CHAPTER V- TN 16: CONSIDERATIONS IN DEFINING A METHODOLOGY FOR CALCULATING THE SUPPLY OF OUTDOOR RECREATION

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ABSTRACT

The purpose of this paper is to suggest ways of measuring supply when supply is defined as the number of user days of recreation that facilities or a land area are capable of supporting in a year. Relevant terms are defined such as: space standard, turnover rate, institutional factor (constraint) etc. Then in terms of the concepts introduced various "supplies" are defined and explained. These are:

1. Theoretical Potential Supply - This is the supply of recreation that would exist in an area if all land and facilities were developed to handle the participation that the area is capable of supporting while continuing to maintain the quality of the environment.
2. Present Potential supply - Present potential supply is calculated in the same fashion as theoretical potential supply except that it is the present degree of development which is considered in the definition.
3. Present Usable Public Supply - Not all of the potential supply of recreation in an area can be considered available for consumption by the public because of either accessibility or ownership constraints. Present usable supply is, therefore, calculated in the same fashion as present potential supply.
4. Effective Supply - Effective supply is present usable supply adjusted for (i)the institutional constraint imposed by present working habits, (ii) legal constraints which restrict the days available for certain types of recreation, and (iii) competing land or water use.

Examples of how to compute the supply measures proposed are presented.

This report was prepared early in a continuing Ontario project on supply measurement. Many problems in measurement and refinements to the basic ideas behind the supply project were being documented even as the first version of this paper was completed in 1972.

INTRODUCTION

When deciding where and in what activities, recreation dollars should be invested, it is important to look at present supply, participation and demand. The purpose this paper is to suggest ways of measuring supply. Supply is defined as the number of user days of recreation the facilities or land area are capable of supporting for a year. When interpreting what is meant by a user day, it should be kept in mind that it is the kind or type experience rather than the duration of the outing that is important and that, therefore, the time dimension attached to a user day is flexible.

Definition of Terms

Before discussing definitions of supply, it necessary to introduce a few terms.

1. Space Standard

   This is the term used in referring to the number of recreationists that can be accommodated per unit of area without appreciably destroying the quality of the recreation experience and/or the quality of the environment (for some class of user). These standards can run the entire gamut of sophistication from, for example, a standard of X linear feet of beach per swimmer to a standard that varies with the OLI standard of the beach. (OLI refers to the Ontario Land Inventory which is an inventory which involves some basic modifications to the Canada Land Inventory.)

It may be that the environmental quality standard is reached before the point where the quality of the experience is destroyed. If this is the case, the space standard established for the quality of the environment should be the standard used in the supply calculation.

2. Turnover Fate

More than one person or group can engage in the same activity at the same location during different periods of a day. For example, one group can occupy a picnic table in the morning, another in the afternoon and possibly a third group in the evening for a turnover rate of 3. In other words, for a physical unit of supply there may be three user days of picnicking
available on a single day.

3. Institutional Factor

Most people who are employed follow the normal pattern of working during the week and taking the weekend off. Therefore, although a similar number of user days of recreation are usually available on each day of the week, user days of supply on weekends are of more value than user days on weekdays since most people are not free to use them during the week. In the author's view, this implies that a reduction factor should be used to deflate the weekly estimate of supply (k factor).

4. Ownership and Accessibility (Location)

There are many types of ownership of recreation land and/or facilities and this can affect the supply of recreation available to the public. The ownership categories that have been used in the 1973 Ontario Tourism and Outdoor recreation
Planning Study (see Reference 21) for the Household Recreation Survey are as follows:

A. Crown Land.

B. Provincially operated:

(i) Parks, recreation areas, public hunting and fishing areas;

(ii) Other public facilities.

C. Conservation Authority operated:

(i) Parks,

(ii) Open Spaces.

D. Municipally operated:

(i) Parks and open space,

(ii) Other municipal facilities.

E. Federally operated:

(i) Parks,

(ii) Other public facilities.

