



## ABSTRACT

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The relatively recent growth in the demand for outdoor recreation has been widely met by the provision of publicly funded facilities. This is especially true with respect to overnight camping parks. As with any governmentally provided good, means other than the private market place must be sought in order to determine the socially optimum supply. One aspect of the optimum public supply of overnight camping facilities is the "spatial", or regional distribution of primary camping benefits emanating from these facilities. Distributional equity, being one of the many objectives of public investment, is an aspect of outdoor recreation investment which has received little attention. In response, the thesis was directed towards determining for the summer (May through September) of 1975 the spatial distribution of primary camping benefits accruing to the residents of British Columbia from their system of overnight camping facilities, the provincial parks.

At the outset, the meaning of economic benefit was explored and then used in examining the commonly used methods to value outdoor recreation facilities. The travel-

cost method, which uses travel expenses as a proxy for willingness to pay, was deemed to be the most theoretically valid approach in determining primary camping benefit. Previous attempts at estimating camping demand and benefit, both for day-use and overnight facilities, were then examined with the conclusion that many are theoretically weak or inaccurate. In light of this, two overnight camping demand functions were formulated for destination (sole purpose of trip) camping groups. Both of these demand models, group camping days overnight demand, (a unique and complete formulation of overnight camping) and overnight group visit demand (only approximated in the outdoor recreation literature) were utilized in econometrically estimating provincial park overnight destination camping demand for as many parks as was statistically possible. For data related and statistical reasons, only the later demand model was used in the calculation of primary overnight destination camping benefit.

By aligning the primary overnight destination camping benefit results, per thousand regional population, in terms of the provincial regional districts, the spatial distribution of primary overnight camping benefit was derived. This revealed that the whole south-east corner of British Columbia received below the provincial average amount of benefit from

the publicly funded provincial park system. A band of regional districts running up from the Okanagan and across the centre of the province received above the provincial average in primary camping benefit, while the middle of the province received an average amount. The results were less consistent for Vancouver Island and the lower mainland, although it is noteworthy that both Victoria and Greater Vancouver were among the chief recipients of per capita primary overnight destination camping benefit.

The empirical analysis of the status quo distribution of primary overnight destination camping benefit revealed information which is requisite to investigation of the regional equity of future provincial park investment; and is another step in further rationalizing the public investment process.

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## CHAPTER I

### INTRODUCTION

#### Scope of the Thesis

There is a large and growing patronization of outdoor recreation facilities throughout Canada. Indeed, it has been estimated that five billion dollars are spent annually on outdoor recreation in this country.<sup>1</sup> More locally, in the ten year period 1963 to 1973, the number of campsites in the British Columbian provincial park system has increased by sixty-six percent (3700 to 6150) while camper nights have more than doubled (0.95 to 1.9 million).<sup>2</sup> Day visits during the same period almost tripled as the number increased from 3.1 to 8.1 million.<sup>3</sup>

Not only do the above statistics denote the general growth of outdoor recreation, but they also reveal the

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<sup>1</sup>Canada, Department of the Environment, Fisheries and Marine Service, Northern Affairs Branch, The Significance of Outdoor Recreation to the Economy, by William F. Sinclair, Chief of Economics and Sociology (Vancouver: 1975 ? ), p. 3.

<sup>2</sup>British Columbia, Department of Recreation and Conservation, Parks Branch, Planning Division, British Columbia's Park System: A Graphic Presentation (Victoria, 1975), pp. 8, 16.

<sup>3</sup>Ibid., p. 16.

significant participation of the public sector in the supply of outdoor recreation services. These public services are regularly supplied with minimal user charges. The main reasons for government intervention into the outdoor recreation market are historical precedence and the Crown's great predominance as a landowner. Two additional reasons, which also give rational to the limited user fees, are the widely held belief that outdoor recreation is socially beneficial and as such should be freely available to everyone,<sup>1</sup> and that outdoor recreation is a quasi-public good since the marginal cost of an additional visitor is zero over a wide range.

Although some people may believe that outdoor recreation is a priceless commodity, resources are limited while competing demands on these resources are not. As

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<sup>1</sup> "Providing recreation opportunities sufficient in number and diversity for the constructive and satisfying use of leisure by all of the nation's people is a primary public purpose". Quote from the National Academy of Science, cited by P.J. Bandy (Chairman, Wildlife and Recreation Committee, Canada Land Inventory, and Biologist in charge of Wildlife Research Division, Fish and Wildlife Branch, Department of Recreation and Conservation, British Columbia) in his introductory remarks to a seminar on outdoor recreation: Wildlife and Recreation Committee, Canada Land Inventory, "The Present and Future of Outdoor Recreation in British Columbia", Victoria, 1971. (Mimeographed.)

with any governmentally-provided good, there are a host of problems in determining the socially optimum supply since the allocative forces of the market have been circumvented. When consumers are not allowed to register their evaluation of a good by offering a price, but instead face a fixed, essentially arbitrarily set fee, other measures must be resorted to in order to determine efficient output and distribution.

Cost-benefit analysis is a response to the problem of allocating goods which have non-priced inputs or outputs. This technique simply involves choosing public projects for which benefits exceed costs over the relevant time horizon. Determining which public project to invest in out of an array of alternatives is merely an extension of this technique. Problems with this approach arise with the exclusion from the analysis of presently non-quantifiable costs and benefits, and non-efficiency considerations. This results in a cost-benefit measure which only investigates the "financial" criterion of comparing money costs to money benefits, and implies that non-valued effects of the project are insignificant or do not exist. This myopic view of public investment is slowly changing as attempts are made to make cost-benefit analysis more relevant to the

multiple objectives of public investment. Hill and Shechter [1971, p. 111] have broadly grouped all costs and benefits, producing a list of six objective-related criteria which they state should be followed when investing in public recreation: national economic benefits, regional economic benefits, distributional equity, preservation of natural areas, availability of choice, and public participation. While the national and regional economic benefit criteria are related to efficiency considerations, the later four concern non-efficiency objectives.

Various techniques within cost-benefit analysis have been developed and used to estimate national or direct consumption benefits, (these will be discussed in the following chapter) and this has greatly aided rational outdoor recreation investment. In investigating regional economic benefit (the secondary effects of recreational facilities) input-output studies have been utilized (for example see Beyers [1970]). The objective of preserving natural areas has only implicitly been taken into account to date, although work is preceding to allow for explicit consideration of this objective (for example see Fisher and Krutilla [1975]). Means are also being developed with which to explicitly include effects of recreational facility

investment on the natural environment, including the effects on the park's ecological and psychological carrying capacities, in the public management decision (for example see Walter and Schofield [1977]). The remaining three public investment criteria, the distributional equity of recreation facilities, the availability of choice of recreational activities, and the extent of the total population's participation in the use of a system of recreational facilities, possibly are being taken into account implicitly in the public investment decision, but have been neglected in the explicit empirical analysis of adding up costs and benefits. Of the three neglected public investment criteria, distributional equity will be further examined.

Public investment in outdoor recreation facilities results in various distributions of costs and benefits, the two most noted being the spatial distribution and income distribution.<sup>1</sup> The former is the geographic distribution of costs and benefits across a political jurisdiction, and the latter is the distribution across the

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<sup>1</sup>

In the United States the racial distribution of costs and benefits is also commonly noted.

income levels of the jurisdiction's residents. While distributional equity involves at least both of these, the thesis will only be concerned with the spatial distribution.

Suggestions have been made to include the distribution of costs and benefits emanating from a new public project in the investment decision<sup>1</sup>; however, regardless of which technique is used, knowledge of the actual prior distribution of costs and benefits is requisite. The spatial distribution of costs and benefits from the existing system of outdoor recreation facilities must be determined before the effects of a new facility can be analysed. This is true whether the ensuing change in the spatial distribution of net benefits is explicitly introduced into the cost-benefit analysis, or noted separately in order that legislators may subjectively take it into account. It is to this end of determining the status quo spatial distribution which the thesis is directed.<sup>2</sup>

Costs and benefits may be broadly segregated into two categories, primary and secondary. Primary benefits

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<sup>1</sup>For example see: Freeman [1969]; Maass [1966]; Marglin [1962]; Weisbrod [1968].

<sup>2</sup>Unless otherwise noted, discussion throughout the thesis of distributional or regional equity is with regard to the "spatial" distribution.

are those gains accruing directly to the people or parties who use the outdoor recreation facility, while secondary benefits are those induced indirectly by the project, such as regional multiplier effects.<sup>1</sup> Synonymously, primary costs are the direct costs involved in providing the recreation facility, whilst secondary costs are those required such that induced secondary benefits can be realized.

Primary benefits and costs are the most important category to be estimated initially, owing to their expected relative size. Since primary costs can be derived from existing government expenditure and revenue data, it is primary benefits and the spatial distribution of these which deserve immediate investigation when considering regional equity. In relation to primary costs, the derivation of primary benefit is an involved and difficult task since there is no market price which allocates provincial recreation facilities, and it is apparent from the outdoor recreation literature that the determination of the spatial distribution of these benefits has not been

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<sup>1</sup>Primary benefits are commonly referred to as national benefits, and secondary benefits as regional benefits.

attempted before. Therefore, the purpose of the thesis is to develop the appropriate manner to serve this end, and to utilize this in actually deriving the spatial distribution of benefits emanating from the British Columbia provincial park system. Specifically, the thesis is directed towards estimating the spatial distribution of primary overnight destination camping benefits derived from the provincial park system of British Columbia during the summer of 1975. It is only with this requisite information that the regional equity of future provincial park investments may be considered.

The calculation of the spatial distribution of primary overnight destination camping benefits is based upon many aspects of economic theory, but most directly upon those of marginal valuation and the travel-cost approach to benefit estimation. By utilizing these two concepts, in the context of constrained utility maximization, individual park demand functions may be modelled, and with the use of observed park visitation data, econometrically estimated. The distribution of primary camping benefits may then be determined by employing integral calculus to determine regional benefit, which is then summed across parks. These are briefly the techniques utilized in order to achieve the

purpose of the thesis: the determination of the status quo spatial distribution of primary overnight destination camping benefits. A short outline of the thesis follows.

#### Thesis Outline

The end result of deriving the status quo spatial distribution of primary overnight destination camping benefit, with some qualifications, is only achieved after much analysis and criticism of previously used benefit estimation techniques. The meaning and manner of calculating economic benefit is investigated in chapter 2: "Economic Benefit -- A Review of the Literature". This information is then utilized in examining the propriety of outdoor recreation benefit estimation techniques which have previously been used. It is concluded that the most appropriate benefit estimation technique is the travel-cost method. Subsequently, previous attempts at estimating camping demand and benefit by means of the travel-cost approach are critically reviewed in chapter 3: "Overnight Camping Demand and Benefit Estimation Models". By employing this inquiry, after noting the peculiarities of overnight camping, in conjunction with a constrained utility maximization model, a unique overnight camping demand

function is derived and analyzed. Finally, it is submitted that the derived overnight camping demand model statistically requires highly disaggregated data with which to econometrically fit it. Utilizing the preceding analysis an alternate overnight park demand model was derived which can be estimated using the commonly aggregated park visitation data, although use of this demand model results in an estimate of realized benefit accruing from the opportunity to camp at a park, and not that from the actual total camping experience.

The empirical representation of the dependent and independent variables in both overnight camping demand models are discussed, along with data sources, in chapter 4: "Estimation of Overnight Camping Demand". Having already segregated campers into day-use and overnight camping categories, they are further differentiated by whether they are transient or destination campers. The proposed benefit estimation methodology is only applicable to destination campers, (park visit is the sole purpose of their trip) thus requiring the deletion of transient camping observations from the park visitation data. Hence, the estimation of the spatial distribution of primary benefits will be for overnight destination camping groups.

The econometric results of estimating both overnight demand models outlined in chapter 3 are then presented and discussed. It is these results which are applied to the task of determining the spatial distribution of primary camping benefits in British Columbia for the summer of 1975; chapter 5: "Primary Overnight Destination Camping Benefit". The benefit distribution results are discussed and presented graphically, the salient feature being the below average amount of camping benefits per thousand population received by the south-east corner of the province. Chapter 6 concludes the thesis with a general review, a discussion of problems encountered, and an examination of the applicability of the theoretical and empirical results.

## CHAPTER II

### ECONOMIC BENEFIT -- A REVIEW OF THE LITERATURE

Fundamental economic theory will be reviewed in this chapter in order to clearly establish the definition of economic benefit, or synonymously, economic value. Although much of this theory is quite elementary, it forms the foundation of all subsequent analysis and thus its review is pertinent. Specifically, once this review has been completed it will be possible to choose on the basis of theoretical validity the most relevant of numerous techniques used for estimating the primary benefit emanating from outdoor recreation facilities.

#### Economic Benefit

##### Marginal Valuation

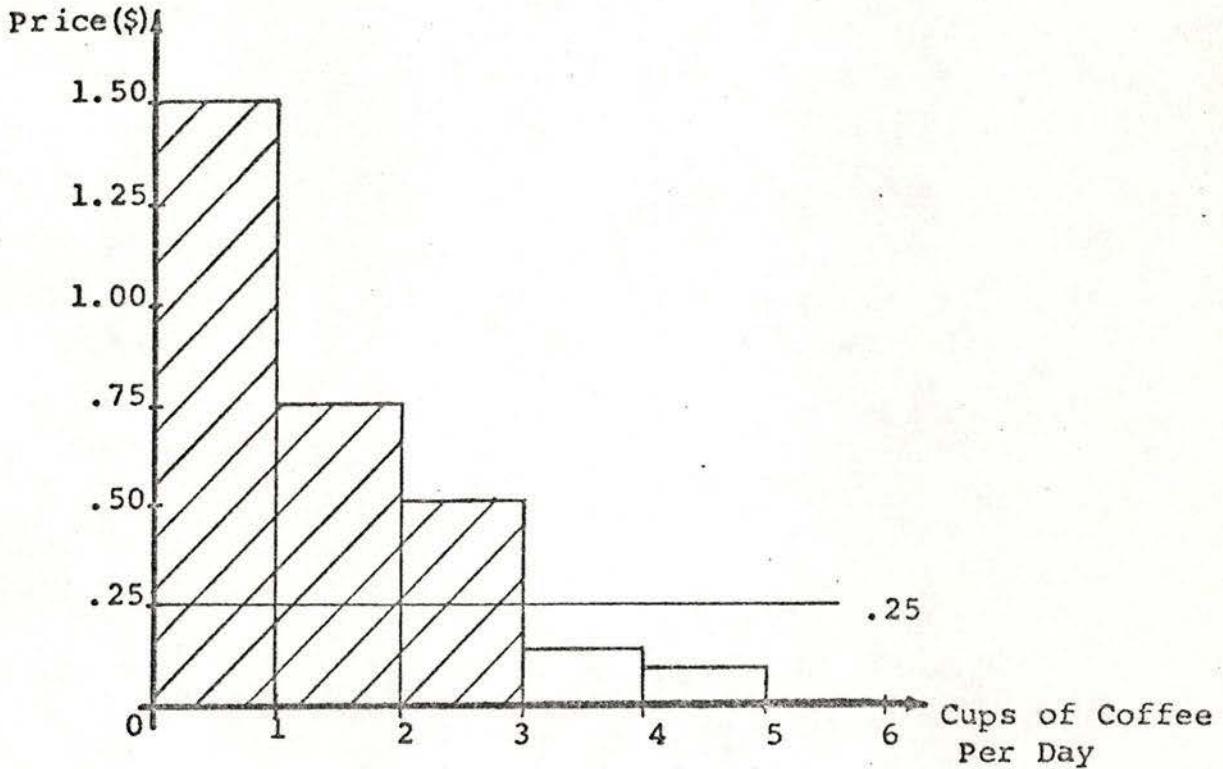
All consumers are confronted by the problem of how to maximize their want satisfaction, given the limited resources at hand. Simply stated, the solution is to ensure that all purchases are conducted such that marginal benefit, or utility, equals marginal cost. If the benefit received from the last unit purchased is less than marginal

cost, income could be reallocated from this good to others, achieving an increase in total satisfaction. Since the value received from any good purchased must at least equal the cost of the good, "minimum economic benefit" is determined merely by what an individual pays for that good.

By way of further elucidating the concept of economic benefit, a simple experiment could be performed whereby an individual is asked what he is willing to pay for successive cups of coffee, rather than forego consumption. The results of such an experiment could be depicted as shown in figure 1 which presents the consumer's marginal valuation of each daily cup of coffee, from \$1.50 for the first cup, to a zero valuation for his sixth cup.

