major physical resource that the public agencies need to provide. Access roads are necessary, but in the majority of cases they are built as part of a timber harvest operation or as part of the public transportation system. Therefore, the cost of road construction is not considered in the direct cost for hunting and fishing.

Even though agencies providing hunting and fishing activities are the most active in land acquisition, the increase in holdings over the 1964-68 period is relatively small (Table 5). The absolute increase in acreage within this period for all public agencies was just over 500,000 acres which represents approximately a 7.5 per cent increase over the four year period, or less than a two per cent yearly increase. Because of this rather slow rate of increase and the fact that not all additions are purchased, acreage costs are not considered as part of either the hunting or fishing packages.

In supplying hunting and fishing, public agencies incur most of their capital improvement and operating expenditures in connection with camping and non-recreation related activities. The only major agency

expenditures attributed to hunting and fishing are law enforcement, and wildlife management. Conservation officers or game wardens and their supporting personnel are employed strictly to police and license the participants in these two activities. This of course assumes that the majority of hunting and fishing takes place on public lands where licenses are required. In the case of big game this assumption is true, but for small game, farm families hunting on their own property, plus their guests do influence participation. But the analysis is done assuming a large majority of participation is on public lands.

Law enforcement and wildlife management costs, therefore, comprise the agencies' direct cost of providing hunting and fishing opportunities. The total law enforcement and management cost was divided between hunting and fishing in proportion to the number of license holders in each activity times the average annual participation rates per licensee.

The above calculation results in the number of recreation days annually spent in the pursuit of each activity. A comparison of recreation days for hunting vs fishing provides the ratio (one-to-three) for the division of the total law enforcement and management cost between both activities.

Total participation for hunting in the East North Central States, which include Wisconsin, Illinois, Indiana, Ohio, and Michigan, in 1965 was 33.445 million recreation days with 2.563 million participants (Swanson, et al. 1969). For fishing it was 93.704 million recreation days with 5.337 million fishermen (Swanson, et al. 1969). This is a little less than a three-to-one ratio of recreation days for fishing vs hunting. This

ratio was used to appropriate the law enforcement cost between the two activities; \$0.085 for hunting per day and \$0.084 for fishing per day.

Wildlife management costs are allocated to hunting and fishing according to the agencies' mission. The Fish Division of the Department of Natural Resources is allocated to fishing, while the Forestry and Game Divisions and the U. S. Forest Service are allocated to hunting. When this is done and added to law enforcement costs the direct cost for hunting and fishing is obtained (Table 13).

Associate Cost

The consumer cost for both hunting and fishing are composed of license fees, equipment costs and trip expenditure. The cost for small game, gun deer, archery deer and fishing were collected and kept separately. The units will be cost per user day.

The license fees are \$5.10 for gun deer and archery deer, \$3.10 for small game and \$5.20 for fishing when a trout salmon stamp is purchased.

In the 1965 National Survey of Fishing and Hunting the participation figures for hunting were adjusted to eliminate the double counting of those individuals who buy a small game and a big game license (Bureau of Sports Fisheries and Wildlife, 1965). The data follows this pattern in more recent studies (Swanson et al. 1969). It is therefore appropriate to combine all three forms of hunting and consider them as one class.

The average hunter spends 13 days in the woods or field annually, while the average fisherman spends 20 days on the lakes or streams over a one year period (Swanson et al., 1969). It is appropriate to use these figures along with the number of years the equipment is to be

Table 13. Direct cost to the agencies providing the hunting and fishing packages in Michigan, 1968

	Package	
	Hunting	Fishing
User days	9,100,000	16,024,280
% of total	36.3	63.7
Law enforcement <u>a/</u>	\$ 768,674	\$ 1,348,884
Game Division <u>a/</u>	1,360,192	----
Fish Division <u>a/</u>	----	2,327,458
Forestry Division <u>a/</u>	26,810	----
National Forests <u>b/</u>	64,330	----
	<u>Total</u>	<u>Total</u>
	\$2,220,006 <u>c/</u>	\$ 3,676,342 <u>c/</u>
Cost per day use	\$ 0.24	\$ 0.23

a/ Agencies under the Michigan Department of Natural Resources.

b/ United States Forest Service.

c/ Yearly expenditures.

Sources: User days and Michigan agencies' data from, Department of Conservation. 24th Biennial Report. 1968. National Forest data from personal correspondence with John Wernham, Chief, Division of Recreation, Range and Wildlife, Milwaukee, Wisconsin.

depreciated in order to get the equipment costs in terms of user days. Table 14 gives the associate cost for hunting and fishing. Average equipment costs for hunting are the total of the average prices for weapon, boots, pants, shirt, jacket, underwear, and glove. For fishing, the equipment cost is composed of the average cost for a rod, reel, tackle, tackle box, boat and motor.

The license fees per day use in Table 14 are obtained by dividing the total yearly license fee for hunting and fishing by the average days of participation in each activity per year. In our case 13 days for hunting and 20 days for fishing. It is interesting to note that a license fee of \$0.39 for hunting and \$0.26 for fishing are higher than the direct cost of \$0.24 and \$0.23 respectively. This implies that hunters and fishermen are paying their own way with respect to consumption of these activities.

Trip expenditures for hunting and fishing were obtained from Kearns et al., and Jamsen and Ryckman. These costs represent the average daily expenditures for gas, oil, repairs, food and lodging required to participate in the hunting and fishing activities.

As with camping the direct cost plus associate cost for hunting and fishing comprise the total supply cost. These costs are found in Table 15.

A portion of the \$11.76 and \$16.89 spent by the hunter and fisherman affects the local community where the recreation experience is consumed. Again a multiplier is used to estimate the total effect.

The multiplier of 1.74 used for camping applies to all forms of outdoor recreation and therefore is appropriately used for hunting and

Table 14. Associate cost for the participant consuming the hunting and fishing packages in Michigan, 1968
(Dollars per day)

Item	Activity Package	
	Hunting	Fishing
Equipment ^{a/}	\$150.00	\$930.00 ^{b/}
Associate cost per day:		
Equipment/day use	1.15	4.65
License fee/day use	.39	.26
Trip expenditures/day	9.84	11.98
Total	\$ 11.38	\$ 16.89
Trip expenditures in the local community	6.20	7.55

^{a/} Average cost for initial investment in equipment.

^{b/} Includes boat and motor.

Sources: Equipment cost from Sears Roebuck and Co., Catalog, Summer 1968. Trip expenditures from Jamsen, G., and J. Ryckman. 1969. Participation and Socioeconomics of Salmon and Trout Fishermen in Michigan. Michigan Department of Natural Resources, Research and Development Report No. 158, and Kearns, Frank et al. 1962. An Economic appraisal of Michigan's State Forests. Forestry Division, Department of Conservation. Technical Report No. 2.

fishing (Gamble, 1967). Which again means that for every dollar spent by the hunter or fisherman \$1.74 in additional income is generated for the local community. On a daily basis this would represent \$10.79 in additional income generated by expenditures on hunting and \$13.14 in additional income from fishing.

Table 15. Total supply cost for one day of participation in hunting and fishing in Michigan, 1968

(Dollars per day)

Cost Item	Hunting	Fishing
Direct cost	\$.24	\$.23
Associate cost	<u>11.38</u>	<u>16.89</u>
	\$11.62	\$17.12

The threshold cost or purchase price for hunting is the minimum cost one would have to incur in order to purchase the necessary weapon, clothing and other items considered essential to consume the hunting experience. It represents the least one has to spend in order to obtain the like items of equipment that the average hunter now possesses. This minimum cost is approximately \$80. Fishing is somewhat different. A boat and motor are included in the items of equipment for the average fisherman, but are not necessary for the man to own in order to participate in fishing. The equipment cost for fishing of \$930 found in Table 14 can be reduced to \$53 if the boat and motor are eliminated. The \$53 represents the average expenditure on rod, reel, tackle and tackle box, while the minimum expenditure for these items or the threshold cost for fishing is

approximately \$20.

The trip expenditures for hunting and fishing include gas, oil, repairs, food and lodging purchased at home, on the way to and at the recreation area. The total of these expenditures are given in Table 14. The difference between these total trip expenditures and expenditures in the local economy is composed of what is spent at home before the trip and what is spent enroute. For hunting \$1.98 of this difference is spent at home and \$1.66, or 75 per cent of the expenditure on gas, oil and repairs is spent enroute to the recreation area (Jamsen and Ryckman, 1969; Kearns et al., 1962). For fishing \$2.41 on the average per day is spent at home, while \$2.02 is spent enroute. Therefore for hunting \$6.20 is spent near the hunting area and \$3.64 at home or on the way. The fisherman spends \$7.55 near the lake or stream and \$4.43 on the way or at home (Jamsen and Ryckman, 1969; Kearns et al., 1962). All these dollar figures are in units of cost per day use.