F. Private land open to the public

G. Private land not open to the public.

Similarly, many recreation opportunities are inaccessible because of locational constraints. For example, a lake might potentially provide user days of fishing, however, if it can not be reached without great difficulty. This should be recognized in the definition of usable supply. On accessibility and travel, see TN 14.

5. Legal, Seasonal and Weather Constraints

Not every day of the year is available for each activity because of seasonal and

legal restrictions. For example, swimming and boating are summer activities. Snowskiing and snowmobiling are winter activities. Most types of hunting and fishing are restricted by law to certain periods of the year. Weather conditions also restrict the days available for particular activities even when these activities are in season. Weather actually involves a different nature of constraint on supply than legal restrictions but for the purposes of this preliminary discussion these factors are considered together. Basically, if one wants she/he can often participate legally in spite of the weather. The same cannot be said regarding legal constraints.

6. Competing Land or Water Use

There is often a conflict amongst recreation uses on a given tract of land or water. For example, water used for waterskiing interferes with the simultaneous use of that water for boat fishing. Multiple use of areas is a topic that has received substantial discussion. Pearse's (see Reference 16) article "Principles for Allocating Wildland Among Alternative Users" is an example of a growing literature. There are a variety of issues regarding non-consumptive use to which one may refer. (See Reference 13, 14 and TN 23.)

Definitions of Supply

The author believes that four methods of measuring supply should be considered.

1. Theoretical Potential Supply

This is the supply of recreation that would exist in an area if all Land and facilities were developed to handle the participation that the area is capable of supporting while continuing to maintain the quality of the environment. In other words, theoretical potential supply is the supply that would be forthcoming if an area were developed to the maximum that its OLI capability ratings allowed. The possibility of maintaining the quality of the environment at a given level is the fundamental issue. Theoretical potential supply is calculated for non-consumptive types of recreation, such as boating, swimming, picnicking, as the product of the area available for a recreation activity, the turnover rate, the space standard appropriate to the highest degree of development, and length of the season in days with length of season being defined as the number of days the activity can be participated in each year. (The length of season definition for theoretical potential supply includes bad weather days during the season but ignores Legal constraints.) So non-consumptive is used here in a special way because in the long run even picnicking and boating can be consumptive. The definition of potential capacity assumes that management can preserve a consumptive balance by applying sufficient capital to maintain a given quality of the environment.

In the case of consumptive activities such as hunting and fishing, the theoretical potential supply calculation recognizes biological productivity and catch per user day based on the assumption that the lands and waters are stocked to their biologically maximum level. Finally, it is assumed that all land and facilities are physically accessible and open to the public.

2. Present Potential Supply

Present potential supply is calculated in the same fashion as theoretical potential supply except that it is the present degree of development which is considered in the definition.

(OLI suitability is considered to be a valid index of present degree of development.) Space standards appropriate to the present degree of development are used in the calculation.

3. Present Usable Public Supply

Not all of the potential supply of recreation in an area can be considered available for consumption by the public because of either accessibility or ownership constraints. Present usable supply is, therefore, calculated in the same fashion as present potential supply but includes only land and water that is both open to the public (i.e. TORP categories A to T) and accessible (this would usually mean the area can be reached by car and/or after a short walk).

4.Effective Supply

Effective supply is present usable supply adjusted for (1) the institutional constraint imposed by present working habits as discussed at the beginning of this paper under item 3 (Institutional Factors), (ii) legal. constraints which restrict the days available for certain types of recreation, especially hunting and fishing and (iii) competing land or water use.

CONCLUSION

This paper presented a discussion of a number of concepts that are of importance in developing an understanding of the supply for outdoor recreation. The ideas presented here have played an important role in the development of the Ontario Day-Rec and TORP models and are used in "A Method of- Allocation of Recreational Supply to Urban Centres". (See TN 17.)

Ontario's planning depends very heavily on an increasingly sophisticated understanding of the nature of recreation supply. As analysis proceeds according to the requirements of a planning-programming-budgeting system, consideration of tradeoffs between alternative supplies for a given activity and tradeoffs between activities having common or disjoint supply are becoming increasingly important. It is imperative that the recreation planner develop a thorough understanding of the nature and composition of supply.