Assuming that individuals can not affect the price of coffee, this consumer faces a constant marginal cost (assuming no externalities) equal to the market price, say twenty-five cents, and he will purchase three cups of coffee per day. This individual values each cup of coffee he consumes at, at least twenty-five cents, or else he would not have purchased it. It is evident from figure 1 that the consumed cups of coffee are valued greater than twenty-five cents, nonetheless, the market price is a minimum estimate of the economic benefit received from each cup of coffee.

Fig. 1. Marginal Valuations of Cups of Coffee



In order to determine the "total economic benefit" received from all the cups of coffee consumed, not only does price, the minimum valuation, need to be known, but also what the individual would be willing to give up rather than forego consumption. Figure 1 reveals that the coffee drinker is willing to pay the total shaded area rather than forego consumption of his three daily cups of coffee; therefore, "total economic benefit" is the sum of the

individual's marginal valuations of the units consumed.<sup>1</sup> The respondent to the coffee experiment would gladly pay only the market price for his coffee, or anything less than the sum of his marginal valuations, but he would pay no more than this because in that event he could achieve greater utility by reallocating his income to other goods.

Since society's marginal valuation of a good is merely the summation of individuals' marginal valuations, "social economic benefit", or the economic value received by society is the sum of the marginal social valuations.

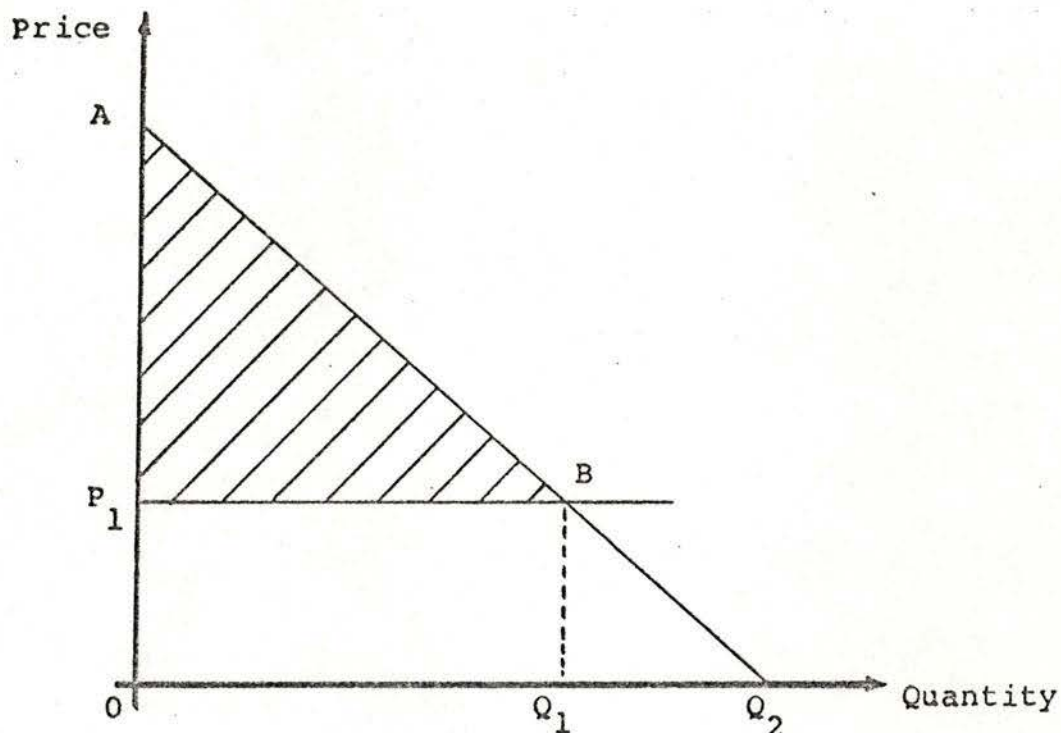
#### Hicksian Versus Marshallian Demand

If the "willingness to pay" experiment had been performed with a perfectly divisible good, the resultant marginal valuation curve would have been smooth and everywhere differentiable as shown in figure 2.

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<sup>1</sup>This amount would be appropriated by the coffee merchant if the merchant was a perfectly discriminating monopolist.

Fig. 2. Marginal Valuation Curve: Marshallian Uncompensated Demand Function



In this case the price is  $P_1$ , the amount consumed is  $Q_1$ , and total economic benefit is the area  $OABQ_1$ . This area is comprised of two entities: the amount paid,  $OP_1BQ_1$ , ( $= P_1 \cdot Q_1$ ) and what Marshall termed "consumer surplus",  $AP_1B$ . Consumer surplus is economic benefit net of cost.

The "willingness-to-pay", or marginal valuation curve shown in figure 2,  $ABQ_2$ , is simply a Marshallian uncompensated demand function portraying the relationship

between price and quantity, all other things being equal (ceteris paribus). These "all other things" include the prices of all other goods, the individual's tastes or preferences, and money income. It can be shown that the area under this Marshallian uncompensated demand curve does not truly measure total economic benefit. Rather, the true measure is the area under the Hicksian compensated demand curve. In determining the Hicksian demand function real income is held constant, whereas only money income is constrained to be unchanged for the Marshallian function.

Given that the Debreu Theorem and the standard assumptions made with regard to ordinal utility functions hold, the "Slutsky Equation" can be derived when utility is maximized subject to an income constraint.<sup>1</sup> This equation reveals that uncompensated Marshallian demand changes in response to a price alteration for two reasons: the own price substitution effect which is unambiguously

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<sup>1</sup>The Debreu Theorem states that if the consumer preference order is a total pre-ordering and if preferences are continuous, then these preferences may be represented by a real ordinal utility function. The standard assumptions made on these functions are that they exhibit continuous first and second partial derivatives, there is non-satiety, and the principal minors of the bordered hessian alternate in sign.

negative, and the real income effect, which for non-inferior goods is positive.<sup>1</sup> It is this real income effect which differentiates the Marshallian and Hicksian demand functions. Only if the income effect is zero are the Marshallian and Hicksian demand functions coincidental.

A measure of economic benefit calculated from a Marshallian demand function, or willingness-to-pay curve will unambiguously overestimate total benefit if the good is non-inferior; however, as the income effect approaches zero, the Marshallian benefit figure will more and more closely approximate the true measure of benefit, and in the limit these will be identical. In applied economics it is thus generally assumed that either the income effect is zero, or that it is so small as to produce only a negligible bias. Recently, Harberger [1971] has suggested that consumer surplus and hence, the use of the Marshallian demand function, be institutionalized as the appropriate measure of economic benefit.

This concludes the theoretical discussion of economic benefit. As argued above, economic benefit is taken to be

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<sup>1</sup>A non-inferior good is defined as one for which demand increases if real income increases.

the relevant area under the Marshallian demand function. The next section of this chapter will review, in the light of this discussion, some of the various measures which have been used to estimate the primary benefit derived from outdoor recreation.

#### Estimation of Benefits From Outdoor Recreation

If park services were allocated by a competitive market, a rationing price would arise, and time series data could be used to econometrically fit a multi-dimensional aggregate park willingness-to-pay, or demand surface to explain variations in quantity demanded. It would then be a simple exercise to add up the marginal valuations over the whole range of consumption in order to determine the primary camping benefits accruing from the park. Unfortunately, this is not possible owing to park services being treated as quasi-public goods. To circumvent this problem many methods have been used to impute market prices and total benefit. These will be discussed below: first with regard to theoretically inadequate primary benefit estimation techniques; followed by the now-traditional and theoretically correct travel-cost approach to benefit estimation.

## Theoretically Inadequate Estimates of Primary Camping Benefit

In 1950 the United States National Park Service sanctioned a benefit estimation process which is utilized in the National Accounts for the valuation of government services. Simply stated, a project is valued as being at least equal to the cost of generating it. Not only does this immediately justify any project, but it also has only a tenuous relation to the benefit received by consumers of the service, for it is a supply-orientated measure. Another such supply measure which is popular in Europe, imputes consumers' forest recreation benefits from the value lost by forest owners. This lost value is due either to damaged timber and increased forest protection costs, or to the opportunity cost of leaving the land in forest and recreation production. Both of these are supply-orientated measures and fail to measure primary camping benefits.

A benefit estimation method somewhat related to the cost of service method, though demand-orientated, is the use of total expenditure on all outdoor recreation as a proxy valuation of the benefits received. In a sense, this is a sum of valuations at the margin of consumption, but

there is a question of, Which margin? This method ignores the timing of consumption and the purpose of the expenditures. It is also of little use in the valuation of a particular recreation facility.

A benefit estimation technique used recently in the U.S.S.R. involves comparing the productivity of two groups of workers: those who have been offered forest recreation and those who have not.<sup>1</sup> As a result of increased productivity by the former group of workers, it was calculated that the value of recreation at the forest studied was 91.7 roubles per year. Though this suggests that there is a positive externality attributable to forest recreation, the benefit estimation procedure ignores consumption benefits because it has no relation to willingness to pay. It is likely however, that a willingness to pay method of benefit estimation would find little support in the U.S.S.R.

A relatively more substantial method of benefit estimation assigns related market values to non-priced recreation services. For example, the value of a provincial campsite could be deemed as the market-determined price of

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<sup>1</sup>Gundermann [1976, p. 6] reports that this method was used by Iljew and Gordienko at the Technical Forest Institute Woronesch in 1972.

campsites at privately owned campgrounds. Total primary benefit is stated to be the sum of this proxy for market price over all consumers and hence, it ignores consumer surplus. This is also a somewhat arbitrary measure since it fails to take into account the quality differences and interaction between public and private campgrounds.<sup>1</sup>

All of the outdoor recreation benefit measures discussed so far, fail to estimate total primary economic value since willingness to pay is not measured. One technique which is used to estimate willingness to pay is simply asking people what the recreation service is worth to them. The usual procedure is to ask recreationalists their reaction to various entrance charges. Although this method is theoretically sound, in that it attempts to map out the marginal valuation or willingness-to-pay curve, it is hampered by the emotional nature of recreation demand and by the effect respondents perceive their answers will have. People may overstate their true willingness to pay in the belief that public authorities will then provide more free facilities, or in order not to appear miserly.

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<sup>1</sup>See O'Riordan [1973] for a discussion of the private and public campgrounds in British Columbia.

Conversely, respondents may understate their valuation if they believe future entrance fees will be based upon their responses. In addition to these failings, Beardsley [1971, p. 179] points out that irrespective "of the bias present, the value estimated is not a true market value and its usefulness in economic efficiency analysis is questionable."

#### Travel-Cost Method of Primary Camping Benefit Estimation

In 1947, Harold Hotelling suggested using observed travel costs as a means of determining willingness to pay for recreation facilities, and though the actual technique he proposed is suspect, it has led to a breakthrough in the valuation of many non-priced goods.<sup>1</sup> Unlike most goods and services outdoor recreation is locationally fixed: outdoor recreation can not be transported to the consumer, but rather the consumer must travel to it. The travel costs incurred by park users are therefore an indication of their marginal valuation. Simply by observing visitation

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<sup>1</sup>Hotelling's suggestion was made in a letter to the Director of the U.S. National Park Service in 1947. He suggested that the value of a park to each user is the travel cost of the most distant visitor. See Clawson and Knetsch [1966, p. 64].

rates to a given park from various geographical locations, a willingness-to-pay function may be generated. This is similar to a gravity model, and as with it, it is expected that there is a negative correlation between park visitation and distance travelled. Assuming that park users are homogeneous with respect to tastes, socioeconomic characteristics, and intervening opportunities, in addition to assuming that the park visit is the sole purpose of the trip,<sup>1</sup> this simple willingness-to-pay function can be used to estimate the aggregate primary camping benefit derived from the park in question. This travel-cost approach is a primary benefit determination technique which is based upon the constructs of consumer demand, and hence, unlike the previous methods discussed, will yield theoretically sound estimates of primary camping benefit.

#### The Fundamental Travel-Cost Technique

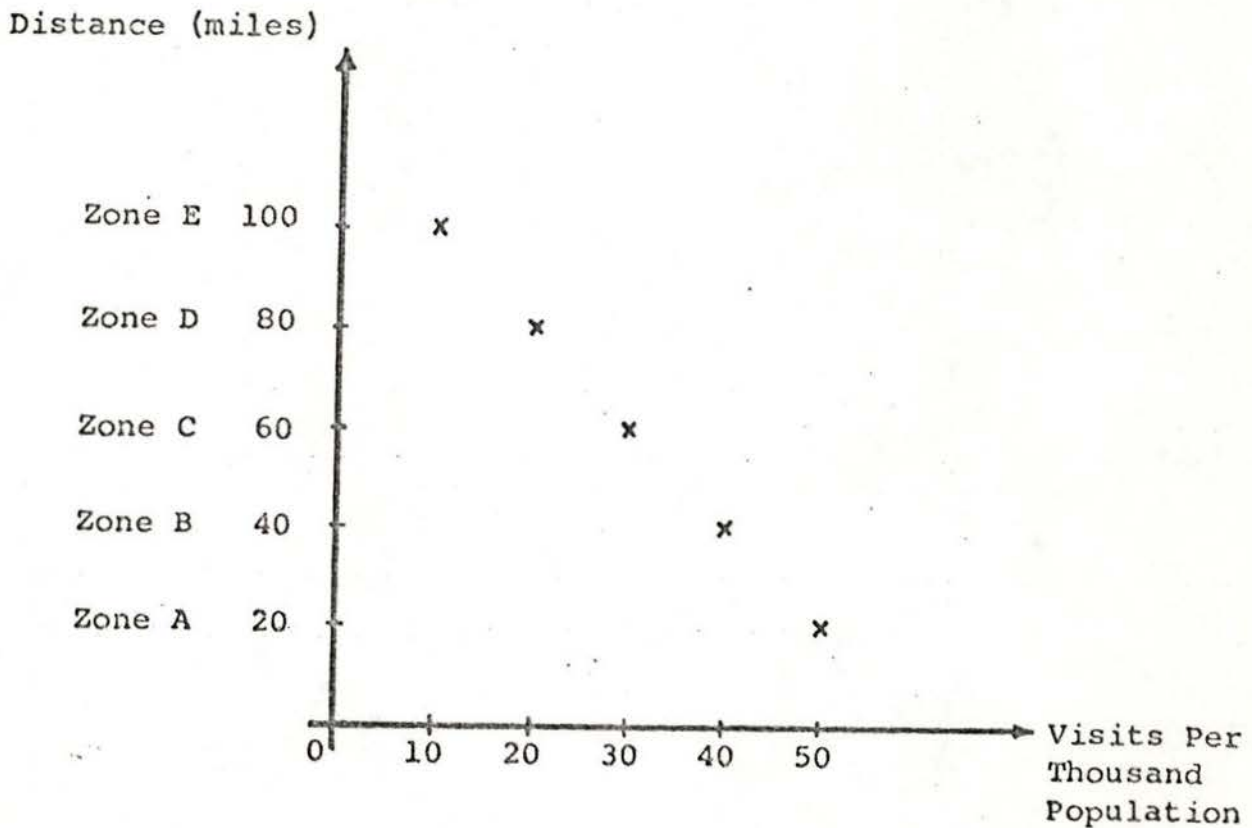
The travel-cost approach to benefit estimation was developed in detail in Clawson [1959a], and Clawson and Knetsch [1966]. It has been used widely since then, although

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<sup>1</sup>The necessity of the "sole purpose of trip" assumption is discussed in detail in chapter 4.

not always in an appropriate manner as will be shown in the next chapter. The fundamental travel-cost technique requires only basic geographic data on the origin of park visitors in order that these visitors can be allocated to various "distance zones". Originally these distance zones were defined by concentric circles about the park in question, though most recent studies use discrete geographical areas, such as cities or counties. Visits are aligned with distance as shown in figure 3.

Fig. 3. Visit Rates and Distance



Since zone population is a major determinant of park visitation, the visit rate is usually expressed as visits per thousand zonal population. The visit-distance relationship is then converted into a visit-cost format by assuming a fixed travel cost per mile. The result of the conversion from mileage to travel cost is shown in figure 4, assuming a travel cost of five cents per mile. Clawson has termed this the "demand curve for the whole recreation experience", and has defined this experience as involving visit anticipation, travel to the site, on-site experience, travel back, and recollection.