Price Projection for Camping, Hunting and Fishing

Up to this point all the prices given are for 1968. It is assumed that the relationship between direct and associate costs will continue to be the same through 1980. It would be much easier after making this assumption to call 1968 the base year and use the 1968 figures as the deflated 1980 costs. But it would be wise to inflate prices to 1980 in order to see what dollar expenditures will be involved by that date. This is a good exercise if only for the purpose of dramatizing the magnitude of the supply cost by 1980.

To accomplish this 1968 was set as the base year giving it an index value of 100. An investigation of past and current construction price indexes and consumer price indexes showed that prices in both categories, construction and consumption, were increasing annually at a rate of between four and five per cent respectively. Therefore it is appropriate to inflate the index by four and five per cent for both construction and consumption goods to 1980. Table 16 gives the index for various years with 1968 as its base.

Table 16 shows that by 1980 prices should be between 1.60 and 1.80 times higher than they were in 1968. Table 17 applies the index to 1968 prices and gives the results of the inflated, direct and associate costs for both types of camping, hunting and fishing.

Of the three activities camping has the highest direct and associate cost. Hunting and fishing have approximately the same direct cost but fishing is relatively more expensive to the consumer, making its associate cost higher. Socially, the total supply costs in descending order of magnitude in 1968 are approximately \$33 per family day use for recreation vehicles camping, \$18 per family day use for tent camping, \$17 per day use for fishing and \$12 per day use for hunting.

If we were to look at total dollars spent, both Michigan's public agencies and recreation consuming households spend much more for camping than either of the other two packages. To better understand what consumers and agencies face when a total package of recreation goods are supplied and consumed, it is beneficial to combine the costs of several of the individual activities. Camping and hunting, and camping and

Table 16. Construction cost and consumer price index for
selected years
(1968=100)

Year	Inflation rate	
	4%	5%
1968	100	100
1970	108	110
1975	132	141
1980	160	180

Source: Inflation rates from, Bureau of the Census,
Statistical Abstracts of the United States,
Washington, D. C.: GPO, 1968.

Table 17. Direct and associate costs in units of cost per family day use for camping, and cost per day use for hunting and fishing in Michigan, 1968 and 1980

Activity	Direct Cost			Associate Cost			Total Supply Cost		
	1968	1980		1968	1980		1968	1980	
		4% Inflation	5% Inflation		4% Inflation	5% Inflation		4% Inflation	5% Inflation
Modern Campground	\$1.34	\$2.14	\$2.41	\$32.09	\$51.35	\$59.76	\$33.43	\$53.49	\$60.17
Primitive Campground	0.47	0.75	0.85	17.88	28.61	32.18	18.35	29.36	33.03
Hunting	0.24	0.38	0.68	11.38	18.21	33.66	11.62	18.59	34.34
Fishing	0.23	0.37	0.67	16.89	27.02	48.35	17.12	27.39	49.02

fishing are packages of primary and secondary activities often consumed. The direct cost for such package combinations may be spread over several agencies; Law Enforcement and Forestry Division, but the consumer cost is all paid by the participant. To avoid double counting the highest trip expenditures of the individual package components was taken to be appropriate. In all cases camping was the component with the highest trip expenditure.

Four package combinations are given in Table 18: Modern camping plus hunting, modern camping plus fishing, primitive camping plus hunting, and primitive camping plus fishing.

Threshold costs are a little different. For the individual packages, camping has the highest cost at \$214; hunting however, is second with \$80. Fishing is last, because the boat and motor used by the average fisherman are not needed in order to become a participant. As noted earlier the main portion of the equipment cost for the average fisherman is the boat and motor, therefore the threshold cost for fishing equipment is \$20.

Primitive camping plus hunting and primitive camping plus fishing are the only package combinations with an appropriate threshold value. These are \$294 and \$234 respectively. Using the direct, associate and threshold costs, conclusion will be drawn as to the directions current policies will lead public agencies. The conclusion arrived at will be given in the latter section of the next chapter.

Table 18. Direct and associate costs for camping, hunting and fishing package combinations in Michigan, 1968

(Dollars/day use)

Cost Item	Package Combination			
	<u>Modern Camping</u>		<u>Primitive Camping</u>	
	Hunting	Fishing	Hunting	Fishing
Associate cost:				
Equipment cost	\$16.88	\$20.38	\$ 2.67	\$ 6.17
User fee	1.39	1.26	1.39	1.26
Trip expenditures	<u>15.36</u>	<u>15.36</u>	<u>15.36</u>	<u>15.36</u>
Total	33.63	37.00	19.42	22.79
Direct cost:	<u>\$ 1.58</u>	<u>\$ 1.57</u>	<u>\$ 0.71</u>	<u>\$ 0.70</u>
Total supply cost	\$35.21	\$38.57	\$20.13	\$23.49

CHAPTER 5

Summary and Conclusion

Summary

Leisure time activities of our population have become increasingly more important over the past several decades in the United States. As individual and family wealth and leisure increases, we as a nation are spending more of our leisure time in outdoor recreation activities. Studies show that a larger share of public lands and capital resources will have to be channeled into outdoor recreation, if current trends in the leisure time activities of our nation's population are to be met. (Bureau of Outdoor Recreation, 1964). This is particularly true for those areas of the country containing large population centers and abundant land and water resources. Such an area is the North Central Region. The majority of the available outdoor recreation facilities and visitations within the region occur on public owned and administered land.

This study is part of a regional wide project being conducted by the Land Grant Universities within the North Central States to evaluate outdoor recreation demand, supply and the public installation involved in supplying needed facilities. In this study, Michigan State University assumed the responsibility of evaluating the regional supply of outdoor recreation. This study involves the development and presentation of a supply model which can be used in the regional analysis of current and projected recreations supply. Michigan was chosen as a representative state around which the supply model could be developed and tested. The specific objective was to develop a supply model of outdoor recreation facilities found on public land

in Michigan that will allow for the development of projections, the examination of alternative decisions and the implications of those decisions in the light of current and proposed public policy.

Most models are an expansion of some formal or informal definition that a researcher has formulated about a segment of the real world. In this study, the segment of the area of concern was defined as a definite set of definitive packages of recreation activities which take place on publicly owned forest land.

Public land considered in this study is covered by forest vegetation and the majority is classified as "natural environment areas" by the Bureau of Outdoor Recreation. The land features of importance on these ownerships are rivers and streams, lakes and ponds, flora, and fauna. Over 75 per cent of the Federal, state and county forest recreation areas in Michigan have these features as their major recreation attractions.

For purposes of this analysis, public agencies owning forest land in Michigan were considered the sole producers of forest-based outdoor recreation facilities. Their production costs include land acquisitions, facility construction, and operating and maintenance expenditures.

These costs were measured in units of the cost to the agency for providing one recreation day to a consuming household; the dollar amount represents what an agency would have to charge in order to just meet expenses. The agency cost is identified as the "direct cost" of supplying recreational opportunities.

Because we are looking at the services provided by public agencies as public goods, the consumer becomes a relevant factor influencing supply decisions. He must bear a portion of the supply cost in order to consume the recreation good. Specifically, he must travel to the recreation site and possess the equipment necessary to utilize the facilities.

Outdoor recreation is a unique commodity or service because consumption takes place on the production site. That is, utilization can only take place if the consumer can get from his place of residence to the recreation site with the equipment necessary to consume the recreation experience. Therefore, the consuming household bears the entire burden of paying the cost of consuming the recreation good.

The consumer cost or "associate cost" must be added to public or direct cost to derive the total cost of supplying forest-based outdoor recreation. This is not a normal cost accounting practice but applies here for two reasons. First the good in question is a public good, therefore forcing the producers (public agencies) to consider the welfare implications of investments in outdoor recreation facilities.

Second, as stated previously, recreation goods are somewhat of a unique commodity in that they must be consumed at the production site.

The items included in associate cost are: User fees, equipment costs, and trip expenditures. User fees are charges for the use of a park or recreation area, or for the privilege of park entry.

Equipment costs include the cost of equipment which the consumer needs in order to use a recreation facility so he may capture the recreation experience. The relevant cost is the average cost of equipment used by the average size family for the different activities families participate in.

The average equipment cost in reality represents the dollars spent by the average household now consuming recreation goods. The minimum cost of this equipment cost continuum represents the minimum amount a household can spend and have the necessary equipment to become participants. This minimum value is called the "threshold cost".

The trip expenditure is composed of transportation costs plus the cost of food and lodging. Transportation costs consist of gas, oil and repairs either purchased at home, on the way to, or at the recreation site. No matter where the money is spent the total dollar value is considered in the associate cost. However, the amount that is spent in the local community near the recreation site and its resulting influence on the local economy is of concern to state and local governments.