APPENDIX

The purpose of this appendix is to summarize the definitions of supply that have been presented and to show by means of example how these alternative supplies might be calculated. Factors shown in capital letters distinguish a method of measuring supply from the preceding method.

<u>Theoretical Potential Supply</u>

- development to Level that OLI capability rating indicates
- function of area available, SPACE STANDARD CONSISTENT WITH MAXIMUM DEVELOPMENT, turnover rate, length of season, (excluding legal constraints)

<u>Present Potential Supply</u>

- present degree of development considered
- function GI area available, SPACE STANDARD

  CONSISTENT WITH PRESENT DEGREE OF DEVELOPMENT, turnover rate, length of season (excluding legal constraints)

<u>Present Usable Supply</u>

- present degree of development considered
- function of area available, space standard consistent with present degree of development, turnover rate, length of season (excluding legal constraints), ACCESSIBILITY and LAND AND WATER TENURE

Effective Supply

- present degree of development considered
- function of area available, space standard consistent with present degree of development, turnover rate, length of season (INCLUDING LEGAL CONSTRAINTS), accessibility, land and water tenure, INSTITUTIONAL CONSTRAINTS and COMPETING USES ON LAND AND WATER

Table 1 is a tabular presentation of the above, and Table 2 is an example of how different types of supply may be calculated.

TABLE 1
SUPPLY CALCULATIONS CONSIDERATIONS*
Supply Categories

Considerations	Theoretical Potential	Present Potential	Present Usable	Effective
1. Potential Stage of Development	X			
2. Present Stage of Development		X	X	X
3. Area Available	X	X	X	X
4. Space Standard	X	X	X	X
5. Turnover Rate	-X	X	X	X
6. Length of Season (includes bad weather consi- derations)	X	X	X	X
7. Accessiblity (% accessible)			X	X
8. Ownership (% open to public)			X	X
S. institutional Constraints				X
10.Length of Season Recog- nizing Legal Constraints				X
11.Competing Land & Water Use				X

X Indicates that an item is considered in the calculation of supply.

Supply Category/ Considerations	Potential stage of development	PPresent stage of development	Area Available	Space standard	Turnover rate	Length of Season (Considering bad weather constraints)	Accessibility (% Accessible)	Ownership (% open to public)	Institutional constraint	Length of season (Legal Constraints Considered)	Competing Land and Water Use	Total Supply (user days) Class 1	Class 2	Total
Theoretical Potential Supply	X		100	5	2	90						90k		
	X		200	3	2	90							108k	198k
Present Potential Supply		X	100	3	2	90						54k		
		X	200	2	2	90							72k	126k
Present Usable Supply		X	100	3	2	90	75	50				20.3k		
		X	200	2	2	90	75	50					27.0k	47.3k
Effective Supply		X	100	3	2		75	50	.75	90	X	15.2k		
		X	200	2	2		75	50	.75	90	X		20.3k	35.4k

In other words, the area could support 198,000 user days of bathing if developed to the limit consistent with its OLI ratings. It is presently providing 126,000 potential user days which, when ownership and accessibility are considered, drops to 47,250. Finally if institutional constraints, legal constraints and competing use are accounted for, the effective supply of the area is 34,438 user days of bathing.

Assumptions

(The assumption numbers correspond to those used in Table 1)

1. The area is in its natural state.
2. The area is in its natural state.
3. Area available - 100 linear feet of Class 1 and 200 linear feet of Class 2 bathing beach.
4. Space standards - with no development - Class 1 = 3 and Class 2 = 2 people/linear foot of beach - with Class 1 = 5 and Class 2 = 3 people/linear foot of beach.
5. Turnover rate is 2 people/day.
6. Season is 100 days with weather conditions preventing use 10 days/year,
7. 75 percent of the area in each Class is physically accessible.
8. 50 percent of the accessible area for each Class is open to the public.
9. Institutional factor ("K") is .75.
10. No legal constraints.
11. No competing land or water uses.