Fig. 4. Park Visit Demand Curve

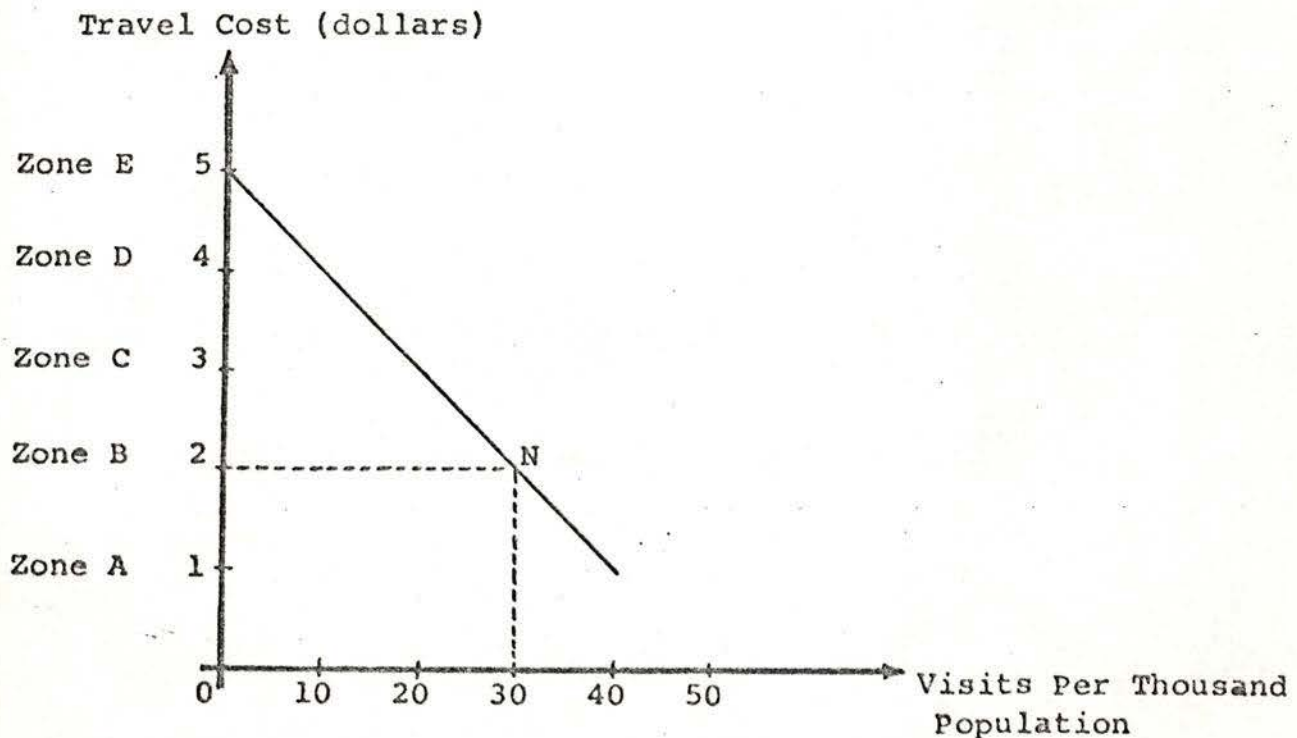
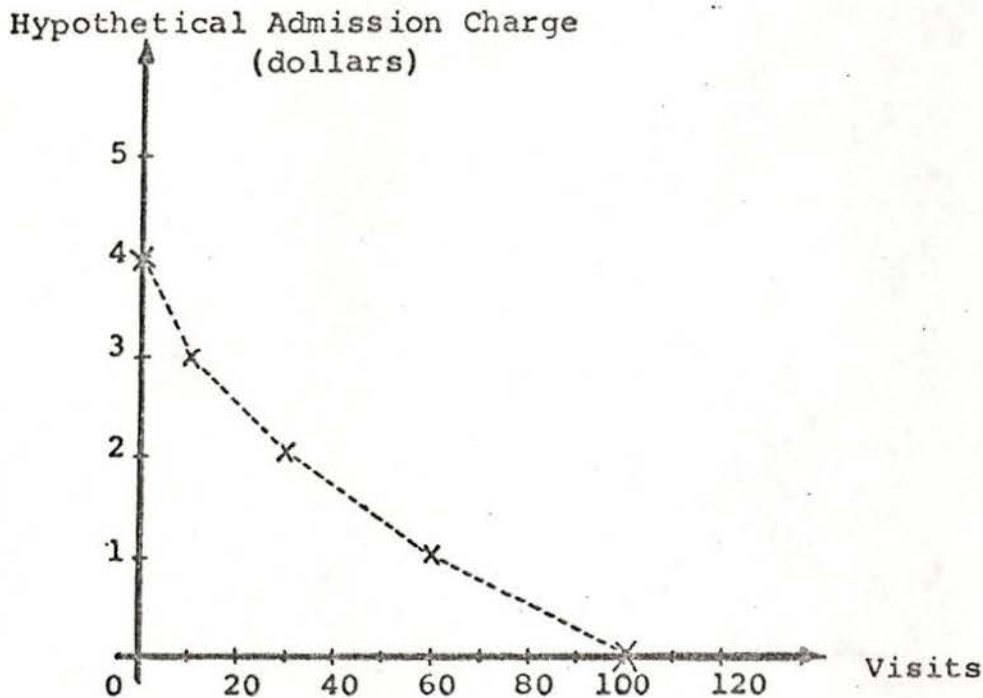


Figure 4 is constructed by observing visitation variation across distance zones and displays the manner by which park visits decrease as cost (distance) increases. Given that all other things are equal, figure 4 is the distance zones' Marshallian uncompensated demand curve for park visits: it is the willingness-to-pay function for each distance zone. Hence, the benefit received per thousand population by Zone B, for example, is the area bound by 5-N-30, of which 2-N-30 ( $= 30 \cdot 2$ ) is total social cost and 5-2-N is consumer surplus. The total absolute economic value received by the visitors from Zone B is the zone's population in thousands multiplied by 5-N-30.

The Clawson-Knetsch technique of economic benefit estimation does not involve the calculation of benefit in the manner shown above, but rather utilizes a demand function exhibiting the relationship between visits and a hypothetical admission charge. This new demand function is called the "recreation site per se" demand curve. Figure 4 reveals that at the current park admission charge, say zero, there are forty visits from Zone A, thirty from Zone B, twenty from Zone C, ten from Zone D, and none from Zone E, assuming a population of one thousand per zone. This gives a total of one hundred visits and is plotted in figure 5. If a

hypothetical admission charge of one dollar is levied, figure 4 shows that visitation from Zones A, B, C, and D will respectively fall to thirty, twenty, ten, and zero. By continuing this process of arbitrarily increasing the hypothetical admission fee by dollar increments, the "recreation site per se" demand function is mapped out, as shown in figure 5.<sup>1</sup>

Fig. 5. Demand Curve for the "Recreation Site Per Se"



<sup>1</sup> In order that this process may be carried out it must be assumed that campers react in the same manner to a change in the park entrance fee as they would to a change in travel costs.

It is the area under this "recreation site per se" demand function which is calculated when using the Clawson-Knetsch procedure to determine the total economic benefit accruing from the park to park users; however, it can be shown that the area under the demand curve in figure 5 is equal to that under the function shown in figure 4.<sup>1</sup> The demand curve for "the whole recreation experience" is appropriate for the calculation of economic value because it is the marginal valuation function. The Clawson-Knetsch second step utilizes no information which is not contained in the "demand curve for the whole recreation experience" (other than population data) and thus, appears to be redundant, although expositionally it does posit the park demand function in the more familiar quantity and direct price mode.

#### Refinements to the Travel-Cost Technique

In recent years the economics of outdoor recreation literature has been abound with refinements to the now-traditional Clawson-Knetsch travel-cost approach to

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<sup>1</sup> See: Burt and Brewer [1971, p. 816]; Williams and Anderson [1975, p. 105]; Mansfield [1971, p. 56].

recreation benefit estimation, and some of these refinements will be briefly outlined. The travel-cost approach was first strengthened by using various socioeconomic variables to account for variations in visitation other than that attributable to distance, avoiding the initial assumption of camper homogeneity. In addition, recent works, such as Cessario, Goldstone, and Knetsch [1969] and Cheung [1972] have attempted to take into account variations in the availability of substitute parks. Prior to this, it had to be assumed that each distance zone, and hence all campers, were equally supplied with recreation services, both in terms of quantity and quality. The socioeconomic characteristics and the availability of substitute park measures act as shift variables for the two-dimensional park demand curve. After taking these factors into account it need only be assumed that park users are homogeneous in their reaction to a price change.

Early in the use of the travel cost technique Scott [1965] pointed out that since travel is so time-intensive, the value of travel time must be included in the cost of camping. Any valuation of benefits which neglects travel time costs will be an understatement of the true value, assuming that the trip to the park in question is the sole

purpose of the trip. Initially, researchers attempted to include distance as an additional explanatory variable to account for the effect of time; however, as Brown and Nawas [1973] report, this usually results in high collinearity between money cost and distance when aggregated data is used. It is shown that when micro data is utilized both variables may be included in the demand equation. Since most recreation data is of an aggregated form, practitioners of the travel-cost method usually add a factor to the fixed mileage cost which takes into account the time costs of travel.

Pearse [1965], in a unique approach, uses micro data on park visitors in order to allocate them into income classes. This is done to avoid the assumption that all campers react in the same manner to a price change, regardless of their income levels. Consumer surplus is defined as the difference between the greatest travel cost paid within an income class and that paid by other members of the group. This implies a discontinuous demand function and thus, underestimates benefit, as does figure 1 relative to figure 2 in which the good is perfectly divisible.

The most recent works in outdoor recreation benefit estimation deal with estimating the present value of benefits

accruing from the introduction of a new park or recreation facility into a system of established facilities. For example, see: Burt and Brewer [1971]; Cheung [1972]; Knetsch [1974]; Knetsch, Brown, and Hansen [1976]; Krutilla and Fisher [1975, chapter 7]; Mansfield [1971]. This type of analysis involves the use of the refined travel-cost approach to estimate recreation demand functions for many facilities within the system, and then these are used to impute the demand for a new facility. It appears, however, that these demand functions have never been used to estimate the distribution of benefits from the existing recreation system. The purpose of the thesis is to alleviate this deficiency by developing the appropriate methodology with which to empirically determine the spatial distribution of primary overnight destination camping benefits emanating from the provincial park system of British Columbia during the summer of 1975. Utilizing the preceding investigation of economic benefit and the travel-cost approach to demand and benefit estimation, overnight camping demand will be modelled in the following chapter. This theoretical demand modelling will form the basis of the empirical overnight park demand and benefit estimation in subsequent chapters.

## CHAPTER III

### OVERNIGHT CAMPING DEMAND AND BENEFIT ESTIMATION MODELS

The economics of outdoor recreation literature is abundant in park demand and benefit estimation attempts. These can be easily differentiated on two grounds: the type of camping which is being analyzed, and the dependent variable which is used. The former of these two factors will be discussed in the first section of this chapter. The four dependent variables which can be used in park demand estimation will then be presented and discussed in the context of critically reviewing some of the previous park demand and benefit estimation attempts. A unique overnight camping park demand model (group camping days overnight demand) will then be presented and used to formulate a primary camping benefit estimation model. Finally, this demand and benefit estimation model will be discussed with reference to data limitations and statistical problems. In response, a second overnight park demand and benefit estimation model (overnight group visit demand) will be presented.

### Overnight Versus Day-Use Camping

Camping (and hence campers) can be divided into two distinct categories: day-use camping and overnight camping. The former involves visits to day-use recreation facilities at which one does not remain the night, while the later involves staying at a recreation facility overnight. Whereas both types of campers have many parks of varying quality from which they may choose, overnight campers have the additional choice of how many days to remain at any particular park. Overnight camping therefore, involves a two-part decision: which park to visit, and how long to stay.

Camping in British Columbia is generally a group experience, the average party size at overnight camping facilities being between three and four people.<sup>1</sup> \* Families and groups of friends are observed camping together, rather than people camping alone. It is conjectured that the decision on optimum group size is made not with reference to the affect on cost, but with regard to comradeship, or is determined by family size. It is also assumed that

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<sup>1</sup> British Columbia, Department of Recreation and Conservation, Parks Branch, Planning Division, Data Handbook--Attendance 75 (Victoria, 1976).

overnight camping parties do not demand park visits per se, but instead desire a camping experience defined over a period of days and nights.

Whether or not camping groups are partaking in day-use or overnight camping they must pay a fixed travel cost (mileage costs plus driving time costs per person) in order that any park can be visited. For overnight campers this fixed "entrance fee" is independent of how long they remain at the park. Both types of camping groups also face a daily camping cost which could include food costs net of those normally incurred at home, amortized recreation equipment costs, or any other costs attributable to the marginal camping day. Given that the camping group size is exogenous to camping demand, this daily cost of camping is unique to the size and tastes of the particular camping group, and independent of which park they visit.<sup>1</sup> In addition to these costs, overnight camping groups must pay a daily campsite permit fee which can generally be considered as

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<sup>1</sup>Some costs may vary to some extent between a "wilderness" campground and a relatively more "developed" campground, depending upon the camping group's tastes. However, it is assumed that regardless of the particular campground visited, the group's daily camping cost is invariant.

fixed, regardless of group size.<sup>1</sup>

The marginal cost of a group camping day at a day-use park (marginal cost of a visit) is simply the sum of the fixed travel cost and the group's daily cost. The marginal cost to overnight campers of a group camping day is somewhat different in that it does not include the fixed travel cost, but rather only the group's daily cost plus the campsite permit fee. The fixed travel cost to overnight campers is not a marginal consideration as long as it is assumed that camping days is the unit of demand. If, on the other hand, it is believed that park visits are demanded by overnight campers, then the marginal cost of a visit is the fixed travel cost plus the group's daily cost and campsite permit fee for one day.<sup>2</sup>

The correct specification of marginal cost is crucial if the demand for any good is to be analyzed since it is generally the most significant demand parameter. Unfortunately,

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<sup>1</sup> Only if a camping party is quite large will it be required to use more than one campsite and hence, this cost may vary in this discrete manner.

<sup>2</sup> Only one day's cost is included because length of stay is undefined beyond one night for observed overnight park visits.

inaccurate specification of the unit of demand and its marginal cost, is widespread in the economics of outdoor recreation literature. This has resulted in many park demand and benefit estimates which are incorrect. Major previous attempts at park demand and benefit estimation are critically reviewed below with reference to this problem.

Critical Review of Park Demand and Benefit  
Estimation Literature

In the introduction to this chapter it was stated that park demand and benefit estimates could be differentiated by dependent variable (unit of demand), in addition to whether day-use or overnight camping was being analyzed. The four dependent variables which can be used in estimating park demand are: (1) user days (party size times number of days spent at the park per visit, times visits); (2) people visits (party size times number of visits); (3) group visits (group trips to the park); (4) group camping days (group visits times number of days spent at the park per visit).<sup>1</sup> In conjunction

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<sup>1</sup>If the length of stay at a park is only one day then group visits is synonymous to group camping days and people visits, to user days.

with each of these there are various independent cost variables which have been used. Both types of variables are discussed below.

#### User Days Dependent Variable

Park demand models utilizing user days (length of stay times party size times visits) as the dependent variable are the least evident in the literature, and the validity of its use is the most tenuous. Since a demand equation is a behavioral model in price-quantity space, it would appear that this demand specification is incorrect owing to its behavioral implication that, for example, five days of camping by one member of a camping group is equal, in terms of group utility, to one day of camping by the whole group of five. More importantly, the marginal cost of a user day is undefined because of the two fixed costs involved in overnight camping: travel cost and campsite permit fee. The cost of one additional user day is dependent upon where one falls in the group. The first user day requires that the fixed travel cost be paid and a campsite permit purchased. The cost of the second user day could be an additional campsite permit if the group size is one, or the time cost of travel for an additional

member of the camping party. Since marginal cost is not defined, it is impossible to econometrically estimate demand.

Burt and Brewer [1971, p. 826]<sup>1</sup> suggest "visitor days" (user days) should be used when modelling demand, though they do not use this approach in their empirical analysis. Holman and Benett [1973, p. 1214] do utilize user days in their model and state cost to be mileage costs. Not only is this not the marginal cost of a user day, but through its use Holman and Benett are applying the fixed travel cost to every member of the camping group for each day they remain at the park, despite the fact that the group incurs this cost only once per trip. If this model had been used to estimate primary camping benefit, benefits would have been grossly overcalculated. Even though a functional relationship between user days and fixed travel costs were estimated, this is by no means a demand function.

#### People Visits Dependent Variable

The use of people visits (party size times visits) as the dependent variable is very common in the outdoor

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<sup>1</sup>Page number references the variable being discussed.

recreation literature, but as with user days, this approach is weak. The people visits park demand model is based upon the premise that the decision unit is not the camping party, but rather the individual, and their demand is defined over park visits, not days of camping. As stated previously, the camping group is the most reasonable decision unit. Also, this approach ignores the time dimension of overnight camping (number of days spent at the park); therefore, creating a simultaneity problem. The decision on number of visits must be affected by the length of stay at each park, for if this were not so rational campers would never remain more than one day at any particular park because by allocating all of their camping funds to travel, in order to visit as many parks as possible, they would maximize utility. If the people visits dependent variable is used to estimate park demand then a great deal of information which pertains to length of stay is ignored. Statistically this is a problem of simultaneous equations and may result in correlated regressor and error term. An even more serious problem which this approach poses, is the assignment of the independent cost variable. The fixed travel cost of camping is a combination of actual driving costs plus the sum of the time costs of the individuals riding in the

vehicle. The driving cost is fixed for any given park and thus, can not be partitioned on a marginal basis amongst the campers.<sup>1</sup> The marginal trip cost is undefined unless the party size is one for all groups. The behavioral implications of this model are troubling, but the fact that it has no defined marginal cost renders it useless for park demand estimation. When this model is used for day-use camping the simultaneity problem is avoided, but the problem of undefined marginal cost remains.