The family seeking an outdoor recreation experience goes to a recreation area in order to participate in one primary activity, but they also undertake other, secondary activities. The primary activity plus a host of other activities comprise the total recreation experience. The combined primary and secondary activities comprise a set or package of experiences consumed by the household. Five sets of activities are uniquely found on forest lands. These are picnicking, driving and sightseeing, hunting, fishing and camping. Picnicking

includes driving and sightseeing, hiking and walking, swimming and fishing as secondary activities. Driving and sightseeing includes picnicking as a secondary activity. Hunting and fishing may include camping as a secondary activity. Camping normally includes picnicking. These are the goods actually provided by public agencies and consumed by the household.

Of the five recreation packages driving and sightseeing has the highest day use percentage and the largest number of participants. It is the most important recreation package.

In the process of gathering inventory data on these packages it was found that the agencies only consider three of the five in the planning process--hunting, fishing and camping. Agencies cannot consciously plan for the supply of activities such as picnicking and driving and sightseeing, either because these packages have no facilities connected with them or they do not take place entirely on the agency's lands. No common denominator exists for quantifying the consumption of secondary activities on public lands. Agencies therefore consider them as spin offs from the other principle facilities provided.

The reader should recognize that day use activities represent 80 percent of all recreation visits to forest land. Due to the reasons outlined above the majority of these activities are excluded from the current analysis.

Because of these data limitations hunting, fishing and camping are then the only recreation packages considered in this analysis.

Inventory of Facilities

Camping

Camping is the most popular forest-based outdoor recreation activity in Michigan. All the state, federal and the majority of the county agencies (85% sample) interviewed provide either primitive or modern camping facilities. The state park system contains over half of all the state's public camping facilities and most of these are modern campsites. Michigan had 24,671 campsites in public ownership in 1968 and will have approximately 38,000 by 1975 and between 46,540 and 48,440 by 1980. Of those available in 1968, 13,394 were in state parks. State parks will have approximately 20,130 campsites in 1975 and between 24,460 and 25,420 in 1980. Therefore modern campsites will remain the most important type of camping facility in Michigan.

State parks and county and local facilities are the only public campsites near population centers. In 1964 the Parks Division of the Michigan Department of Natural Resources had 36.7 per cent of their campsites located in Southern Lower Michigan. This area which contains the state's population centers is projected to have 39.1 per cent by 1975. With the help of the state's recent \$100 million bonding program for development of outdoor recreation facilities, this figure should increase somewhat by 1980.

The Parks Division added more campsites per year on their holdings than any other supplying agency. Their high growth rate, plus the proportion of total state inventory that they control points to an increasing growth rate in campsites, with a large number being found near urban centers.

Because much of the future development of camping facilities will be undertaken in southern Michigan, by the Parks Division, where public ownership is small; land purchase will be required. In the future the purchase price of land should be a factor in the direct cost of supplying recreation opportunities, and is likely to be sizable due to the high land values in southern Michigan.

Hunting and Fishing

Hunting and fishing are extensive land users requiring a lower man-to-land ratio than the other recreation activities. For this reason it has been hypothesized that a saturation point can be reached for participation in hunting and fishing. This hypothesis points to a stable or slowly rising number of licensed hunters or fishermen as a sign that the saturation level has been reached. An implicit assumption here is that the decline or stabilization of licensees is due to a saturation of the hunter or fishermen carrying capacity of the land. No regard is given to the possibility of stabilization due to taste changes, deer herd size and the possibility that hunting or fishing may be an inferior good. Regardless of the actual cause and effect relationship the concept of saturation was used to evaluate participation.

The broad classes of hunting and fishing were broken down into resident - small game - gun deer - archery deer, and - fishing license holders. Participation rates for these licensees were obtained by comparing the number of license holders with Michigan population.

The evidence indicates that small game and gun deer hunting have reached the saturation point while archery deer and fishing continue to increase. Past trends indicate that the absolute number of small game and gun deer hunters should maintain a level of between 550,000 and

650,000 licensees through 1980, while archery deer and fishing will continue to increase.

Both archery deer and fishing will increase not only in absolute numbers of license holders, but also in the number of participants per unit of population. Extrapolation of trends over the past 5 years in Michigan shows that fishing should rise from its 1968 level of 9.17 per 100 population to 10.75 by 1975 and on up to 11.00 by 1980. The ratio for archery deer hunting will similarly increase from its levels of 0.63 per 100 population in 1965 to 0.85 by 1975 and on up to 1.00 by 1980.

These ratio changes represent an increase in the number of licensed fishermen from 801,214 in 1968 to 974,400 by 1975 on up to 1,092,100 by 1980. For archery deer hunters their numbers will increase from 59,039 in 1968 to 76,300 by 1975 on up to 98,300 by 1980.

Supply

Camping

Agencies are involved in supplying two types of camping; modern sites for trailers and primitive sites for tents. The cost of construction and maintaining camping facilities vary considerably between the two types of campsites. The direct cost given in dollars per family visitor day is \$1.34 for the modern campsite and \$0.47 for the primitive site. The modern sites cost the agency a little less than two and one-half times what it would cost them to supply the same recreation day to a family on a primitive site.

The modern site is used one third more often than the primitive site. Using this as a weighting factor and combining both types of camping, the weighted direct cost becomes \$0.97. This value is less than the \$1.00 user fee that the average camper pays. Therefore camping fees result in more revenue to the state than the amount expended in providing the facility.

The consumer experiences the same variation as seen in direct cost when purchasing recreation vehicle vs tent equipment. For the household to consume one day of recreation it must have equipment, pay user fees, and incur travel expenses. Travel expenses and user fees remain nearly the same regardless of the type of campsite used. The differences in equipment costs causes the disparity in consumer costs.

The associate cost for the household is also given in units of dollars per family visitor day. For modern camping the consumers' price tag is \$32.09 for every day a family camps and for primitive camping their cost is \$17.88 per day. These figures were obtained by depreciating tent equipment and recreation vehicle equipment over

a ten year period at twenty days use per year. Allowance was made for the per cent of different types of recreation vehicles in use and the fact that camper trucks are generally held three years and sold with a substantial salvage value, plus the fact that only 10 per cent of the use of the truck is in recreation related activities.

Combining the direct cost for modern campsites with the associate cost for recreation vehicle camping gives a total supply cost of \$33.43. Doing the same for primitive campsites and tent camping we get \$18.35. Both figures represent the total agency plus consumer cost for one day of use of a campsite by an average camping family of 4.0 members.

Of the total supply cost for modern camping 4.00 per cent is agency or direct cost and 96.00 per cent consumer cost. For primitive camping the agency's share is 2.56 per cent while the consumer pays 97.44 per cent of the total.

The threshold cost represents the minimum, not average, expenditure for the equipment necessary for an average family to participate in camping. The lowest cost of \$214 is found in tent equipment and is \$89 less than the average cost for all campers using tent equipment. The non-participant must initially spend at least \$214 to get the equipment necessary to become an active camper.

Hunting and Fishing

Hunting and fishing carry lower price tags than camping for the supplying agencies and the public. The major direct cost is for law enforcement plus wildlife management expenditures by the federal and state agencies providing the hunting and fishing packages. The

agency need not provide any recreation facilities in order for participation in either of the primary activities, therefore capital improvement costs for facilities are not considered.

Law enforcement costs are divided between hunting and fishing on the basis of the number of user days involved in each activity. On this basis approximately two thirds of the total cost is attributed to fishing and one third to hunting. When considered in terms of the cost per hunter day and fisherman day the direct cost is \$0.085 per hunter day and \$0.084 per fisherman day.

The wildlife management costs are allocated to hunting, and fishing according to the agencies' mission. The Fish Division of the Department of Natural Resources is allocated to fishing, while the Forestry and Game Divisions and the U. S. Forest Service are allocated to hunting. When this is done and added to law enforcement costs the direct cost for hunting becomes \$0.24 per hunter day and for fishing \$0.23 per fisherman day.

The hunter and fisherman again must have the proper equipment to participate plus pay a license fee and trip expenditures. These costs will again be in units of dollars per visitor day. The average hunter hunts 13 days per year while the average fisherman fishes 20 days per year. For both activities the equipment is depreciated over a ten year period. The resulting associate cost for the hunter is \$11.38 per day in the field while for the fisherman it is \$16.89 per day.

Of the total associate cost for hunting \$0.39 per day is spent on license fees while the fisherman spends \$0.26 per day. Note that these two figures are higher than the direct costs of \$0.24

and \$0.23 for hunting and fishing respectively. Again the participants are paying their own way.

Combining the direct cost and associate cost, the total supply cost becomes \$11.62 for hunting per day and \$17.12 for fishing per day.

Of the total for hunting 2.07 per cent is paid by the agency and 97.93 per cent by the hunter, while for fishing, 1.34 per cent is born by the agency and 98.66 per cent by the fisherman.

The minimum cost to the individual to become a hunter is \$80. This is \$70 less than that for the estimated average paid by all hunters. Fishing is somewhat different. A boat and motor are included as items in the \$930 equipment cost for the average fisherman, but are not necessary for the man to own in order to participate in fishing. The equipment cost is \$53 if the boat and motor are eliminated. The minimum or threshold cost for the like amount of equipment represented by \$53 becomes \$20. This then is the minimum initiation fee for a man who wants to become a fisherman.

In actual practice several of these packages are found in combination with one another. Combining camping and hunting, and camping and fishing while eliminating the double counting which is due to trip expenditures, we obtain costs for the package combinations often consumed. The direct, associate and total supply costs for modern camping plus hunting becomes \$1.58, \$33.63 and \$35.21 respectively and for modern camping plus fishing they are \$1.57, \$37.00 and \$38.57. Primitive camping plus hunting has a direct, associate and total supply cost of \$0.71, \$19.42 and \$20.13 respectively and for primitive camping plus fishing \$0.70, \$22.79 and \$23.49.

The threshold cost only applies to primitive camping plus hunting and primitive camping plus fishing. For these two packages we have a threshold cost of \$294 and \$234 respectively.

Conclusions

The policy implications of the data compiled for this study, dealing with public agencies, point in two directions one for those now consuming recreation goods and one for those who are not. In general terms the data presented in the report seem to indicate that present policies subsidize the medium and high income segments of Michigan's population and that the subsidy does not provide recreation in the most efficient manner.

If we look at the direct and associate costs for all three packages we see that the associate cost is several times higher in all cases. These costs are what the average household pays for one day of participation in the activity. The size of the associate cost would indicate that the demanders are somewhere in the middle to high income range. The average recreation vehicle owner has an income near \$10,500 and two thirds of them have incomes between \$6,000 and \$14,000 (Recreational Vehicle Institute, 1969). Therefore the majority of government funds spent on recreation, benefit the medium to high income households.

It is also apparent that the households who have already invested in equipment, benefit from public recreation over those who have not purchased equipment. Looking at the number of modern and primitive campsites, and the growth rate of each, also indicates who gets served and who does not. State parks make up over one half of the campsites and they are generally modern in design. State parks also account for the largest capital expenditure program among outdoor recreation facility supplying agencies in Michigan. This again points to public programs designed for the medium to high income market.

Whether consumer dollars follow government dollars or vice versa is a point of contention. However, it does seem apparent that they go hand in hand. In a marketing system such as ours we naturally expect private firms to invest in areas where consumers seem to spend their dollars. This is exactly what we see government agencies doing with respect to the recreation goods.

No market segment counts or hears all or even a large majority of the population. Only the voices or votes (dollars spent) of those with the tastes and the income to purchase the product are heard. Those with the tastes or desires but not the income are not counted or considered as part of the market.

It was previously pointed out that government agencies typically planned in an aggregate manner. They view an entire campground as a unit of investment by writing off the entire cost of the facilities for the primary and secondary activities in terms of the primary facility--the campground. Such things as picnic areas, beaches, campsites and boat launching sites get grouped together. Aggregating in this manner causes a loss of information and a clouding of possible alternative approaches to supply, therefore possibly causing an inefficient allocation of funds.

The direct cost of an entire campground (\$1.34 for modern and \$0.47 for primitive), is low when compared to associate cost (32.09 for recreation vehicles and \$17.88 for tents). This may not be true if the campground is viewed in terms of its parts. A picnic area has a low capital equipment investment and a low operating and maintenance cost. The family pays an equally low associate cost to enjoy picnicking. The household virtually has no equipment costs, only trip expenditures. Now in the same campground a boat launching site may represent a low

direct cost to the agency, but a high associate cost to the consumer. He must own a boat and motor to use the facility and incur trip expenditures similar to the picnicker.

In the case of the picnic area we have a low to moderate direct cost along with an equally low associate cost. In the second case we have a low to moderate direct cost and a high associate cost. Yet both are grouped together and treated as a single investments. If we were to disaggregate these activities several things could result.

Disaggregation allows us to look at each as a separate investment. Where direct cost is high relative to associate cost, or they are nearly equal (as in picnic areas), an investment should not return a profit commensurate with the business world. Where the opposite is true (boat launching ramps), a profit can be made.

Agencies are charging a lump sum fee for the use of all facilities within an area. This results in charging too much for the use of some facilities and too little for others. Michigan public agencies could charge different rates for the different types of facilities found on a developed area. This would be charging users in accord with a market criteria. Or the agencies could let private firms under the agencies' supervision develop those facilities, on public land, which could return a profit. In both cases the allocation of resources would be more efficient and regulated by market criteria.

The affluent consumer has already invested large sums of money in a boat and motor and/or camping equipment. In most cases he would be willing to pay a fee to launch his boat or camp. Because direct cost is low, the fee necessary to make a profit would be small. Direct cost for the entire modern campground is only \$1.34 per camper day. Therefore

public agencies would have to charge customers \$1.34 in order to break even. A fee somewhat higher than this would make the whole operation profitable. Even then the recreation goods are not rationed correctly, because demand for the individual facilities within the area is relatively unknown, also the users are not charged an equitable fee for the facilities they actually use.

If the agency charges the user for the facilities he uses, a more efficient allocation could be obtained, but administrative costs would rise. Whether the agencies take the total responsibility of supplying public recreation or work in some combination with private developers, they have the sole responsibility of providing those facilities where the direct cost is high in comparison to associate cost. These types of facilities may not be able to pay for themselves in terms of a profit but are an important part of the total recreation experience.

It should be said here that currently agencies are extracting user fees or license fees which do cover direct cost. As such the consumer whether a camper, hunter or fisherman pays his own way by the present system. Therefore inefficiencies are not caused by underpayment for the recreation area as a whole, but are a result of under and/or over payment for the individual facilities actually used within the area. As pointed out this is due largely to the fact that little or no discrimination of payment is made for the facilities actually used or not used once a consumer passes the park gate.

A caution statement is needed to qualify the above. Administrative costs of the head offices of the respective departments within which the supplying agency falls are not included in direct cost; therefore adjusted direct cost may be higher than the fees paid by the consumer.

This last point would suggest that if agencies charged fees for

the facilities actually used, better allocation of the recreation goods would result, but it does not follow that more money could be extracted from all consumers as a whole. Presently consumers are paying for direct cost by user fees, therefore agencies have no need to extract more money as a whole. The above is true only if the agencies receive in appropriations the money they extract as user fees. If they are receiving less than what they collect, then the agency is running a deficit.

Assuming that an agency receives what it collects in fees, a pay as you use system, controlled by the agency, would only result in a shift of revenue collection from a gate charge to a charge for facilities used. While the present system causes some users to subsidize the consumption of other users by overpayment, the pay as you use system would extract a more equitable fee per consumer, resulting in a more efficient allocation of resources.

The new fee system has an attribute of monitoring the demand for the facilities within a developed area and shed light on the prices each facility can command. The lump sum charge at the gate provides neither of these two types of information with any accuracy. With demand and price information a better allocation of resources can be accomplished by showing facilities of high demand and undersupply where development should take place and facilities of low demand and under use which can be eliminated or not developed further.

A similar allocation can be accomplished by private development of profitable facilities, but at the same time removing some of the risk incurred by capital development, which was here-to-for assumed entirely by public agencies. If the agency's appropriations do not decline because of private development, funds would be released for use elsewhere (day-use areas in inner cities). The key seems to be that in the first case agencies assume the entire risk and responsibility of providing recreation and the

new fee system would allocate resources more efficiently. In the second case risk and responsibility are shared and private development may release funds once tied up by the public agency's capital development, and still result in a similar efficient allocation of resources.

The above discussion presents an argument which would appear to favor the combination of public and private development to supply outdoor recreation to the public. The influence of higher administrative costs connected with all public or public plus private development may dampen somewhat the use of the pay as you use system and/or private development. But this extra cost still seems justified by the demand and price information which the new system would generate. However, other political, legal and administrative constraints may mitigate the above arguments and have not been dealt with adequately here.

The available demand and price data are not good enough under present accounting procedures to list all those facilities which could be handled by private developers. The point still remains that we do have facilities in campgrounds which the agency need not be in the business of providing. Therefore, it seems prudent for public agencies to take the responsibility of initiating the new fee system, thereby generating price and demand information which would allow for the reallocation of outdoor recreation resources. Once the system is initiated and price and demand data forthcoming, private development may be encouraged.