The cost variable used most often with the people visits dependent variable is average fixed cost: total fixed cost (mileage, plus time costs) divided by camping group size. Since this is not marginal cost, any estimated relationship claimed to be a demand function, is theoretically incorrect and can not be used to estimate primary camping benefits. Examples of the use of this approach are: Knetsch, Brown and Hansen's [1976, p. 111] day-use reservoir visits model; Krutilla and Fisher's [1975, chapter 8, p. 209] weekend skiing model; Pearse's [1968, p. 95] hunting trips

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<sup>1</sup>The driving cost is fixed given the mileage to the park and the vehicle the campers are using. Though it may vary to some degree with load, it can be considered as fixed.

model; R.J. Smith's [1971, p. 95] day-use fishing trips model. Since average fixed costs sum to total fixed costs, this cost variable could be used as a minimum estimate of benefit; however, this is only a point estimate. Since a theoretically correct demand function can not be estimated, consumer surplus can not be calculated. Any value that is claimed to be consumer surplus when using this approach, is a misconception and can not be included in the benefit calculation.

The simultaneity problem is most evident in a paper by Brown and Nawas [1973, p. 247] in which they use what appears to be the person trips model. Their cost variable is total cost per party member, where total cost is a function of fixed costs and length of stay. The model is attempting to determine demand for hunting trips, but uses the length of stay for these trips as an exogenous variable on the right hand side of the equation. This leads to the proverbial question, and the essence of the simultaneity problem: What comes first, the trip or the length of stay?

V.K. Smith [1975, p. 105] uses a people visits model to estimate demand for wilderness recreation and uses total fixed travel cost as the cost variable. Clawson and Knetsch [1966, p. 72] also use this approach, though they use total

cost (fixed travel cost, plus the campsite permit fees and daily group camping costs over the whole stay) as the cost variable, and as Brown and Nawas, assume away the simultaneity problem on the left hand side of the equation, but include length of stay on the right hand side.

Nonetheless, not only are these not demand equations for reasons argued above, but any estimate of primary benefit generated by them would be highly inflated, for the expended cost portion of them alone would be total group cost times the number of people in the group.

#### Group Visit Dependent Variable

The most commonly used park demand model is the group visit model for day-use camping facilities. This is the approach outlined in chapter 2 which postulates that group or family demand for single day park visits is a function of the fixed cost of travel. Since the cost variable is a marginal cost (cost of an additional day) this is a theoretically sound demand function and is behaviorally defensible. Examples of this are: Cesario, Goldstone, and Knetsch [1969, p. 19]; Cheung [1972, p. 149]; Knetsch and Cheung [1975, footnote 2]; Mansfield [1971, p. 57].

Only a few authors have used this day-use model for

overnight camping. With this approach utility is defined over group trips to parks, not length of stay at the park. This appears to be behaviorally faulty (group visits demanded, not actual camping days) and since length of stay is treated as exogenous to the camping demand model, use of this approach may result in the simultaneity problem. If the length of stay dimension is ignored, it follows then that the marginal cost of visiting a particular park is the group's fixed cost of travelling there, plus the daily camping cost for one day and a campsite permit fee. This is not the marginal cost of camping, but rather the marginal cost of visiting. Thus, if it is assumed that the simultaneity problem is not significant because costs associated with actually camping at the park are considered by camping groups to be very small relative to the fixed time and mileage costs of getting there, then demand may be postulated as a function of the marginal cost of a visit. Pearse [1972, p. 406] suggests (though in the people visit context) that the consumer surplus calculated from this fixed travel cost approach will measure the net amount that camping groups are willing to pay for the "recreational opportunity per se". This will necessarily understate total primary camping benefit for it ignores the benefit received while actually

partaking in the recreational opportunity.

Walter and Schofield [1977, p. 216] use group visits as the dependent variable and distance as the independent variable (later transforming it to cost) when estimating overnight camping demand. This is the only paper which even approximates (marginal cost is only implicitly entered in the estimated demand function) the theoretically correct formulation of overnight camping demand.

Even though use of the group visit demand technique results in a lesser estimate of benefit, benefit received from the opportunity per se, the apparent relative insignificance of the daily camping costs in overnight camping suggests that it is a close approximation of total primary camping benefit.

#### Group Camping Days Dependent Variable

The remaining dependent variable which can be used to estimate park demand is group camping days (number of days spent at the park per visit, times group visits). It has been argued that the user days and people visits dependent variables can not be used for park demand estimation because the marginal cost of these proposed units of demand are not defined. The dependent variable group visits may

be used in the estimation of overnight camping demand, but it is unlikely that overnight camping groups demand park visits instead of group camping days. Since the marginal cost of group camping days is defined, (campsite permit fee plus the group's daily camping cost) overnight camping demand, and hence primary camping benefit, can be estimated in a theoretically correct manner.

Only Burt and Brewer [1971, pp. 822, 826] have used group camping days, or "household camping days" as the dependent variable when estimating overnight camping demand (possibly overnight and day-use combined). The cost of an additional group camping day is not used as the independent cost variable, but instead they incorrectly use total fixed travel cost. A statistical relationship may be generated using this approach, but it is not a demand function and any attempt to calculate benefit using this technique will grossly overstate primary benefit.

In order to correct for the absence of an overnight park demand function which is behaviorally appropriate and theoretically correct, a park demand function defined over group camping days will be formulated in the next section of this chapter. Although estimates of primary overnight camping benefit calculated with a group camping days demand

model may not vary significantly from that calculated with a group visit demand model, the derivation of the group camping days demand function will be a positive contribution to outdoor recreation economics, owing to the misconstrued demand and benefit formulations proliferate in the literature.

Group Camping Days Overnight Demand  
and Benefit Estimation Models

The chief components of overnight camping demand are listed below, and these give rise to the group camping days overnight demand model which follows.

- there are many parks from which to choose
- there are many regions from which campers come
- parks vary in quality
- all parks are not used by all people and some people use no parks
- people may camp at various parks for varying lengths of stay
- there is both a fixed entrance fee (travel cost) and a fixed daily fee (campsite permit fee)
- it is assumed that the camping decision unit is the family or group, and that camping group size is exogenous to camping demand

- it is also conjectured that group camping demand is defined over camping days
- the daily cost to a camping group varies from group to group but does not vary among parks.

### Group Camping Days Overnight Demand Model

#### Demand Model for Individual Camping Groups

The camping group's utility function is defined over camping and a composite good which is comprised of all other goods.<sup>1</sup> In turn, the utility received from camping is a function of the number of group camping days spent at all parks visited in a year. The only assumption made on the group utility function at this point, is that it is defined for all camping groups (follows the standard axioms of consumer theory). The utility function of the  $K^{\text{th}}$  group is

$$\begin{aligned}
 (1) \quad U_K &= U_K (C, Y) \\
 &= U_K [C (C_1, C_2, \dots, C_m), Y] \\
 &\text{where: } C_1, C_2, \dots, C_m \geq 0
 \end{aligned}$$

Camping is denoted by  $C$ , and  $Y$  is the composite good. There

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<sup>1</sup> "Camping group" refers to both camping parties composed of family members and those composed of friends.

are  $m$  parks, and  $C_i$  is the number of group camping days spent at the  $i^{\text{th}}$  park.<sup>1</sup> The utility function, defined over  $R^n$  (the set of  $n$ -dimensional real numbers) is assumed to be strictly quasi-concave. Strict quasi-concavity over  $R^n$  allows the indifference curves to cross the axis (and thus permits corner solutions) and also ensures that a unique global maximum is obtained from the first order (necessary) conditions.

The group budget constraint is

$$(2) \quad M = P_C \sum_{i=1}^m C_i + P_Y Y + \sum_{i=1}^m FC_i \quad ; \quad i = 1, \dots, m$$

where:  $FC_i = 0$  if  $C_i = 0$

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<sup>1</sup>In order to represent the number of camping days the group spent at the  $i^{\text{th}}$  park on subsequent visits, another subscript could be added to the camping days terms. For example,  $C_{iL}$  would denote that the group spent  $C$  camping days at the  $i^{\text{th}}$  park on their  $L^{\text{th}}$  visit to it during the season. For sake of simplicity in exposition, and since the data used in the empirical analysis does not allow for discerning between initial and subsequent visits, only the first visit by the group to any park will be explicitly considered. It is conjectured that the implications of the group camping days demand model will not be altered by this simplification.

Respectively,  $M$  and  $P_C$  are nominal group income and the daily (marginal) cost of camping for the  $K^{\text{th}}$  group, while  $P_Y$  is the price of the composite good  $Y$ , and  $FC_i$  is the fixed travel cost required to visit the  $i^{\text{th}}$  park. The fixed travel cost includes the mileage cost of driving the car, time costs of its occupants, any layover costs required if the trip to the park exceeds one day, and any relevant ferry charges.<sup>1</sup> This cost is also dependent upon the camping party size; however, the mileage cost and ferry charges for the car are independent of group size.

As outlined earlier, the daily group camping cost (marginal cost) is

$$(3) \quad P_C = A + (OT \cdot PS)$$

where:  $A$  is the daily campsite permit fee, which was the same at all provincial parks in British Columbia during 1975;  $OT$  is the sum of any other costs attributable to the marginal camping day, per person;  $PS$  is the camping party size.

To further simplify the presentation of the group camping days overnight demand model it is assumed for

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<sup>1</sup>The calculation of the various cost variables will be presented in the next chapter.

present purposes that there are only two parks from which to choose. It is conjectured that all implications derived using this simplified model hold in the general case when there are  $m$  parks.

The utility function of the  $K^{\text{th}}$  group becomes

$$(4) \quad U_K = U_K [C(C_1, C_2), Y] \quad ; \quad C_1, C_2 \geq 0$$

and the group income constraint is

$$(5) \quad M = P_C C_1 + P_C C_2 + P_Y Y + FC_1 + FC_2$$

$$\text{where: } FC_1 = 0 \quad \text{if } C_1 = 0$$

$$; \quad FC_2 = 0 \quad \text{if } C_2 = 0$$

Setting  $P_Y$  equal to one results in equation (5) being in terms of the composite good  $Y$ , such that<sup>1</sup>

$$(6) \quad M = Y \quad \text{if } C_1 = C_2 = 0$$

Maximizing the group utility function (equation (4)) subject to their income constraint (equation (5)) derives the first order utility maximizing conditions:

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<sup>1</sup> By way of simplifying notation, the notation for equation (5), and equations (6) through (13), has not been explicitly altered to denote that all of these equations are in terms of the composite good  $Y$ .

$$(7) \quad \frac{U'_{C_i}}{P_C} = U'_Y \quad \text{if } C_i > 0$$

$$(8) \quad \frac{U'_{C_i}}{P_C} < U'_Y \quad \text{if } C_i = 0$$

$$\text{where: } U'_{C_i} = \frac{\partial U}{\partial C} \cdot \frac{\partial C}{\partial C_i}$$

$$; \quad U'_Y = \frac{\partial U}{\partial Y}$$

The equality will hold for all goods consumed, with the result that the marginal utility received per dollar is equal for all goods. The inequality occurs with the constrained utility maximization process when the marginal utility of group camping days at the  $i^{\text{th}}$  park is less than the product of marginal cost and the marginal utility of income. In this event there will be a corner solution: there will be zero consumption of group camping days at the park in question. The assumed shape of the group indifference curves ensures that the second order utility maximization conditions are satisfied.

It is important to note that only the marginal cost

of camping,  $P_C$ , enters the equilibrium conditions,<sup>1</sup> and that this cost is constant at all parks for any given camping group. The fixed travel costs are relevant only with respect to their affect on the income constraint. That is, the fixed travel costs of camping do not affect the marginal camping day, but rather affect the determination of whether any consumption will take place at a particular park.<sup>2</sup> If both parks are visited, the group's income constraint could be rewritten as:

$$(9) \quad (M - FC_1 - FC_2) = P_C C_1 + P_C C_2 + Y$$

Since positive consumption of camping days at any park requires the payment of the fixed travel cost, the budget constraint which camping groups face is not invariant. The amount of nominal income which a group has to allocate between camping and the composite good is dependent upon

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<sup>1</sup>This result is expected in any such situation in which a two-part tariff is levied. For a good discussion of this see Oi [1971]: "A Disneyland Dilemma: Two-Park Tariffs for a Mickey Mouse Monopoly."

<sup>2</sup>It is conceivable that an institutional constraint such as length of holidays could give added affect to the fixed costs terms. However, since this is a cross-sectional analysis of camping, it is postulated that this concern will not pose a problem.

which, if any, of the parks they visit. To rephrase this, for every possible amount of  $Y$  which could be consumed, there is a given amount of income remaining (unless  $Y = M$ ) which is allocated among parks in the form of travel expenses and camping day costs. For example, in the case of two parks and any amount of  $Y$ , say  $Y^1$ , there are corresponding amounts of  $C_1$  and  $C_2$ , say  $C_1^1$  and  $C_2^1$ , which will achieve efficient resource allocation among camping days. This consumption bundle may not achieve group utility maximization, but it will be efficient with respect to camping days.

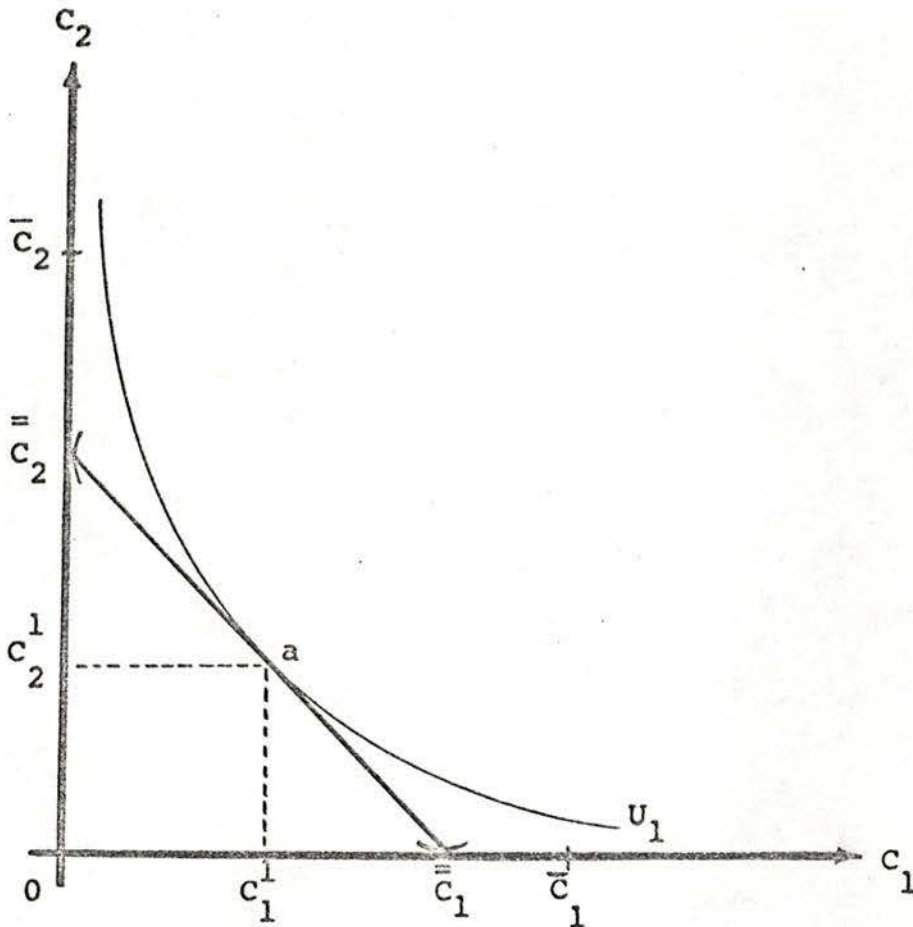
In order to determine  $C_1^1$  and  $C_2^1$  it is important to realize that the amount of group income which can be spent on camping days at both parks, given that  $Y^1$  of the composite good is consumed, is:

$$(10) \quad (M - Y^1 - FC_1 - FC_2) = P_C C_1 + P_C C_2$$

If park one is not visited then all camping day resources,  $(M - Y^1 - FC_2)$ , are spent at park two, and visa versa. These two corner solutions are respectively,  $\bar{C}_2$  and  $\bar{C}_1$ , as shown in figure 6, where:

$$(11) \quad \bar{C}_i = \frac{(M - Y^1 - FC_i)}{P_C}$$

Fig. 6. Group Indifference Map in the Two Park Case



If, however, both parks are visited then the maximum length of time the group could camp at the  $i^{\text{th}}$  park is  $\bar{c}_i$ , where:

$$(12) \quad \bar{c}_i = \frac{(M - Y^1 - FC_1 - FC_2)}{P_C}$$

The fixed travel cost required to visit either park is readily discernible from figure 6:

$$(13) \quad FC_1 = (\bar{C}_2 - \bar{C}_2) P_C$$

$$FC_2 = (\bar{C}_1 - \bar{C}_1) P_C$$

The line connecting points  $\bar{C}_1$  and  $\bar{C}_2$  in figure 6 is the "budget line" which displays the various combinations of camping days that may be consumed if both parks are visited, subject to the group's income constraint. The slope of this line is always equal to one: the ratio of the equivalent marginal costs. The budget line is an "open" set because the points  $\bar{C}_1$  and  $\bar{C}_2$  are not included. It would be irrational for a camping group to pay the fixed travel costs required to visit a park and then not consume any camping days there. The group's indifference map will determine where, and how many camping days are consumed. The tangency of a group's indifference curve and their budget line at point 'a' in figure 6 reveals that  $C_1^1$  days of overnight camping are consumed at park one, and  $C_2^1$  overnight camping days at park two.