So far the discussion has centered on the current consumers of outdoor recreation facilities, but from a public welfare standpoint the question of the non-consumer remains to be dealt with.

A person may either chose not to consume because of tastes and preferences or he may be forced not to consume because of income.

The interest lies with those who are excluded because of their income. When reference is made to non-consumers throughout the balance of this paper the reference is intended for those excluded due to income.

Does the public agency concern itself with encouraging the non-consumer or non-demander to become an active participant? The evidence would say yes. Of all the agencies the Parks Division and many county and local agencies are in a position to deal with the urban poor. The Parks Division has shifted new construction from the Northern Lower Peninsula to the Southern Lower Peninsula and the new \$100 million recreation bonding program puts seventy percent of its money in developments which are a one-half hour drive from urban centers. The preliminary evidence would indicate that concern for the urban poor is present and that something is being done about their problems. However, results of current policies and programs suggests something entirely different.

Effectively such a policy only moves the recreation site closer to the consumer, which would correspondingly lower the trip expenses or at least the travel part of the trip expenses. Trip expenditures are approximately one-half of the total associate cost for modern camping, 86 percent for primitive camping, 84 and 71 percent for hunting and fishing respectively. But travel expenditures (gas, oil and repairs) make up only 28 percent of total trip expenses. The policy of moving recreation sites closer to the cities, can only lower trip expenditures by something less than 28 percent. Trip expenditures are 50, 86, 84, and 71 percent of associate cost for modern camping, primitive camping, hunting and fishing respectively. Therefore the maximum possible reduction in associate cost would be 12.5, 24.1, 23.5, and 19.9 percent

respectively for these same activities, if the travel portion of trip expenditures were zero.

This policy would help those now using parks, but it is doubtful if it would really help the non-user. No matter where the campground is located a non-user has to invest in a minimum amount of equipment in order to use the facility. This is true even if the travel expenses are zero. The policy of locating facilities within a one half hour drive of the city center does not lower or deal with the equipment or threshold cost.

If we assume that lowering the travel cost induces a non-demander to become a demander, we are saying that travel expenses are the limiting factor or the added expense causing a household to choose not to participate. This picture does not seem realistic when we find a threshold cost of over \$200 for camping, and \$80 for hunting. For fishing the threshold cost of \$20 does not seem to be excessive. In this case trip expenditures may possibly be the limiting factor. But the initial equipment investment for camping and hunting seem to limit participation. Lowering travel costs does nothing to lower equipment expenditures. For those who have already invested in equipment, this lower travel cost does lower their consumption cost and they are the only group that benefits.

When an agency wants to make demanders out of non-demanders and does it by building campgrounds near cities, they may be misdirected in their efforts. The results and consequences of such an action point directly to a subsidy for the middle and high income groups, with no help to the poor. What has been said applies directly to camping, but the same conclusions can be drawn for hunting and fishing. Although the proposed mixture of private firms and public agencies may not work the

same, because of the distinct lack of facilities for these activities. However, the relationship of threshold cost and associate cost does hold for hunting and fishing as it does for camping.

A counter question should be proposed: if the associate cost was zero (free good to consumers) would non-demanders become demanders? Consumption or non-consumption now becomes strictly a matter of tastes. Frankly, information on tastes and its relationship to the consumption function is not available and therefore no one can definitely say if these activities would be consumed by the urban poor if associate cost was entirely eliminated.

Possibly the funds released by private development could be used to build day-use facilities in or near the inner city. These areas would be of the type that require little or no equipment expenditures on the part of the participant. The money could also be used to subsidize public transportation systems, because many of the urban poor have no means of transportation to a park no matter how close a recreation area is to their homes. Before day-use areas are built, researchers should gain information about the tastes of the poor so recreation areas can be designed to meet their desires.

Planners need good records on as many of the recreation facilities found on developed forest areas as possible, and also data on consumer tastes if more effective programs of supply are to be developed.

Planning, in general, revolves around the campground. Driving and sightseeing, and picnicking are byproducts of an agency's supply efforts. Little or no inventory or financial data is available for these activities. Yet they are considered by most planners to be the activities most participated in. Before a decision maker can make informed decisions

about recreation goods, he must have better data and better decision methods or models.

This study also indicates that there is a lack of effective co-ordination between agencies with respect to planning or facilities provided. Michigan's National and state forests are located away from urban centers. Most of their consumers are moderate or high income people. State parks however, are in both urban and non-urban areas. It is here that co-ordination is needed. In non-urban areas the parks cater to the high and medium income people. We also find this same approach near urban centers. In other words the Parks Division seems to follow the same policy in two widely diverse socioeconomic situations.

In densely populated areas where more than one agency is providing recreation it is important to co-ordinate their activities for the sake of harmony and efficiency. The Parks Division and county and local governments are the agencies in question in urban areas. Some policy should be developed outlining their respective roles as suppliers, thereby avoiding wasteful duplication of efforts and facilities.

For a greater co-operation between all agencies, a governing board should be formed with all agencies represented. This group would have the responsibility of developing a plan outlining all agencies' roles as suppliers of recreation in Michigan. It could also have the responsibility of ironing out difficulties between agencies.

Also for those agencies supplying facilities in southern Michigan a question arises about non-residents using public facilities.

The largest concentrations of non-resident use occurs along the southeastern shore of Lake Michigan and the western shores of Lake St. Clair and Lake Huron. In most cases the majority of users in state parks in these areas on holiday week ends are people from Illinois, Ohio, and Indiana. Public officials must ask themselves if the economic benefit arising from non-resident use of state facilities is greater to the state than the use of state funds in projects where only residents will benefit and does the benefit to the local area outweigh the benefit which would be received in a state project benefiting a large group of residents.

The first major consideration is the people benefited. The majority of economic benefit will be felt in the local community where the recreation is consumed. Therefore the basic conclusion is that the expenditure of state funds in these cases will generally benefit only local people. As outlined in Chapter 4 the overall economic benefit is obtained by using the multiplier 1.74. In terms of actual dollars, the daily expenditures in the local area of \$9.64 for camping generate an additional income of \$16.77, for hunting the \$6.20 expenditure generates \$10.79 and for fishing \$7.55 generates \$13.14.

Most of the public funds spent by non-residents is for camping facilities. The Parks Division spends \$1.34 (direct cost) for every camping family per day while that same family spends money which generates \$26.41 (original expenditure plus \$16.77 in additional income). Most public administrators interviewed expressed the opinion that the benefits from the money spent by non-residents far outweigh the public expenditures for construction and maintenance of camping facilities. The above analysis would appear to justify their beliefs.

One question not asked or answered is a comparison of the \$16.77 benefit to the local community with the benefits which could be received by an alternative use of public funds in recreation projects helping the urban poor or any other alternative state program.

It appears that the recipients of the recreation dollars in the local area are local businessmen of medium income. Their income stream appears to be only somewhat seasonal, because the campgrounds we are referring to are located near large urban areas (Detroit, Benton Harbor etc.) where the majority of trade is non-tourist. By assuming that the funds spent in building and maintaining a modern campground were transferred to a day-use recreation center in the inter city, the above mentioned income generated by out-of-state travellers would be lost, but the inner city dweller would acquire access to recreation here-to-for unavailable.

The overriding consideration is the per cent of income lost to the local area if the day-use facility is built in favor of a modern campground. In many of the parks heavily used by out-of-state travellers the income generated by their expenditures appears to be a small percentage of the total local GNP, due to the high local population and the resulting high amount of intra area trade. In such cases the expenditure programs of the public agencies should be re-evaluated.

Where the income generated by recreation is a significant proportion of the total area income, the benefits of the public money spent in modern camping facilities may be justified. Only when a large proportion of the local GNP is generated by recreation expendi-

tures and the community depends upon large numbers of spending tourists, is this policy justified. Such areas are usually sparsely populated and depend highly on recreation spending to bolster their local income base.

In Michigan the majority of areas used extensively by out-of-state travellers are not tourist towns or communities. As such state agencies might do better by concentrating more on providing recreation facilities which benefit the local urban populus not non-residents. The above hypothesis is based on scant evidence and many assumptions and should be evaluated in that light.