If a different amount of the composite good had been specified above, then a different combination of overnight group camping days would have been chosen. In this manner, by arbitrarily choosing various amounts of the composite good, a set of efficient overnight group camping days

consumption bundles is determined:

$$\begin{array}{l}
 Y^1; \quad C_1^1, \quad C_2^1 \\
 Y^2; \quad C_1^2, \quad C_2^2 \\
 Y^3; \quad C_1^3, \quad C_2^3 \\
 \cdot \quad \cdot \quad \cdot \\
 \cdot \quad \cdot \quad \cdot \\
 \cdot \quad \cdot \quad \cdot \\
 Y^n; \quad C_1^n, \quad C_2^n
 \end{array}$$

$$\text{where: } C_1^j, C_2^j \geq 0; j = 1, \dots, n$$

$$; Y^j > 0$$

The second step of the resource allocation process involves choosing among the efficient consumption bundles in order to maximize group utility. Conceptually, by systematically applying each of the above consumption bundles to the group utility function, equation (4), the group's utility maximizing bundle may be determined and thus, the equilibrium conditions satisfied. The parameters for overnight group camping days demand are therefore, the marginal cost of a camping day ( $P_C$ ), the fixed cost of travel to both parks ( $FC_1, FC_2$ ), nominal group income ( $M$ ),

and the price of the composite good ( $P_Y$ ). The demand equation for overnight group camping days at park number one is:

$$(14) \quad q_{C_1}^D = f(P_C, P_Y, FC_1, FC_2, M)$$

In the general case of  $m$  parks it follows that the  $K^{\text{th}}$  group's demand function for overnight camping days at the  $i^{\text{th}}$  park is:

$$(15) \quad q_{C_i}^{DK} = f(P_C, P_Y, FC_1, FC_2, \dots, FC_m, M)$$

#### Comparative Statics

If a good is non-Giffen<sup>1</sup>, demand for that good will be a monotonically decreasing function of price. The good camping, as opposed to camping at a particular park, is conjectured to be a normal good,<sup>2</sup> and thus, any change in its marginal cost ( $P_C$ ) will elicit a change in demand (equation (15)) via the negative own price substitution

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<sup>1</sup>The demand for a Giffen good varies directly with price: the negative real income effect outweighs the own price substitution effect.

<sup>2</sup>Demand increases if real income increases.

effect and the positive real income effect. The affect of a price change on the demand for overnight group camping days at individual parks is not as easily deduced. Any change in a group's marginal cost of camping is the same for all parks; hence, demand for group camping days among parks is only affected by the resulting modification of real group income. A change in the fixed travel cost ( $FC_i$ ) to a particular park will also affect group camping days overnight demand via the real income effect, for it will directly affect the income constraint. Three factors which are unique in the determination of the affect on demand from a change in the group's marginal cost of camping, relative to standard demand analysis, are that: (1) there is no own price substitution effect among parks; (2) some parks may be considered as inferior goods, depending upon group preferences; (3) corner solutions are possible.

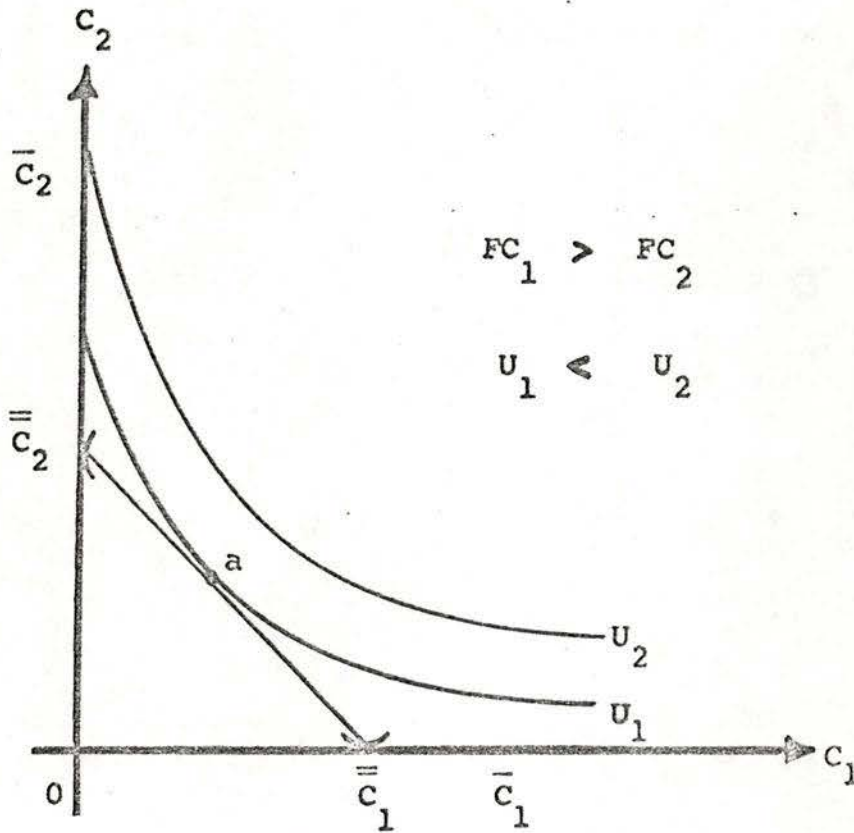
Since there is no own price substitution effect amongst parks when the marginal cost of camping changes, it is the real income effect which determines the slope of the group's camping days overnight demand function for a particular park. The possibility of non-positive consumption implies that the income effect depends not only on preferences and the absolute level of real income, but also on the

direction of the price change.

If one park completely dominates another in terms of a group's preferences, and if the dominating park has the lower fixed travel cost, then a corner solution will unambiguously always occur. Even though the marginal rate of substitution between the two parks equals the ratio of prices (point 'a' in figure 7; park two is the dominating park) a corner solution inevitably results:  $C_1 = 0$ ;  $C_2 = \bar{C}_2$ . Any change in marginal cost merely causes the budget line,  $\bar{C}_2 \bar{C}_1$ , and the single park consumption points,  $\bar{C}_2$  and  $\bar{C}_1$ , to move in or out with respect to the origin, with no change in resource allocation amongst the two parks. If there are only two parks, the income effect for park one is zero and is positive for park two, since camping as a whole is assumed to be a normal good. If there are more than two parks it would be possible for park two to be inferior. That is, when park two dominates park one and the fixed travel cost is less to the former ( $FC_2 < FC_1$ ):

$$\frac{\partial C_1}{\partial P_C} = 0 \quad ; \quad \frac{\partial C_2}{\partial P_C} < 0 \quad \text{if park two is normal.}$$

Fig. 7. Group Indifference Map: Park Two Completely Dominates Park One

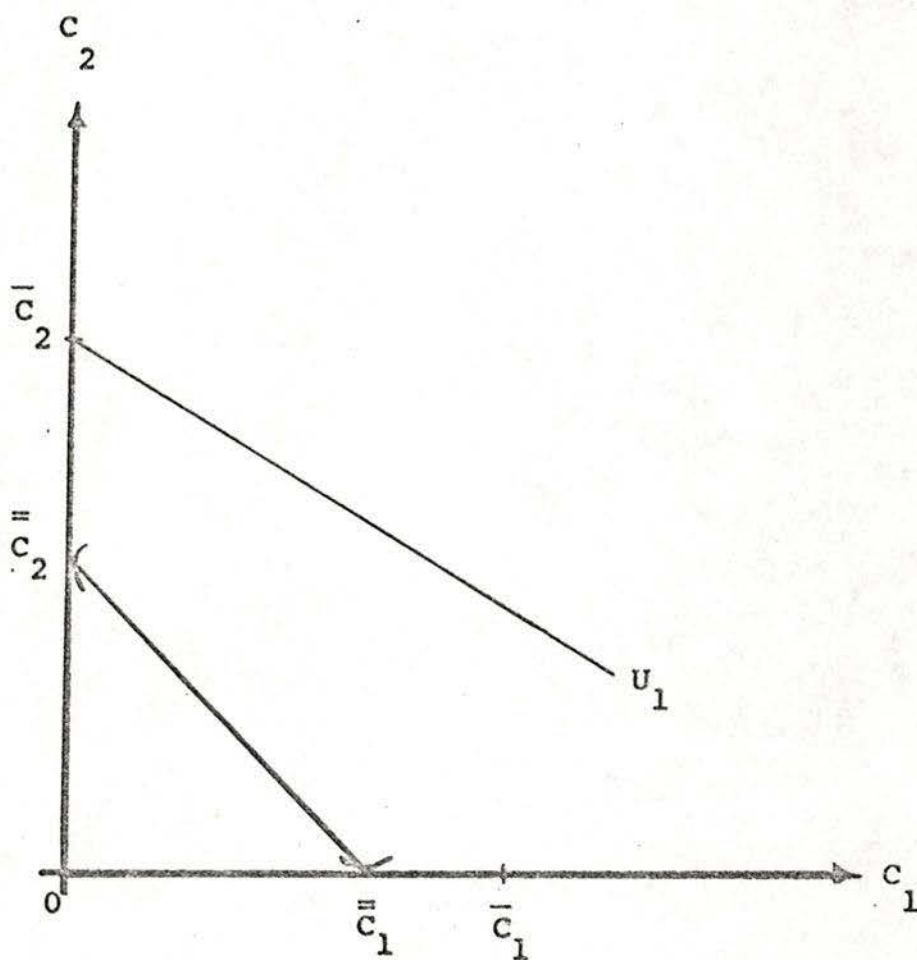


If, on the other hand, the fixed travel cost to the dominating park is the greater of the two, ( $FC_2 > FC_1$ ) the above comparative statics do not apply. The affect on demand from a change in marginal cost would be similar to the case discussed below, with reference to figure 9, in the situation in which the absolute level of real income is an important factor.

In the case in which park two (dominant park) is a perfect substitute for park one, the comparative statics are the same as those

which were shown above when the dominating park requires the lesser fixed travel cost. In this event of a perfect substitute, the group indifference curves are linear since the elasticity of substitution is infinite. Park two, with the lesser fixed travel costs, is always chosen, as is shown in figure 8.

Fig. 8. Group Indifference Map: Parks One and Two are Perfect Substitutes



The comparative statics are not as obvious when one park is considered to be normal and the other inferior. The change in group camping days overnight demand when the marginal camping cost is altered depends upon the direction of the price change and the absolute level of real income. In figure 9a only the inferior park, park two, is visited when real income is low. When the marginal cost of camping falls (real income increases) both parks will be visited if real income increases sufficiently. Camping days at park two decrease as a result of the group's negative income effect with respect to it, and this is shown in figure 9b. If, on the other hand, the price change had been upward, consumption of camping days at park one would have remained zero, and camping days spent at park two would have decreased, assuming that camping in general is a normal good. In the case of more than two parks, the upward price effect is indeterminate since the income effects amongst parks, with respect to park two, may offset the overall price effect between camping and the composite good. The final illustration, figure 9c, displays the case of relatively high real income when only park one is visited since the group deletes the inferior park completely from its consumption bundle. A further decrease in the marginal

Fig. 9. Group Indifference Maps at Three Levels of Real Income; One Park is a Normal Good and the Other Inferior

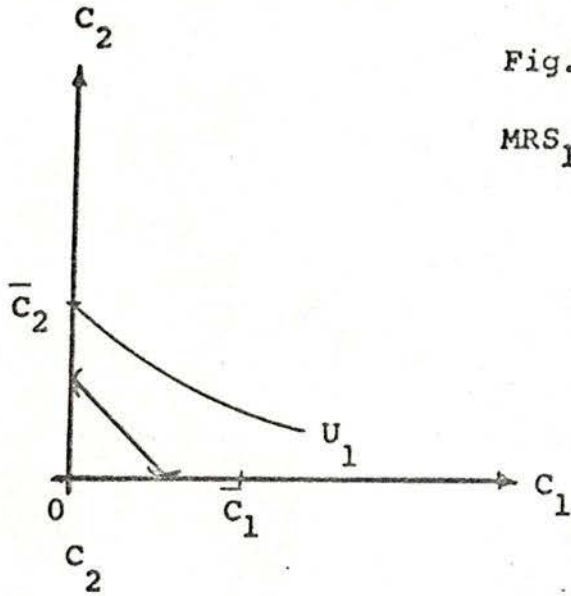


Fig. 9a.

$$MRS_{1,2} < P_C / P_C$$

$$U_1 < U_2 < U_3$$

$$\bar{c}_1 < \bar{c}'_1 < \bar{c}''_1$$

$$\bar{c}_2 < \bar{c}'_2 < \bar{c}''_2$$

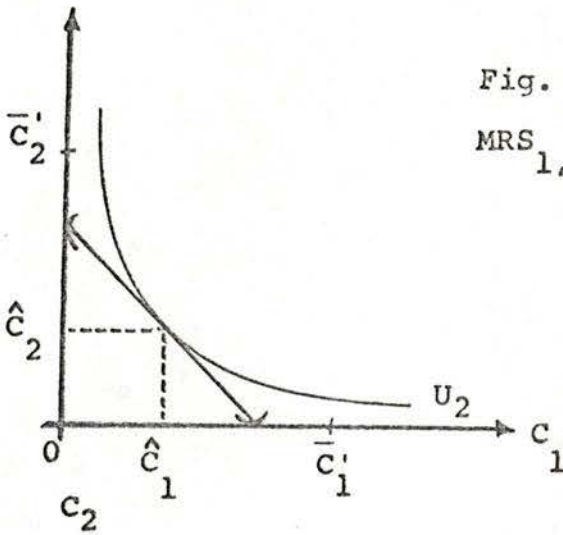


Fig. 9b.

$$MRS_{1,2} = P_C / P_C$$

$$\hat{c}_2 > \bar{c}_2$$

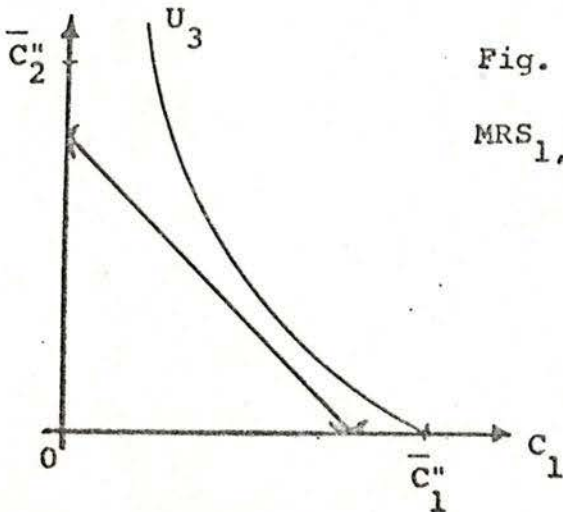


Fig. 9c.

$$MRS_{1,2} > P_C / P_C$$

cost of camping would leave figure 9c unaltered, except that all points would shift outwards from the origin. An increase in the group's marginal cost of camping at this point would result in consumption at both parks, as shown in figure 9b, if real income was lowered to a great enough extent. This is the result alluded to previously: a significantly large decrease in real income, in the event that park two, which has the greater fixed travel cost, completely dominates park one, would result in camping days being consumed at the dominated park. The table below summarizes the effects of these marginal cost changes which are dependent upon whether the good is normal or inferior, the absolute level of real income, and the fact that corner solutions are possible.

Assuming that camping in general is a non-Giffen good ensures that its demand is a monotonically decreasing function of price and increasing function of income. Since any change in the marginal cost of group camping days elicits only an income effect with respect to allocating resources among parks, the non-Giffen good assumption is not a sufficient condition for a negatively sloped individual park group camping days overnight demand function. The necessary condition is that the park be a normal good.

Table 1

Comparative Statics When One Park is a  
Normal Good and the Other Inferior

	Park one (normal)	Park two (inferior)
low real income <sup>c</sup> - price increase	$\partial C_1 / \partial P_C = 0$	$\partial C_2 / \partial P_C > 0^a$
- price decrease	$\partial C_1 / \partial P_C < 0^b$	$\partial C_2 / \partial P_C > 0$
medium real income <sup>d</sup> price change	$\partial C_1 / \partial P_C < 0$	$\partial C_2 / \partial P_C > 0$
high real income <sup>e</sup> - price increase	$\partial C_1 / \partial P_C < 0$	$\partial C_2 / \partial P_C > 0^b$
- price decrease	$\partial C_1 / \partial P_C < 0$	$\partial C_1 / \partial P_C = 0$

<sup>a</sup> if there are more than two parks

<sup>b</sup> if the real income change is great enough

$$^c c_1 = 0, \quad c_2 > 0$$

$$^d c_1 > 0, \quad c_2 > 0$$

$$^e c_1 > 0, \quad c_2 = 0$$

Only if this is so, will the group camping days overnight demand function for a particular park be unambiguously negatively sloped.

### Regional Demand Model

Through utilization of the travel-cost methodology of park demand and benefit estimation (discussed in chapter 2) it is possible to construct a park's group camping days overnight demand function aggregated across camping groups. This approach avoids the impossible task of estimating demand functions for each camping group when determining the total primary camping benefit derived from a particular park. By noting camping groups' marginal camping costs, the fixed travel costs they must incur, and their nominal income, the camping days overnight demand function for a particular park can be statistically estimated, assuming that all camping groups react in a homogeneous manner to changes in the demand parameters, *ceteris paribus*. Graphically, this is the horizontal summation of the individual groups' camping days overnight demand functions (equation (15)).

In order to estimate the spatial distribution of primary overnight destination camping benefits in the province, the individual group camping days overnight demand

functions could instead be aggregated on a regional basis, resulting in regional group camping days overnight demand functions. These demand functions would portray group camping days overnight demand at a particular park by camping groups from a given region of the province. These regional demand functions could then be used to calculate the primary camping benefit received by a region's camping groups from the particular park. Unfortunately, it is not possible to estimate these regional demand functions with the park visitation data that was available when the empirical analysis was conducted. The available data consisted of observed regional park visitation (the data for each park is aggregated into observations, over the season, May through September, of the number of camping groups visiting the park from each of the provincial regional districts) and hence, there is only one price-quantity observation per region, per season, precluding statistical demand estimation. However, since it has been assumed that all camping groups react in the same manner with regard to changes in the demand parameters, *ceteris paribus*, observed park visitation variation across provincial regions can be used to statistically estimate an aggregate regional group camping days overnight demand function. This is the approach outlined in chapter 2

by which, in this case, the regional group camping days demand rate is aligned with marginal cost. Conceptually, it is as if the regional demand parameters are experimentally varied, note made of the ensuing changes in group camping days overnight demand, and then using these results to trace out the demand curve. By reapplying the values of any region's demand parameters to this aggregated regional demand function, the number of overnight group camping days demanded by the region can be calculated. This is not a provincial demand function, but rather a demand function appropriate for all regions. The formulation of this aggregate regional group camping days overnight demand function follows.

The demand for overnight camping days at the  $i^{\text{th}}$  park by the  $K^{\text{th}}$  group from the  $j^{\text{th}}$  region is as was shown previously with equation (15), with the addition of the subscript  $j$  to the dependent variable.

$$(16) \quad q_{C_i}^{D_{kj}} = f(P_C, FC_1, FC_2, \dots, FC_m, M)$$

As before,  $P_C$  is the group's marginal cost of camping, the  $FC_i$ 's are the fixed travel costs to the  $m$  parks, and  $M$  is nominal group income. The price of the composite good,  $P_Y$ , has been deleted since it is assumed to be constant throughout

the province and hence, can be of no help in explaining observed camping variation.

Regional demand for overnight group camping days at the  $i^{\text{th}}$  park by the  $j^{\text{th}}$  region is equation (16) summed over the  $L$  camping groups in the region.

$$(17) \quad q_{C_i}^{D_j} = \sum_{k=1}^L q_{C_i}^{D_{kj}} = g(P_C, FC_1, FC_2, \dots, FC_m, M_1, M_2, \dots, M_L)$$

$P_C$  and the  $FC_i$ 's are respectively, the average daily camping cost and the average fixed travel costs faced by camping groups in the region, and the  $M_k$ 's are the groups' nominal income. Since it is improbable to observe each groups income, a proxy is usually used, such as regional per capita income or an income distribution measure. Thus if

$$(18) \quad \bar{M} = h(M_1, M_2, \dots, M_L)$$

the regional demand function can be simplified to

$$(19) \quad q_{C_i}^{D_j} = g(P_C, FC_1, FC_2, \dots, FC_m, \bar{M})$$

At any point of time only one  $q_{C_i}^{D_j}$  is observable for each region; however, by observing the variation in the dependent and independent demand variables across regions,

an aggregate regional overnight group camping days demand function can be statistically estimated, as argued above. Therefore, the demand function for overnight group camping days at the  $i^{\text{th}}$  park is

$$(20) \quad Q_{C_i}^D = F(P_{C_j}, FC_{1j}, FC_{2j}, \dots, FC_{mj}, \bar{M}_j)$$

where the subscript  $j$  denotes the observed regional marginal camping cost, the regional fixed travel costs, and the regional group nominal income measure. It is assumed that this approach creates no aggregation problems.

Equation (20) suggests that the tastes and preferences of camping groups are identical throughout the province, and so additional variables must be used to account for variations in regional camping demand due to structural and taste differences. Two such variables which have been shown to be significant (ORRRC [1962, part 1, chapter 2]) are age distribution and urbanization. The first variable indicates the prevalence of families with children, under the assumptions that families are significant consumers of group camping days and hence, the more families with children in a region, the more overnight group camping days demanded. The second factor refers to the affect of urbanization on tastes, assuming that city dwellers are more likely to camp than

their rural counterparts. Regional group camping days demand also obviously varies in a positive manner with regional population. By rewriting equation (20) to include these additional explanatory variables, the regional demand function for overnight group camping days becomes

$$(21) \quad Q_{C_i}^D = F(P_{C_j}, FC_{1j}, FC_{2j}, \dots, FC_{mj}, \bar{M}_j, T_j, Rpop_j)$$

where:  $T$  represents the taste variables;  $Rpop$  is regional population in thousands.<sup>1</sup>

By utilizing the observed regional variations in overnight group camping days at the  $i^{th}$  park, in conjunction with the regional demand parameters, the aggregate overnight group camping days demand function can be econometrically fitted and the parameter coefficients determined. In estimating any demand function there is always the possibility of inadvertently fitting the supply function

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<sup>1</sup>If the group camping days demand function is multiplicative then by dividing equation (21) by  $Rpop_j$ , the dependent variable becomes overnight group camping days per thousand regional population:  $Q_{C_i}^D / Rpop_j$ . This is the type of dependent variable shown in chapter 2.

instead of demand. This identification problem arises because usually any observed point of demand is also a supply point, since the intersection of supply and demand determines the market clearing conditions. The supply of campsites at any park however, is predetermined for the season and does not vary with demand, except in a seasonally lagged manner. Also, demand usually does not equal supply, and in the cases where campgrounds are periodically full, this is on a daily basis and not throughout the season. Since the market is generally not cleared; supply does not react to demand within a single season; and the campsite fee is not used to allocate resources; it seems unlikely that the econometric analysis could result in the inadvertent estimation of the campsite supply function.<sup>1</sup>

#### Group Camping Days Primary

#### Benefit Estimation Model

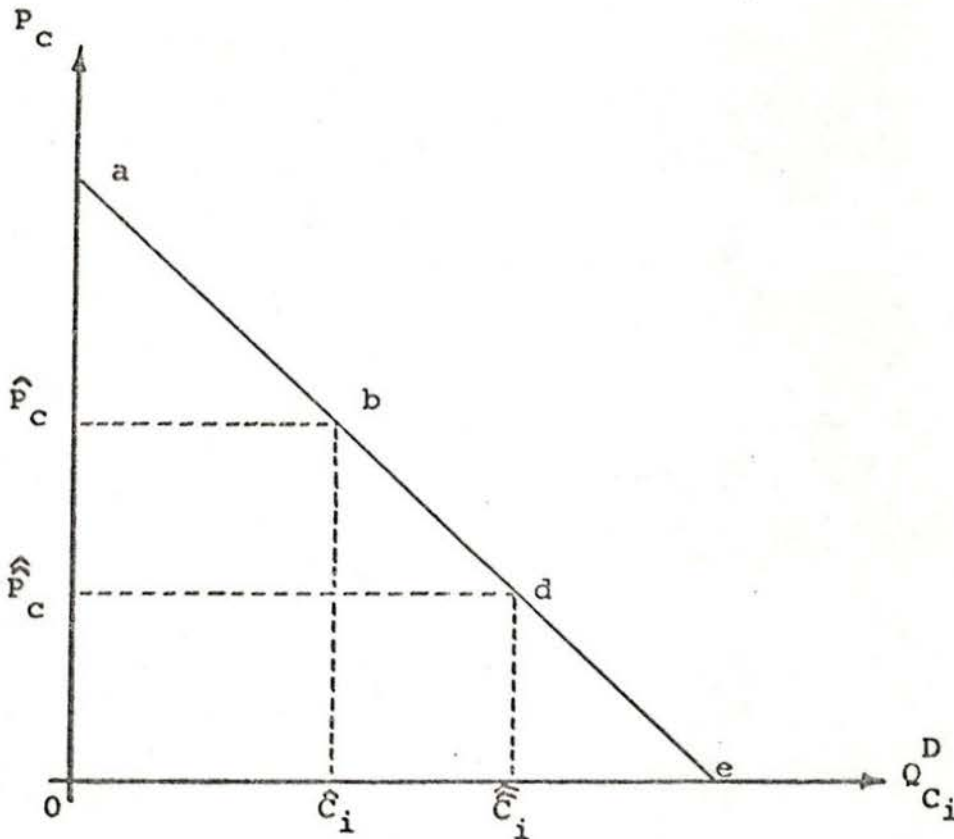
Once the aggregate group camping days overnight demand model has been econometrically fitted, it becomes possible to calculate the primary economic benefit received from

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<sup>1</sup>The affect of congestion on park demand is discussed in chapter 4.

overnight camping. It was argued in the previous chapter that primary camping benefit is the sum of the camping group's marginal valuations for camping days, or in the case of a provincial region, the sum of the region's marginal valuations. Graphically, this is the relevant area under the aggregated regional group camping days overnight demand function, which is shown in two-dimensional (price-quantity space) linear form in figure 10.

Fig. 10. Aggregate Regional Group Camping Days Overnight Demand Function



The Marshallian uncompensated demand function displayed in figure 10 is a graphical portrayal of equation (21), inverted to put the analysis in the more traditional mode of price being a function of quantity demanded.

$$(22) \quad P_{C_j} = F' (Q_{C_i}^D, FC_{1j}, FC_{2j}, \dots, FC_{mj}, \bar{M}_j, T_j, Rpop_j)$$

The inverted function is denoted by  $F'$ . Primary camping benefit is taken to be the area under the two-dimensional Marshallian uncompensated demand function. The variables other than price and quantity -- the various fixed costs, regional group income, tastes, regional population -- act as shift variables, moving the demand curve,  $abde$ , in and out relative to the origin. The primary camping benefit received from the  $i^{\text{th}}$  park by the  $j^{\text{th}}$  region is the integral of equation (22) over the range of camping days consumption from zero, to the number of group camping days consumed by the region. That is

$$(23) \quad B_{C_i}^j = \int_{Q_{C_i}^D = 0}^{Q_{C_i}^D} = \hat{C}_i F' (Q_{C_i}^D, FC_{1j}, FC_{2j}, \dots, FC_{mj}, \bar{M}_j, T_j, Rpop_j) dQ_{C_i}^D$$

where:  $B_{C_i}^j$  is the primary economic benefit accruing to the  $j^{\text{th}}$  region from camping at the  $i^{\text{th}}$  park for  $\hat{C}_i$  group camping days. Figure 10 reveals that the  $j^{\text{th}}$  region's camping groups received benefit is the area  $ab\hat{C}_i$ , of which  $ab\hat{P}_c$  is consumer surplus and  $\hat{P}_c b\hat{C}_i$  is total cost. Correspondingly, if another region spent  $\hat{C}_i$  group camping days at the park, the received economic benefit would be the area  $ad\hat{C}_i$ , after taking into account the shift variables.

Total absolute primary overnight camping benefit accruing to a region ( $B^j$ ) is merely the sum of benefits acquired at all the individual parks.

$$(24) \quad B^j = \sum_{i=1}^m B_{C_i}^j = \sum_{i=1}^m \int_{Q_{C_i}^D=0}^{Q_{C_i}^D=\hat{C}_i} F'(Q_{C_i}^D, FC_{1j}, FC_{2j}, \dots, FC_{mj}, \bar{M}_j, T_j, Rpop_j) dQ_{C_i}^D$$

Regional overnight camping benefit per thousand regional population may then be calculated by dividing through by  $Rpop_j$ ; therefore, allowing for comparison across provincial regions and hence, the determination of the spatial distribution of primary overnight camping benefits in British Columbia.

Another approach to regional benefit estimation would be to estimate a regional overnight camping demand function over group camping days at all parks: one demand function per region, defined over all parks. Total regional benefit would be the sum of the areas under this one demand curve. The estimation of this type of camping demand function would require a park attractiveness measure in order that group camping days at each park could be standardized into a homogeneous product. The generation of this attractiveness measure would not only require detailed information on the quantity and quality of each park's characteristics, but also information on individual camping groups' tastes and past recreational habits. Park attractiveness is a function of the characteristics of a park, plus group preferences and whether the group has visited the park before. Although it is possible to formulate approximate park attractiveness measures, as is done in the next chapter, it is conjectured that this can not be done accurately enough to standardize all parks into a homogeneous product and hence avoid the critical problem of defining demand functions over dissimilar goods. For this reason, this benefit estimation approach will not be used. Instead, the above described technique of estimating individual park demand functions across regional

observations of overnight group camping days demand will be utilized in the determination of primary overnight destination camping benefits.

Data Limitations and Statistical  
Problems Involved in Estimating  
Group Camping Days Overnight Demand

The data used in the thesis is discussed in the following chapter, but suffice it to note that since the data is aggregated on a regional basis for each park (total group camping days spent at each park by each region) there are many more substitute parks ( $FC_i$ 's) than there are regional group camping days observations; therefore, the camping days demand function, equation (21), can not be estimated in its present form. In order to circumvent this problem it is proposed that all fixed costs be summed, except the one for the park in question. This results in the following demand equation:

$$(25) \quad Q_{C_i}^D = F(P_{C_j}, FC_{ij}, SUM_j, \bar{M}_j, T_j, Rpop_j)$$

The summed fixed travel cost term is denoted by  $SUM_j$ , where:

$$(26) \quad SUM_j = \sum_{h=1}^m FC_{hj} \quad ; \quad h = 1, \dots, m ; h \neq i$$

It is unfortunate that this aggregation must be performed because much information is now hidden. The inclusion of the fixed cost terms in the group camping days demand equation is the result of the first order utility maximization conditions, and indicates that the fixed travel costs to all of the parks affect a park's demand. Fixed travel costs differ across regions and some would be expected to explain camping days variation better than others since camping groups obviously do not perceive all parks to be alike; indeed, as suggested previously, it would seem reasonable that some parks are considered to be inferior (negative real income effect). In addition to having different magnitudes of affect on demand, the fixed costs also have different directions of influence. An increase in the fixed costs of a substitute park which is inferior, will have the opposite affect on demand as that of an increase in the fixed cost of a park which is non-inferior, *ceteris paribus*. The aggregation of these fixed costs into one term (except for the fixed cost of the park being analyzed) hides these influences on park use. In fact, the summed fixed costs term no longer represents the admission aspect of a two-part tariff, but instead is a measure of the availability of substitute parks. It is proposed that

as this term decreases across regions, implying closer substitutes, camping days spent at the park being analyzed would tend to decrease also, and the converse is expected to occur as the term increases in magnitude across regions.<sup>1</sup>

The fixed travel cost term to the park being analyzed has been left in the group camping days demand function independently so as to take into account its especially relevant influence on demand. Since the fixed travel costs affect the income constraint directly, if the park is visited, the sign of this variable's coefficient is expected to be negative, given that the park is considered to be non-inferior.