LITERATURE CITED

- Bureau of the Census. 1968. Statistical Abstracts of the United States. U. S. Department of Commerce. 1032 pp.
- Bureau of Outdoor Recreation. 1964. U. S. Department of Interior. Unpublished Data.
- Bureau of Sports Fisheries and Wildlife. 1965. 1965 National Survey Fishing and Hunting. U. S. Department of Interior, Research Publication No. 27. 76 pp.
- Cicchetti, Charles J., Seneca Joseph J., and Paul Davidson. 1970. The Demand and Supply of Outdoor Recreation An Econometric Analysis. Bureau of Economics Research, Rutgers University.
- Crapo, Douglas, and Michael Chubb. January 1969. Recreation Area Day-Use Investigation Techniques. Recreation Research and Planning Unit, Department of Park and Recreation Resources, Michigan State University, Technical Report No. 6. , 124 pp.
- Department of Conservation. 1968. 24th Biennial Report 1967-1968. Department of Conservation, State of Michigan. 239 pp.
- Gamble, Hays B. June 1967. The Economic Structure of Sullivan County, Pennsylvania. Pennsylvania State University, College of Agriculture, Agriculture Expt. Sta., University Park, Pennsylvania. Bulletin 743. 60 pp.
- Hendee, John C., Catton, William R., Marlow, Larry D. and c. Frank Brockman. 1968. Wilderness Users in the Pacific Northwest - Their Characteristics, Values and Management Preferences. U. S. Forest Service Research Paper PNW-61. 92 pp.
- Hughes, Jay M. 1970. Forestry in Itasca County's Economy an Input-Output Analysis. Agriculture Experiment Station, University of Minnesota, Miscellaneous Report No. 95, Forestry Series 4. 24 pp.
- Jansen, G., and J. Ryckman. 1969. Participation and Socioeconomics of Salmon and Trout Fishermen in Michigan. Michigan Department of Natural Resources, Research and Development Report No. 158. 33 pp.

- Kearns, Frank W., James, Lee M., Smith, Norman F., and Ray Pfeifer.
January 1962. An Economic Appraisal of Michigan's State
Forests. Forestry Division, Department of Conservation.
Technical Publication No. 2. 59 pp.
- LaPage, Wilbur F. 1968. The Role of Fees in Campers' Decisions. U. S.
Forest Service Research Paper NE-118., Upper Darby, Penna.
24 pp.
- Manthy, Robert S., and Lee M. James. September 1969. A Study of
Probable Future Demand on the Public Lands, for the Public
Land Law Review Commission. Michigan State University.
214 pp.
- Recreational Vehicle Institute. 1969. Facts and Trends. 24 pp.
- Shafer, Elwood L. 1969. The Average Camper Who Doesn't Exist.
U. S. Forest Service Research Paper NE-142. 27 pp.
- Swanson, Gustav A., Shield, J. T., Wayne, Olson H., Decker, Eugene,
Held, R. B., Straayer, John A., Hill, Ralph R., Hunter,
Gilbert N., and Glen Purdue. January 1969. Fishing and
Wildlife Resources on the Public Lands. Department of
Fishery and Wildlife Biology, Colorado State University.
326 pp.

BIBLIOGRAPHY

- Bloemendaal, Dirk C. 1969. Michigan Pictorial Campground Guide. Third Edition, Royal Lithographics, Grand Rapids, Michigan. 148 pp.
- Bureau of Business and Economics Research. 1968. Michigan Statistical Abstracts Seventh Edition. Graduate School of Business, Michigan State University. 559 pp.
- Bureau of the Census. 1968. Statistical Abstracts of the United States. U. S. Department of Commerce. 1032 pp.
- Bureau of Outdoor Recreation. 1964. U. S. Department of Interior. Unpublished Data.
- Bureau of Sports Fisheries and Wildlife. 1965. 1965 National Survey of Fishing and Hunting. U. S. Department of Interior, Research Publication No. 27. 76 pp.
- Cicchetti, Charles J., Seneca Joseph J., and Paul Davidson. 1970. The Demand and Supply of Outdoor Recreation An Econometric Analysis. Bureau of Economics Research, Rutgers University.
- Grapo, Douglas, and Michael Chubb. January 1969. Recreation Area Day-Use Investigation Techniques. Recreation Research and Planning Unit, Department of Park and Recreation Resources, Michigan State University, Technical Report No. 6. 124 pp.
- Gamble, Hays B. June 1967. The Economic Structure of Sullivan County, Pennsylvania State University, College of Agriculture, Agriculture Expt. Sta., University Park, Pennsylvania. Bulletin 743. 60 pp.
- Heath, Edward J. 1964. Comparison of Recreation Development Plans for a Northern Maine Wilderness Tract. Maine Agriculture Expt. Sta. Bulletin 628. 51 pp.
- Hendee, John C., Catton, William R., Marlow, Larry D. and C. Frank Brockman. 1968. Wilderness Users in the Pacific Northwest - Their Characteristics, Values and Management Preferences. U. S. Forest Service Research Paper PNW-61. 92 pp.
- Hughes, Jay M. 1970. Forestry in Itasca County's Economy an Input-Output Analysis. Agriculture Experiment Station, University of Minnesota, Miscellaneous Report No. 95. 24 pp.
- Jansen G., and J. Ryckman. 1969. Participation and Socioeconomics of Salmon and Trout Fishermen in Michigan. Michigan Department of Natural Resources. Research and Development Report No. 158. 33 pp.

- Kearns, Frank W., James, Lee M., Smith, Norman F., and Ray Pfeifer. January 1962. An Economic Appraisal of Michigan's State Forests. Forestry Division, Department of Conservation. Technical Publication No. 2. 59 pp.
- LaPage, Wilbur F. 1968. The Role of Fees in Campers' Decisions. U. S. Forest Service Research Paper NE-118., Upper Darby, Penna. 24 pp.
- Manthy, Robert S., and Lee M. James. September 1969. A study of Probable Future Demand on the Public Lands, for the Public Land Law Review Commission. Michigan State University. 214 pp.
- Michigan Department of Conservation. 1964. 22nd Biennial Report 1963-1964. Department of Conservation, State of Michigan. 208 pp.
- Michigan Department of Conservation. 1966. 23rd Biennial Report 1965-1966. Department of Conservation, State of Michigan. 239 pp.
- Michigan Department of Conservation. 1968. 24th Biennial Report 1967-1968. Department of Conservation, State of Michigan. 239 pp.
- Michigan Department of Natural Resources Forestry Division. 1968. Department of Conservation, State of Michigan, Unpublished Data.
- Parks Division. 1968. Department of Conservation, State of Michigan. Unpublished Data.
- Recreation Resources Planning Division. March 1, 1967. Michigan Outdoor Recreation Plan Preliminary Draft. Recreation Resources Planning Division, Department of Conservation.
- Recreation Vehicle Institute. 1969. Facts and Trends. 24 pp.
- Sears Roebuck and Co. 1968. Summer Catalog. 1553 pp.
- Shafer, Elwood L. 1969. The Average Camper Who Doesn't Exist. U. S. Forest Service Paper NE-142. 27 pp.
- Swanson, Gustav A., et al. January 1969. Fishing and Wildlife Resources on the Public Lands. Department of Fishery and Wildlife Biology, Colorado State University. 326 pp.
- U. S. Forest Service. 1971. Correspondence with John O. Wernham, Chief of Division of Recreation, Range and Wildlife, Milwaukee, Wisconsin.

APPENDICES

Appendix I

Inventory, classification, and evaluation of existing outdoor recreation areas and facilities, Bureau of Outdoor Recreation Questionnaire 1964.

FORM BOR 8-73 (2-23-64)		U.S. DEPARTMENT OF INTERIOR BUREAU OF OUTDOOR RECREATION WASHINGTON, D.C. 20240		Do Not Use	
INVENTORY, CLASSIFICATION, AND EVALUATION OF EXISTING OUTDOOR RECREATION AREAS AND FACILITIES				1. Map No. 2. Area No.	
INSTRUCTIONS: This form is to be used for an inventory of the following outdoor recreation areas: (1) All Federal, State, and County areas of ten acres or more, regardless of location; and (2) City and town areas of ten acres or more. Recreation Area - A land and water area administered as a unit for outdoor recreation. Total Acreage - Land and water acreage under the jurisdiction of the administering agency or firm.					
3. Name or identification of area (Include designation such as park, forest, hunting area, wayside, recreation area, etc.)					
4. Location of largest part of area					
A. State		B. County		C. City (If in city or town)	
D. Precise location of center of area (Complete (1), (2) or (3))					
(1) Township		Range		Section	
(2) Air miles		Direction		From center of nearest town with pop. of 2500 or more (Name town)	
(3) Latitude		Degrees		Minutes	
Longitude		Degrees		Minutes	
5A. Other counties which have portion of area			B. Other states which have portion of area		
6. Administering agency					
A. Name		B. Type of agency (Check one)			
		(1) ☐ Federal (2) ☐ State (3) ☐ County (4) ☐ Other local government			
7. Ownership or land status (Check if only one; give % of total if more than one ownership)					
A. ☐ Federal B. ☐ State C. ☐ County D. ☐ Other local E. ☐ Quasi-public (Non-profit organization) F. ☐ Private					
8A. Acreage within area which is land (other than wetlands).....					Acres
B. Acreage within area which is permanent wetlands (swamp, bog, marsh).....					Acres
C. Acreage within area which is water					Acres
D. 8A + 8B + 8C.....					Total acreage
9. Classification of area according to Bureau of Outdoor Recreation Classification System (Total of 9A through 9F should equal 8D). See attached definitions.					
Class	In present condition (Acres)	Revised classification with changes programmed for next five years (Do not complete if no changes are programmed) (Acres)	Potential use (Acres)		
Class I High Density Recreation	A	G	N		
Class II General Outdoor Recreation	B	H	O		
Class III Natural Environment	C	J	P		
Class IV Outstanding Natural Features	D	K	Q		
Class V Primitive Areas	E	L	R		
Class VI Historic and Cultural Sites	F	M	S		
10. Accessible adjacent water outside area (Check appropriate box to indicate size)					
A. ☐ None B. ☐ Under 100 acres C. ☐ 100-499 acres D. ☐ 500-999 acres E. ☐ 1,000 acres and over					
11. Quality of surface water within area (Check appropriate box or boxes)					
Pollution					
A. ☐ None or minor B. ☐ Polluted but acceptable for recreation use C. ☐ Polluted sufficiently to be unacceptable for recreation use D. ☐ No surface water					
12. Access to area (Check appropriate box or boxes)					
A. ☐ Road B. ☐ Water C. ☐ Air D. ☐ Trail					