The aggregation of data into regional park visitation observations poses additional problems which are conjectured to be more serious than not having enough observations to estimate the coefficients of all the fixed travel cost terms. Variation in camping groups' marginal cost of camping is primarily due to party size, but only the regional average party size per park is supplied in the available

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<sup>1</sup>In the following chapter a more detailed measure of the availability of substitute parks is developed and used, in addition to the above measure, in estimating overnight camping demand.

park visitation data. The variation of camping group size is observably large, but any average of this will tend towards the regional average and in turn, the provincial average as the sample size increases. Hence, it is expected that there will be little difference among regions in the average party size, ensuring that there will be little variation in the marginal cost of camping. Statistically this implies a small sum of deviations squared and hence, the tendency towards small t-statistics for the marginal cost coefficient. The end result of this aggregated data problem is a bias towards accepting the null hypothesis (the coefficient of  $P_C$  is not statistically different from zero) when, it is postulated, it would not have been accepted if disaggregated data had been used.

The aggregated party size is troublesome for another reason also. The time element of the fixed travel costs is a direct function of both distance and party size; thus, the marginal camping and fixed travel costs tend to move in a linear fashion. This would not seem to pose a problem for the individual fixed travel cost term since its variation is so significantly dependent upon distances across regions, but it would appear that the collinear relationship becomes much more apparent with the aggregated fixed cost term.

Also, it would appear that there may be a linear relationship between the individual fixed travel cost term in the demand equation and the summed fixed cost term: a relatively large average party size would ensure a large time cost element for all parks. The result of these collinear or multicollinear relationships would be a tendency for large variances of these estimators. Small t-statistics would result with a bias towards inappropriately accepting the null hypothesis. It would also become impossible to distinguish among the variables involved, their affect on the variation of the dependent variable. In addition, the use of multicollinear data generally results in coefficient estimates which are markedly sensitive to changes in model specification and sample coverage.

Only by econometrically estimating the regional group camping days overnight demand function (equation (25)) will the true extent of the conjectured statistical problems be revealed; however, on an a priori basis, it would appear that there is a possibility that satisfactory statistical estimation of the coefficients of the group camping days overnight demand model may not be possible. This does not mean that the postulated demand model is incorrect, but rather that disaggregated data (data on the individual

camping groups) may be required for its estimation.

Regardless, the group camping days overnight demand model is a unique modelling of park demand, and is a significant improvement, behaviorally and theoretically, over previous overnight park demand modelling.

Since the thesis is directed towards determining the status quo spatial distribution of primary overnight destination camping benefits, overnight camping demand must be adequately estimated. Due to the uncertainty as to whether the group camping days demand model can be accurately estimated, given the aggregated data base, another overnight camping demand model will be formulated. It was argued earlier that the only theoretically correct overnight camping demand model evident in the economics of outdoor recreation literature, is the group visit park demand model. This demand model will be developed in the final section of this chapter.

Overnight Group Visit Demand  
and Benefit Estimation Models

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The group visit demand model<sup>1</sup> expresses the affect

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<sup>1</sup>The derivation of the overnight group visit demand model will only be presented briefly since its theoretical formulation is very similar to that for the group camping days overnight demand model.

on overnight park visits of variation in the fixed travel costs across regions, and may be used to calculate the gross primary camping benefit (consumer surplus plus expending outlays) received from the recreational opportunity per se. It is postulated that group utility is defined over group park visits, group camping size is exogenous, and the group's length of stay has an insignificant affect on demand since the daily camping costs are quite small relative to the fixed travel cost. The independent cost variable, the marginal cost of a group park visit, is the fixed group travel cost. If the group utility function, defined over park visits ( $V_i$ 's) and the composite good ( $Y$ ),

$$(27) \quad U_K = U_K[V_1, V_2, \dots, V_m, Y] \quad ; \quad V_i \geq 0$$

is maximized subject to the group's income constraint,

$$(28) \quad M = FC_1 V_1 + FC_2 V_2 + \dots + FC_m V_m + P_Y Y$$

$$\text{where: } FC_i = 0 \quad \text{if } V_i = 0$$

the first order utility maximization conditions yield the  $K^{\text{th}}$  group's demand function for overnight visits to the  $i^{\text{th}}$  park,

$$(29) \quad \frac{D_k}{V_i} = g(FC_i, FC_p, P_Y, M) \quad ; \quad p = 1, \dots, m; p \neq i$$

The  $V_i$ 's are overnight group visits to the  $i^{\text{th}}$  park, the  $FC_i$ 's are the marginal visit costs (fixed group travel cost),  $M$  is nominal group income, and  $P_Y$  is the price of the composite good, which will be excluded from further analysis since it is assumed to be constant throughout the province.

If equation (29) is separately summed over the camping groups of each provincial region at a particular park, then regional variations of the demand parameters can be used to econometrically fit a regional aggregate demand function for overnight group visits to that park, or in the general case, to the  $i^{\text{th}}$  park,

$$(30) \quad Q_{V_i}^D = G(FC_{ij}, FC_{pj}, \bar{M}_j, T_j, Rpop_j)$$

$$; p = 1, \dots, m ; p \neq i$$

where: the  $FC_{ij}$ 's are the average fixed travel costs to the  $i^{\text{th}}$  park from the  $j^{\text{th}}$  region;  $\bar{M}_j$  is the regional group nominal income proxy;  $T_j$  represents the regional tastes and preference variables;  $Rpop_j$  is regional population in thousands.

As with the group camping days overnight demand model, there are not enough observations to allow for the incorporation of all the independent marginal visit costs

in the overnight group visit demand model to be econometrically estimated. Although it is usually assumed that the prices of close substitutes remain constant in applied demand analysis, thus solving the problem at hand, this would imply that all regions are equally supplied with parks, in terms of quality and quantity. A casual examination of a map of British Columbia fails to verify this. With the group camping days overnight demand model it was proposed that the fixed travel costs be summed and this used as a measure of the availability of substitutes. This will also be done in this case, though noting as before that much information is hidden in the process.<sup>1</sup>

Since the overnight group visits demand model does not involve a two-part tariff, the comparative statics are greatly simplified. Although corner solutions are still possible, an own price substitution effect occurs when the marginal visit cost changes for a park since a group's fixed travel cost is unique for each park. Therefore, the non-Giffen good assumption is a sufficient condition for all

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<sup>1</sup> The more detailed measure of the availability of substitute parks to be developed in the following chapter, which was mentioned earlier, will also be utilized in estimating the overnight group visit demand model.

parks to have negatively sloped regional overnight group visit demand functions.

The primary overnight camping benefit received by the  $j^{\text{th}}$  region from visiting the  $i^{\text{th}}$  park ( $B_{V_i}^j$ ) is the integral of the inverted (price as a function of quantity) regional overnight group visit demand function from zero group visits to the number of visits made by the region, say  $\hat{V}_i$ .

$$(31) \quad B_{V_i}^j = \int_{Q_{V_i}^D = 0}^{Q_{V_i}^D = \hat{V}_i} G'(Q_{V_i}^D, \text{SUM}_j, \bar{M}_j, T_j, \text{Rpop}_j) dQ_{V_i}^D$$

The inverted equation (30) is denoted by  $G'$ , and  $\text{SUM}_j$  is the measure of the availability of substitute parks

$$(\text{SUM}_j = \sum_{h=1}^m FC_{hj}; h = 1, \dots, m; h \neq i).$$

By summing the benefits received from all parks  $((B^j)^v)$ ,

$$(32) \quad (B^j)^v = \sum_{i=1}^m B_{V_i}^j = \sum_{i=1}^m \int_{Q_{V_i}^D = 0}^{Q_{V_i}^D = \hat{V}_i} G'(Q_{V_i}^D, \text{SUM}_j, \bar{M}_j, T_j, \text{Rpop}_j) dQ_{V_i}^D$$

and then dividing by  $R_{pop_j}$ , the spatial distribution of primary overnight destination camping benefits can be calculated. The camping benefits which are measured with the use of the overnight group visit demand model are those received by overnight camping groups from their opportunity of using the provincial parks, no matter how long they remain (actual overnight camping must take place though).

Using a group utility maximization model, the variables relevant to the demand for overnight camping have been ascertained, given two behavioral assumptions: group camping days are demanded, and camping group size is exogenous to the camping demand model. The proposed group camping days overnight demand function is unique and induces many insights into overnight camping demand within a multi-park system. The model also proves to be valuable when juxtaposed to previous camping demand and benefit estimation attempts. As there may be problems in successfully fitting the group camping days overnight demand model, due to conjectured data related statistical problems, a group visit overnight camping demand model was also formulated.

Econometric techniques can now be utilized in order to test the validity of the two camping demand models

formulated in this theoretical analysis of overnight camping demand. The data employed in the econometric demand estimation process is discussed in the following chapter, along with an examination of the estimated park demand equations. It is these fitted overnight park demand equations which are required in order to calculate the spatial distribution of primary overnight destination camping benefits accruing to the residents of British Columbia from their system of provincial parks during the summer of 1975.

## CHAPTER IV

### ESTIMATION OF OVERNIGHT CAMPING DEMAND

The results of econometrically estimating both the overnight group camping days, and the overnight group visit demand models will be presented in this chapter. The sources and composition of the dependent and independent variables will be outlined in the first section. The problem of distinguishing between different types of camping demand will also be discussed. The second section of the chapter will be a presentation and analysis of the econometrically determined overnight camping demand equations. These fitted demand functions will be utilized in the next chapter to calculate primary overnight destination camping benefit, and its distribution, in British Columbia.

#### Empirical Representation of Variables

The primary data used in the thesis consists of an aggregation of the park campsite permits issued by the British Columbia Parks Branch in 1975. These campsite permits are required by overnight campers at all of the major provincial parks and they record park usage by the vast majority of campers, approximately eighty-five percent

of all party nights.<sup>1</sup> Though these permits will be discussed further, suffice it to note at this point that length of stay, camping party size, type of accomodation, and place of residence are recorded on all of the permits issued. This information is then compiled and aggregated by the Parks Branch Research Section. The park visitation data has been transformed from observations on individual overnight camping groups to aggregate information on each provincial regional district's camping activity at each park. The twenty-nine regional districts of British Columbia (shown in map 1) are synonymous with Statistics Canada's census divisions, and as such, census information is readily comparable to the park visitation data.

The primary data set is a very complete record of observed park attendance, and is relatively unique among recreation jurisdictions.<sup>2</sup> Since it is composed of only

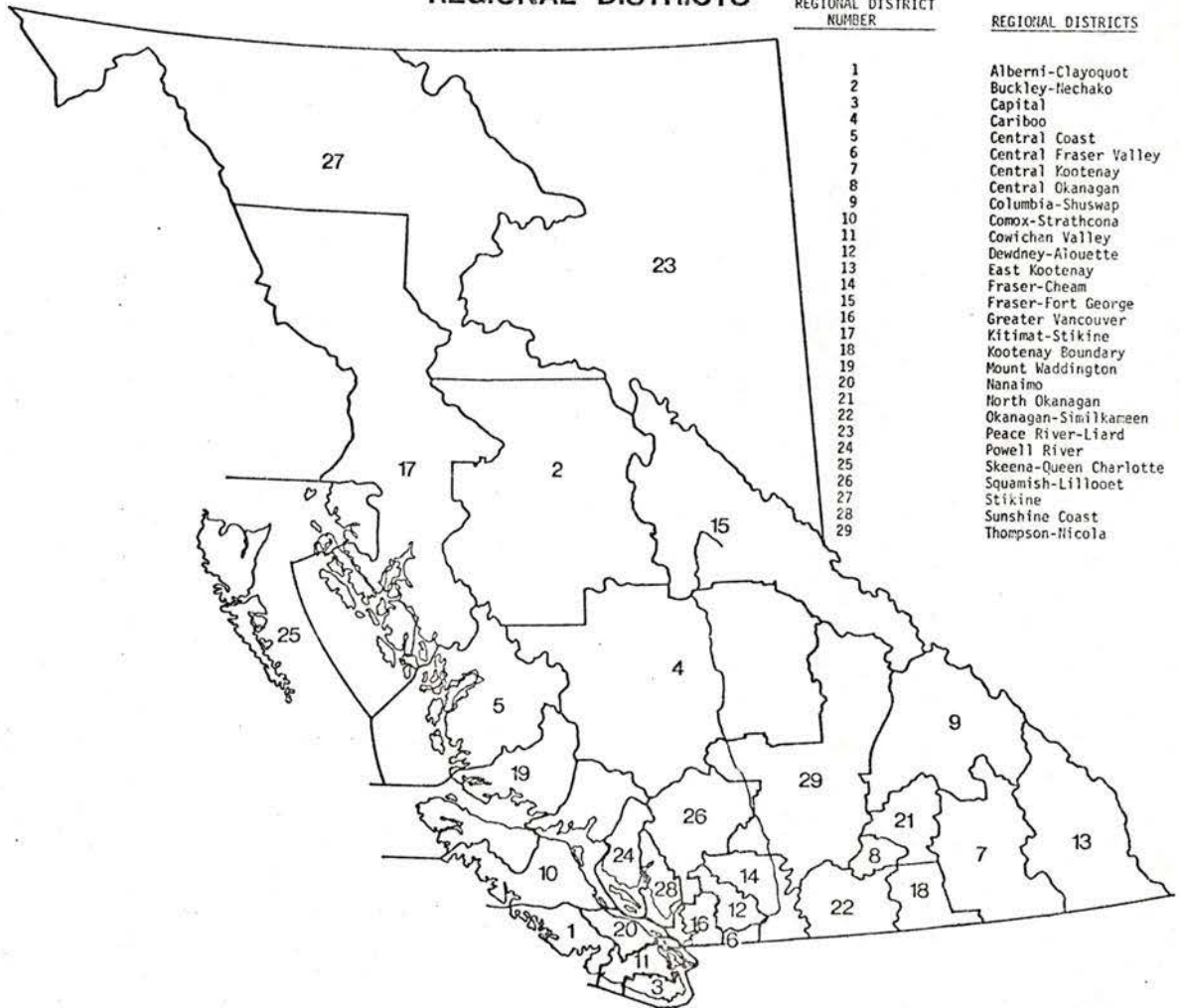
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<sup>1</sup>British Columbia, Department of Recreation and Conservation, Parks Branch, Planning Division, Attendance Procedures for 1975. (Victoria, 1975), p. 10.

<sup>2</sup>Park visitation information was collected again in 1976, but it is unlikely to be done again due to the expense and the fact that there is now sufficient information with which to carry out a great deal of analysis.

MAP 1

REGIONAL DISTRICTS



observed information though, the data set is not very robust with respect to much of the information required for demand analysis. Since no socioeconomic information was sought from campers when the primary data was recorded, it can not be determined whether campers and non-campers are differentiable on these grounds. Thus, these two groups must be assumed homogeneous to the extent that regional census data can be used as a proxy for the non-existent micro data. A more troublesome consideration is that it is not possible with the regionally aggregated visitation data to explicitly differentiate between transient and destination campers. This issue will be discussed below, prior to a more detailed presentation of data sources.

#### Transient versus Destination Camping

In addition to the day-use or overnight distinction, park visitors may be categorized as being either transient or destination campers. The former do not regard their stay at the park in question as the sole purpose of their trip, but rather their stay forms part of an extended trip. Often, overnight camping facilities are used as inexpensive substitutes for motels, or as O'Riordan [1973, p. 301] reports, as a "cheap nature motel". Transient campers'

park usage is only a facet of their trip: it is incidental in that if the particular park were not available, another park or substitute facility would be used with no affect on their enjoyment. Destination campers on the other hand, seek out a particular park, and their visit to it is the sole purpose of their journey away from home. These campers may stay in other parks enroute if their home is quite distant from the destination park, but this secondary park usage is only the result of their desire to visit the destination park.

The fact that the camping population can be segregated into transient and destination campers precludes the unqualified acceptance of the home-park distance as a valuation of a park's services. Using observed travel distance would necessarily overstate the transient campers marginal benefit, except possibly for the first and last night of their trip, and would result in a multiple counting bias.

Parks, on a priori basis, can not be labelled as being transient or destination in use. There is not, for example, some level of park attractiveness which determines whether the park is used primarily by transient or destination campers, but rather it is a combination of

factors. The most significant of these are the regional supply of substitute parks and distance to the park in question. If one region is poorly supplied with parks, campers may be forced to do their destination camping at a park which would otherwise not be used if more attractive parks were nearby. Hence, whether a park is primarily transient or destination in use must be determined with regard to both sending regions and receiving parks.