13. Distance from main paved highway to principal entrance.....		Miles							
14. Access road from highway is adequate to permit uninterrupted flow of traffic on average weekend day in season.....									
A. ☐ Yes		B. ☐ No							
15. Principal roads within the area are adequate to permit uninterrupted flow of traffic on average weekend day in season.....									
A. ☐ Yes		B. ☐ No							
Physical description of area									
16. Land - Rank (up to three) features which generally characterize the whole area by inserting 1, 2, and 3 in the boxes to the left of the items.		A ☐ Beach (ocean or lake)	E ☐ Agricultural land						
		B ☐ Wetlands	F ☐ Brushland						
17. Terrain - Rank (up to two) features which generally characterize the whole area by inserting 1 and 2 in the boxes to the left of the items.		C ☐ Desert	G ☐ Woodland or forest						
		D ☐ Grassland	H ☐ Tundra or alpine						
18. Other features of the area which are of major significance in attracting visitors. Check boxes to the left of all that apply.		A ☐ Rolling	C ☐ Hilly						
		B ☐ Flat	D ☐ Mountainous						
		A ☐ Lakes or ponds	F ☐ Canyons						
		B ☐ Reservoirs	G ☐ Buttes						
		C ☐ Rivers or streams	H ☐ Shore-fronts						
		D ☐ Rapids	J ☐ History						
		E ☐ Springs	K ☐ Archeology						
		L ☐ Flora	M ☐ Fauna						
		N ☐ Climate	O ☐ Other						
19. Recreation activities									
Existing - Rank 1, 2, and 3 for the activities participated in by the most people, on an annual basis, and check all other existing activities.									
Programmed - Check activities which are not existing but are scheduled to be available within the next 5 years.									
Potential - Check activities not existing or programmed for which the environment is suitable.									
Activity	Exist- ing (1)	Program- med (2)	Poten- tial (3)						
A. Driving and sightseeing									
B. Swimming									
C. Skiing (water)									
D. Skin and scuba diving									
E. Bicycling									
F. Fishing (salt water)									
G. Fishing (warm water)									
H. Fishing (cold water)									
I. Picnicking									
J. Nature study									
K. Boating (motor)									
L. Boating (non-motor)									
M. Hunting (big game)									
N. Hunting (small game)									
O. Hunting (water fowl)									
P. Horseback riding									
R. Golf									
S. Camping (tent)									
T. Camping (trailer)									
U. Camping (group)									
V. Ice skating									
W. Sledding or tobogganing									
X. Skiing (snow)									
Y. Hiking and walking									
Z. Mountain climbing									
AA. Playing games or sports (softball, tennis, etc.)									
BB. Viewing outdoor sports events (ball-games, racing, etc.)									
CC. Drama and concerts									
DD. Other (Specify)									
20. Total number of visits to this area for recreation purposes.									
Day visit. Count each person who visits or uses area for any length of time during day but does not stay overnight.									
Overnight visit. Count each person who stays overnight one night - a three night stay counts as three over-night visits									
1959 →	A. Day visits		B. Overnight visits		196 → (Most recent year) →	C. Day visits		D. Overnight visits	
	No.	☐ Count ☐ Estimate	No.	☐ Count ☐ Estimate		No.	☐ Count ☐ Estimate	No.	☐ Count ☐ Estimate
21. Percentage of total annual recreation attendance which occurs in each month.									
A. January		%	D. April		%	G. July		%	K. October
B. February		%	E. May		%	H. August		%	L. November
C. March		%	F. June		%	J. September		%	M. December
22. Fees are charged (Check appropriate box or boxes)									
A. ☐ Entrance or parking		B. ☐ User		C. ☐ None					

C-2

23. Recreation acreage and sites in area.

Site - A tract of land within a recreation area designated for a particular activity.

Suggested maximum - Should be based on present standards of space and privacy.

Use pressure - Estimate, to nearest 10%, whether existing sites could handle more visits during average weekend in season (as +10%), or whether facilities are inadequate (as -10%). Leave blank if less than +10% or -10%.

Boat access site - A tract of land designated for launching boats, usually providing launching ramps, parking space for autos and boat trailers. May include boat service, picnic, and sanitary facilities.

Group campsite - A tract of land designated for camping use by an organized group of people. Usually has permanent facilities for eating and sleeping.

General roads - Roads used by passenger vehicles.

Special roads - Roads usually used for specific activities, as dirt roads open only during the hunting season.

Recreation facility	Existing		Additional programmed for next 5 years		Suggested maximum no. of sites, including (2) and (4)	Use pressure (+% or -%)
	Area (Nearest whole number) (1)	Number of sites (2)	Area (Nearest whole number) (3)	Number of completed sites (4)		
A. Play field	Acres		Acres			
B. Swimming beach	Acres		Acres			
C. Swimming pool	Sq. ft.		Sq. ft.			
D. Picnic	Acres		Acres			
E. Boat access	Acres		Acres			
F. Tent camp	Acres		Acres			
G. Trailer camp	Acres		Acres			
H. Cabin and motel	Acres		Acres			
J. Hotel and lodge	Acres		Acres			
K. Parking facilities	Acres		Acres			
L. Group camping	Acres		Acres			
M. Ice skating	Acres		Acres			
N. Ski slope	Acres		Acres			
O. Vista point	Acres		Acres			
P. Marina	Acres		Acres			
Q. Golf course	Acres		Acres			
R. Other (Name)	Acres		Acres			
S. General roads	Miles		Miles			
T. Special roads	Miles		Miles			
U. Designated horse trail	Miles		Miles			
V. Designated foot trail	Miles		Miles			
W. Bicycle path	Miles		Miles			
X. Interpretive facilities	☐ Yes ☐ No					

24. Number of units at existing sites in area

Unit	Existing (1)	Additional programmed to be completed within 5 years (2)	Suggested maximum including (1) and (2) based on present standards of space and privacy (3)
A. Picnic tables			
B. Boat access parking spaces			
C. Tent spaces			
D. Trailer spaces			
E. Cabin and motel units			
F. Hotel and lodge beds			
G. Group camping, no. of persons			
H. Marina slips and moorings			

J. General parking spaces					
K. Ski lift capacity per hour					
L. Golf holes					
M. Other (Name)					
25. Additional acreage is planned within five years A. ☐ Yes B. ☐ No		26. If the answer to 25 is "Yes," answer this question and also complete Form BOR 8-75 A. Additional land acres B. Additional water acres			
27. Physical environment of adjacent lands is such that the area can be expanded beyond its present boundaries and/or the boundaries indicated in item 26. A. ☐ Yes B. ☐ No.					
28. Other actual or potential uses of area, and their effect on recreation use of area.					
Non-recreation uses	Present non-recreation uses of area			Check potential non-recreation uses which would limit present amount of recreation use (3)	Check present or potential non-recreation uses which would limit recreation at area only if recreation use increases as much as 25% (4)
	Check existing uses (1)	Check effect			
		Improves recreation use	Little or no effect		
A. Timber production					
B. Mining (minerals) or gas or oil production					
C. Grazing					
D. Agriculture					
E. Watershed management					
F. Water impoundments					
G. Industry					
H. Commerce					
J. Residential					
K. Through roads and highways					
L. Transmission right of ways (electric, gas, water)					
M. Other (Name)					
29. Special problems encountered in administering this area					
(IF NECESSARY, ATTACH AN ADDITIONAL SHEET)					
30. Comments (If desired, this space may be used to clarify responses to previous questions - Please indicate number of item)					
(IF NECESSARY, ATTACH AN ADDITIONAL SHEET)					
31. Submitted by (Name)		Agency and address		Date	

C-4

Appendix II

Computer output questionnaires for 1968 reinventory.

FEDERAL ADMINISTRATIVE AGENCY 1210

UNIT NAME	COUNTY NAME	TOTAL ACERAGE		DAY VISITS		NIGHT VISITS	
		1964	1968	1964	1968	1964	1968
MURON NATIONAL FOREST	081	0413452		01260000		0420000	
MIAMATMA NATIONAL FOREST	041	0615715		00609490		0199925	
QITANA NATIONAL FOREST	053	0035674		00345000		0161000	
MANISTEE NATIONAL FOREST	165	0459758		01920000		0339700	

FEDERAL ADMINISTRATIVE AGENCY 1210

UNIT NAME	ACERAGE IN LANDSHIP	EXISTING FACILITIES				REC. UNITS		
		FACILITY CODE	ACRES		SITES 1964 1968	FACILITY CODE	NUMBER	
			1964	1968			1964	1968
MURON NATIONAL FOREST	5413452	A				D	00055	
		B	004		004	E	00010	
		D	022		008	F	00186	
		E	001		001	L	00300	
		F	085		013	04	48390	
		J	001			N	01200	
		K	016					
		L	049		004			
		V	019		001			
		J						
		K	004		001			
		R	055		011			
		S	921					
		U	058					
		V	059					
MIAMATMA NATIONAL FOREST	5415715	B	007		007	D	00158	
		D	060		012	E	00071	
		E	013		010	F	00569	
		F	238		022	H	00004	
		K	100			L	00060	
		N	002			K	00340	
		K	011			N	01650	
		L	045		002	R	00086	
		V	008		002			
		J						
		R	087		011			
		S	999					
		T	003					
		J						
		V	010					
ONTANA NATIONAL FOREST	0835674	B	009		009	D	00152	
		D	053		013	E	00214	
		E	030		030	F	00328	
		F	215		024	L	00096	
		V	100			K	00512	
		K	013		001	00	48780	
		V	002		001	R	00023	
		J	014		002			
		R	023		004			
		S	999					
		T	300					
		V	003					
MANISTEE NATIONAL FOREST	5459758	A				D	00187	
		B	004		003	E	00059	
		D	044		011	F	00275	
		E	011		011	L	00100	
		V	129		016	09	82560	
		K	026			N	29000	
		L	025		001			
		V	190		002			
		J						
		R	017		007			
		S	999					
		V	003					

MURON NATIONAL FOREST	001
MIAMATMA NATIONAL FOREST	041
OTYAWA NATIONAL FOREST	053
MANISTEE NATIONAL FOREST	165

STATE ADMINISTRATIVE AGENCY 4

UNIT NAME	COUNTY NAME	TOTAL ACERAGE		DAY VISITS		NIGHT VISITS	
		1964	1968	1964	1968	1964	1968
GRAND SABLE ST FOREST	003	016920		00190000		0003300	
ALLEGAN STATE FOREST	005	0029425		00057000		0008600	
ALPENA ST FOREST	007	0072660		00274000		0004850	
HARUWOOD ST FOREST	031	018609		00452000		0008900	
MUNUSCOG ST FOREST	033	011751		00104000		0001500	
STUNGEDON RIVER ST FOREST	043	021584		00201000		0001000	
FIFE LAKE STATE FOREST	055	018293		00452000		0008900	
IRON RANGE ST FOREST	071	007621		00058000		0000200	
PERE MARQUETTE ST FOREST	085	005089		00188000		0002400	
LAKE SUPERIOR ST FOREST	095	021782		00234000		0009200	
MACKINAC STATE FOREST	097	028441		00306000		0009100	
MICHIGAN ST FOREST	103	011435		00088000		0000400	
ESCANABA RIVER STATE ST FOREST	103	016265		00127000		0001300	
CHIPPENAW RIVER ST FOREST	107	005979		00175000		0001900	
MEMONINNEE ST FOREST	109	012120		00117000		0000500	
THUNDER BAY RIVER ST FOREST	119	018006		00635000		0008800	
OWENAW STATE FOREST	129	017970		00770000		0006000	
PIGEON RIVER ST FOREST	137	017563		00542000		0009400	
HOUGHTON LAKE ST FOREST	143	0318516		01235000		0021400	

STATE ADMINISTRATIVE AGENCY 4

UNIT NAME	ACERAGE IN OWNERSHIP IN 1964	EXISTING FACILITIES				REC. UNITS		
		FACILITY CODE	ACRES		SITES 1964 1968	FACILITY CODE	NUMBER	
			1964	1968			1964	1968
GRAND SABLE ST FOREST	0189880	E	012		011	D	00065	
		F	072		010	E	00140	
		S	215			F	00059	
		V	003					
ALLEGAN STATE FOREST	0029425	B	003		002	D	00160	
		D	002		001	E	00020	
		E	004		002	F	00148	
		F	037		005			
		X	100					
		S	070					
		V	021					
ALPENA ST FOREST	0072660	B	005		002	D	00066	
		E	004		002	E	00055	
		F	027		003	F	00066	
		S	100					
		V	001					
HARDWOOD ST FOREST	0186090	E	006		005	D	00035	
		F	014		004	E	00060	
		S	505			F	00029	
		J						
MUNSCONG ST FOREST	0117510	E				D		
		F				E		
		S	113			F		
STURGEON RIVER ST FOREST	0215840	E	009		004	D	00012	
		F	007		003	E	00060	
		S	203			F	00011	
		U	010					
		X	100					
		W	045					
FIFE LAKE STATE FOREST	0182930	E	033		023	D	00107	
		F	050		013	E	00530	
		S	400			F	00215	
		U	000					

COUNTY AD. INISTBATIVE AGENCY							
UNIT NAME	COUNT	TOTAL ACERAGE		DAY VISITS		NIGHT VISITS	
	NAME	1964	1968	1964	1968	1964	1968
ALCONA CO PARK	001	0000000		00007000		0009800	
MINERS CASTLE COUNTY PARK	003	0000020		00077000		0002500	
WESTSIDE CO PARK	005	0000011		00001000			
LONE RAIDS PARK	007	0000015					
BEAVER LAKE PARK	007	0000012		00012500		0000300	
BARNES PARK	009	0000045		00000100		0000044	
AWENAC CO PARK	011	0000047					
CHARLTON MEMORIAL PARK	015	0000110		00150000		0050000	

COUNTY ADMINISTRATIVE AGENCY									
UNIT NAME	ACERAGE IN OWNERSHIP	EXISTING FACILITIES				REC. UNITS			
		FACILITY	ACRES		SITES	FACILITY	NUMBER		
			1964	1968			CODE	1964	1968
ALCONA CO PARK	0000080	B	001		001	D		00005	
		D	001		001	E		00035	
		E	001		003	F		00025	
		F	040		001	G		00250	
		G	040		001	00		01200	
		K	001			K		00035	
			002		001				
		S	002		001				
MINERS CASTLE COUNTY PARK	0000020	F	006		001	D		00018	
		J	001			F		00025	
		D	001		001	K		00060	
		S	001						
		V	001						
WESTSIDE CO PARK	0000011	A	001		001	D		00050	
		B	003		001	K		00150	
		D	003		003				
		K	001						
		J	001		001				
LONG RAPIDS PARK	0000015	D	001		001	D		00004	
BEAVER LAKE PARK	0000012	F	006		040	D		00060	

COUNTY ADMINISTRATIVE AGENCY										
UNIT NAME		TOTAL			OPERATING			CAPITAL IMPROVEMENT		
		1964	1966	1968	1964	1966	1968	1964	1966	1968
ALCONA CO PARK	001									
MINERS CASTLE COUNTY PARK	003									
WESTSIDE CO PARK	005									
LONG RAPIDS PARK	007									
BEAVER LAKE PARK	007									
BARNES PARK	009									
AREHAC CO PARK	011									
CHARLTON MEMORIAL PARK	015									

Appendix III

**Camping visitations for state park and state
forest campgrounds in Michigan, 1968.**

Table 19. Camping visitations for state park and state forest campgrounds in Michigan, 1968

Item	Visitation per year	Number of Campsites	Visitation per year
State parks	5,149,409	13,394	384 ^{a/}
State forests	691,816	2,360	293 ^{a/}

^{a/} Visitation per campsite per year is used in Table 8 to obtain direct cost/visitor day.

Source: From records of individual agencies.