This problem of distinguishing between transient and destination campers at any given park is only infrequently mentioned in the outdoor recreation literature, and because of this few suggestions have been made to solve it. A readily obvious solution would be to ask campers whether or not their park visit is the sole purpose of their trip, and then discard all non-destination visit observations from the ensuing benefit analysis. This would successfully result in a benefit figure attributable solely to destination camping. Unfortunately, this is an expensive time-consuming solution which is not very applicable on a wide-scale. Beardsley [1971, p. 177] suggests that to include the benefit accruing from a park to transient campers, and hence to entirely avoid the problem of distinguishing between the two groups of campers, total trip cost should be

partitioned by the amount of time spent at each park. This assumes that campers allocate both their expenditure and their time in proportion to the benefit they receive from the facilities visited. Though this is an interesting proposal, it also requires an expensive data collection process and is of no use if the appropriate data is not available.

In Canada [Cesario, 1973, p. 22, footnote 6] and Clawson and Knetsch [1966, p. 74] there are methods suggested with which to delete transient campers from observed camping data. These methods are based upon the assumption that as distance between a sending region and a receiving park increases, there is a greater likelihood that campers are of the transient nature. Since destination campers must attribute the total cost of a trip to one park, they are less likely to travel as far as transient campers who can partition total cost amongst all the parks they visit, plus other attractions. Although Cesario's approach is more sophisticated, both his and the Clawson-Knetsch approach involves deletion of visit observations in a manner which is a monotonic transformation of distance. The main fault with this approach is that it is not applicable to a system of parks in which sending regions are not equally

supplied with park services. The distance threshold between destination and transient camping will vary as the regions' supply of substitute parks varies, and with the quality of the park being analyzed.' Though a proper distance decay function may be derived for a single park, this becomes a very complex problem when a system of parks is being examined, such as the British Columbia provincial park system.

The approach used in the thesis to distinguish between transient and destination campers is based upon the average lengths of stay of camping groups at parks. It is conjectured that as a region's camping groups average length of stay increases, it is more likely that destination camping is occurring. As there is no a priori information with which to assign a transient camping function which declines with average length of stay, a discontinuous function has been arbitrarily chosen. It is assumed that if the regional average length of stay at a park is less than 1.5 nights, all camping is of the transient type, and if average length of stay is equal to or greater than 1.5 nights, camping is of the destination nature. O'Riordan [1973, p. 301] suggests the critical average length of stay is one night, but it is presumed herein that some transient campers may stay for more than one night. The marriage of

both indicators, distance and average length of stay, may prove to be the best solution, but due to the complexities involved in a system of parks, the average length of stay of 1.5 nights was utilized as the point of demarcation.

One result of using average length of stay to discriminate between destination and transient camping is that there can be no observations of zero camping group visits from a sending region. When a particular park is not used by a region's camping groups the average length of stay is not defined, and so it is unknown whether the region did not partake in transient camping or in destination camping at the park in question. Also, if a region is transient camping then there is no destination camping, but these zero destination camping observations can not be used because the discontinuous nature of the cutoff would produce a bias in the demand analysis, and the natural log (required for a multiplicative demand function) of zero is undefined.<sup>1</sup>

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<sup>1</sup>Young and Young [1975] confirm that zero observations on the dependent variable should be discarded when a logarithmic transformation is being used in regression analysis. They state that arbitrarily setting the log-value of the dependent variable to zero is inappropriate.

## Variable Formulation and Data Sources

Primary Data

In 1975 there were 246 Class A parks (outstanding natural, scenic and historic features -- no resource exploitation allowed) and 7 Class B parks (natural attractions, though some resource exploitation allowed) in the British Columbia provincial park system.<sup>1</sup> At 73 of these parks camping permits were required for overnight camping and it is the compilation of these permits which forms the primary data set. Unfortunately, the visitation information was not properly recorded at two of these parks, (Big Bar Lake and Laird River Hot Springs) and so the visitation information is from 71 parks which include 85 campgrounds.<sup>2</sup> At these parks there were over three hundred thousand campsite permits issued in 1975 and this accounts for eighty-five percent of all overnight park use.<sup>3</sup> The

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<sup>1</sup> British Columbia, Department of Recreation and Conservation, Parks Branch, Planning Division, British Columbia's Park System - A Graphic Presentation (Victoria, 1975), Appendix.

<sup>2</sup> In appendix 1 (table 9) all of the parks from which data was collected, plus all substitute parks are listed.

<sup>3</sup> British Columbia, Attendance Procedures for 1975, p. 10.

campsites at which permits are not required are the smaller, less popular, and not as well serviced campgrounds. At these there are usually just a refuse container, a privy and a picnic table; with no drinking water, nature program, firewood, or other developed services. There are no "improved campsites" (power, sewage, and water hookups for camping trailers) in any of the British Columbia provincial parks.

There are two types of campgrounds which issue campsite permits. The newest type is the "gatehouse campground" which was initiated at heavy-use parks for security reasons; Alice Lake, Cultus Lake, Golden Ears, Lakelse Lake, Miracle Beach, Rath Trevor Beach, Shuswap Lake, and Goldstream. At these parks the camping group purchases the campsite permit at the gatehouse upon entering the park. Camping at these parks accounts for 23 percent of all overnight park usage.<sup>1</sup> The other type of permit issue arrangement is the "uncontrolled campground" at which campers merely enter the park and choose a vacant campsite. In the evening or early morning a park ranger makes the rounds, selling permits. This type of park accounts for 62 percent of

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<sup>1</sup> Ibid., p. 10.

overnight park use.<sup>1</sup>

At both types of campgrounds the following information is recorded on the park's campsite permits: campsite number; whether or not it is a renewal; type of accommodation (tent, tent trailer, travel trailer, truck camper, or motor home); whether or not the campers arrived in a vehicle; origin of campers (if B.C. the first three digits of their phone number is recorded, and otherwise whether they are from Alberta, other Canada, Washington, Oregon, California, or other United States); license number; number in camping party. A copy of each permit is forwarded to the British Columbia Parks Branch Research Division for compilation, and from this amassed information was generated the primary visitation data used in the thesis. This aggregated primary data set includes: the total number of camping "party nights" (May through September 1975) spent at each park; the percentage of camping "party nights" attributable to each regional district, at each park; the "average length of stay" of camping parties from each region, at each park; the "average party size" of camping parties from each region, at each park.<sup>2</sup>

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<sup>1</sup>Ibid., p. 10.

<sup>2</sup>These data are listed in appendix 2 (tables 10 through 12).

The average length of stay information reveals that at eight parks there are no regions which stay an average of 1.5 days or longer; hence, these can be considered, under the assumption made above, as purely transient camping parks: Emory Creek, Skihist, Lac La Hache, Canim Beach, Bromley Rock, Stemwinder, Yard Creek, and Mount Fernie. It should also be noted that at some parks very few regions have an average length of stay of 1.5 days or more, and thus, it will be impossible to directly statistically determine the demand relationships for these parks because of the statistical degrees of freedom consideration.

The four dependent variables presented in chapter 3 may be calculated from the primary data set as follows:

1. User Days = Party Nights x Average Party Size
2. People Visits =  $\frac{\text{Party Nights} \times \text{Average Party Size}}{\text{Average Length of Stay}}$
3. Group Visits =  $\frac{\text{Party Nights}}{\text{Average Length of Stay}}$
4. Group Camping Days = Party Nights

The primary data set was used to generate the required dependent variables and was also utilized in the generation of the independent cost and availability of substitutes variables.

### Camping Cost Variables

The group camping days overnight demand model requires the estimation of the group daily cost (marginal cost) of camping and the fixed travel cost, while the overnight group visit demand model requires only the latter. The formulation of the fixed travel cost variable will first be presented, followed by the group daily camping cost.

#### Fixed Travel Cost

The fixed travel cost is composed of two factors: the return mileage or driving cost from the  $j^{\text{th}}$  regional district to the  $i^{\text{th}}$  park, and the time costs of this trip.

Mileage Cost. The mileage cost,  $MC_{ij}$ , is composed of the actual vehicle driving costs, the layover cost if the trip is too long to make in a single day, and any required ferry fees. This mileage cost is given as

$$(33) \quad MC_{ij} = 2 \left[ DC (D_{ij} - FTEM_{ij}) + (LC_{ij} \cdot A) + \right. \\ \left. CF_{ij} + (PF_{ij} \cdot APS_{ij}) \right]$$

where: DC is the average per mile driving cost for an intermediate size automobile. In 1974 this was calculated

by the Canadian Automobile Association to be 6.14 cents per mile, and it includes the variable driving costs of gasoline, oil, maintenance, and tires.<sup>1</sup> This was inflated by the Canadian Automobile Operation and Maintenance Price Index<sup>2</sup> to 7.05 cents per mile for 1975.

$D_{ij}$  is the one-way mileage between the centre of the  $j^{\text{th}}$  region and the  $i^{\text{th}}$  park. The regional centres are listed in appendix 4 (table 14) and were chosen with reference to geography and population. Regional District number 27, Stikine, was excluded from the analysis as there is no regional centre due to the region's very small and highly dispersed population. The distances were calculated using: a British Columbian seventy-four city distance matrix supplied by Environment Canada; park-to-nearest-town distance information supplied by the British Columbia Parks Branch; a provincial road map was used to choose the shortest routes and to provide any missing information. The resulting matrix showing the distances between the 28 regions and 134 campgrounds is given in appendix 4 (table 16).

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<sup>1</sup> Canadian Automobile Association, Car Costs 1974-75.

<sup>2</sup> Canada, Statistics Canada, Prices and Price Indexes. (Ottawa: Information Canada, 1975), p. 53, Table 9.

$FTEM_{ij}$  is the ferry time equivalent mileage calculated by dividing the ferry crossing time by the assumed average driving speed (AS) of 45 miles per hour. This has been added to all the road mileages where applicable, and it must be subtracted at this point so as to not overstate driving costs. The thirty-one ferry routes used to visit the parks analyzed are presented in appendix 4 (table 15).

$LC_{ij}$  is a minimum estimate of the number of layovers required if the park can not be reached in one day of travel. The British Columbia Automobile Association estimates that the average family on a vacation drives between 225 and 270 miles per day, and at maximum 400 miles.<sup>1</sup> It was thus assumed that no family would travel further than 500 miles in a day (as was suggested by Scott [1965, p. 29]) and this was used to calculate  $LC_{ij}$  from the distance data. A minimum estimate of the cost of a layover is the number of layovers required times the cost of a provincial campsite (A), which was two dollars in 1975.

$CF_{ij}$  is the car ferry fare required on the particular one-way ferry trip.

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<sup>1</sup> Interview with travel guides at the British Columbia Automobile Association, Victoria, B.C., 6 August 1976.

$PF_{ij}$  is the per person one-way ferry fare which is multiplied by the average party size ( $APS_{ij}$ ) to determine the group's ferry cost. Since the primary data does not reveal camping party composition, it was assumed that the average British Columbian resident camping party composition was equal to the average party composition of all non-resident travellers in the summer of 1974. This adult-child ratio is 2.32:0.64, and was used in calculating the per person ferry fare.<sup>1</sup>

Time Cost. Travel time is composed of actual travelling time plus any leisure time foregone as a result of necessary layovers. The return time cost,  $TC_{ij}$ , required to travel from the  $j^{\text{th}}$  region to the  $i^{\text{th}}$  park is given as

$$(34) \quad TC_{ij} = OCT_j (2 \cdot APS_{ij}) [(D_{ij}/AS) + (LC_{ij} \cdot FLT)]$$

where:  $OCT_j$  is the opportunity cost of an individual's travel time when the adult-child ratio is taken into account. The opportunity cost of travel time is the value which individuals place on their leisure time. Watson [1974,

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<sup>1</sup>B.C. Research, Visitors 74, by A.M. Pollock, A. Turner, and G.S. Crawford. Prepared for the Department of Travel and Industry, British Columbia. (Vancouver, 1975), p. 51.

p. 152] has calculated the value of leisure time to be 67.5 percent of the average wage rate, assuming two thousand hours of work per year. This is significantly greater than the values of leisure time calculated previously when commuting time models were used, as noted by Harrison [1974, p. 112]. The average regional wage rate was calculated using the most recent (1974) taxation statistics.<sup>1</sup> As is usually done in transportation studies, the opportunity cost of a child's travel time was set at one third the adult rate (Harrison [1974, p. 124]).

$(D_{ij}/AS)$  is the travel time required to go from the  $j^{\text{th}}$  region to the  $i^{\text{th}}$  park, assuming an average driving speed,  $AS$ , of 45 miles per hour.

FLT is the foregone leisure time which is the result of the required layovers. Assuming that eight hours are required for sleeping and two hours for meals and personal maintenance, there remain fourteen hours of potential leisure time. If it takes more than one day to travel to the destination park, ( $D_{ij}$  exceeds 500 miles) then after deducting travel time there are 2.9 hours remaining which can not be used as leisure time at the destination park and

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<sup>1</sup> Canada, Revenue Canada, Taxation, Taxation Statistics 1974 (Ottawa: 1976), Table 6, p. 102.

hence, is foregone leisure time.

The fixed travel cost of camping,  $FC_{ij}$ , is the sum of the mileage and time costs required to make the trip;

$$(35) \quad FC_{ij} = MC_{ij} + TC_{ij}$$

This is unique for every park that a camping group visits. Using the aggregated primary data, a unique fixed travel cost was calculated for the average camping group from each regional district, at every park.

In addition to the costs taken into account above, any other costs attributable to the trip should also be included, such as any food expenses exceeding those at home. These costs are difficult to generalize from observed data and so were not included, but since it is likely that these expenditures are relatively small, no great disservice is done by their exclusion.

#### Daily Group Camping Cost

Calculation of the daily group camping cost is required for the estimation of the group camping days overnight demand model. Elsewhere this variable was denoted as  $P_C$  and is shown below for the average camping

group from the  $j^{\text{th}}$  region, camping at the  $i^{\text{th}}$  park,

$$(36) \quad P_{C_{ij}} = A + (OT \cdot APS_{ij})$$

where: A is the campsite permit fee, which for 1975 was two dollars at all of the provincial parks where permits were issued.

$APS_{ij}$  is the regional average party size.

OT is the average daily cost per group member which is attributable to the camping experience. This could include: food costs exceeding those at home (these are likely if all provisions are not brought from home as one would not buy in the same cost-saving quantity); depreciation and amortization costs of recreation capital (especially relevant for owners of trailers, motor homes, and such); the cost of non-durable recreation equipment (for example, books, film, and camping fuel). Since daily camping cost data is sparse and unreliable, it was assumed that OT equalled one dollar. This low value was intentionally chosen so as to ensure a downward bias of benefit; however, it does produce the conjectured variation in  $P_{C_{ij}}$  related to party size, and it is statistically as valid as any other value for estimating the coefficients of the group camping days overnight demand model. It was argued earlier that there may be difficulty in estimating the coefficient of

$P_{C_{ij}}$  due to the small standard deviation of  $APS_{ij}$ . This is unaffected by whatever constant (OT)  $APS_{ij}$  is multiplied by.

#### Measure of Available Substitutes

In the previous chapter it was noted that there are not enough visit observations to statistically allow for the separate inclusion of all the fixed travel costs into the demand equations. As a result it was proposed that a variable denoting the availability of substitute parks could be formulated by summing all of the fixed travel costs, except the one for the park in question. By this approach a region which is relatively well supplied, would have a smaller summed fixed travel cost term. However, this measure ignores the fact that all parks are not of equal quality. For this reason an availability of substitutes variable will be presented which takes into account the variability of park quality across the province. A most important aspect of this variable is a term which differentiates parks: a park attractiveness variable. Earlier it was suggested that park attractiveness is a very subjective matter, but it is conjectured that a composite attractiveness variable may be generated, allowing

for rough comparisons among parks. The formulation of this variable follows shortly.

Initially, it must be decided which parks should be judged as substitute goods. Since there is little park information available to campers, other than that which is on the official road map of British Columbia,<sup>1</sup> it is assumed that the parks listed therein are generally the best known and hence, the most relevant substitutes to any particular park. In addition to these, the national parks within British Columbia, plus Jasper, Banff, and Waterson Lakes National Parks located just inside of the Alberta border, are deemed to be substitute goods. In total this involves 120 parks: 71 for which there is visitation data, 42 others which are listed on the official road map, and 7 national parks.<sup>2</sup> This does not include any parks in the border states of Washington, Idaho, or Montana, as it is conjectured that these would be somewhat dissimilar goods owing to the fact that a national border must be crossed.

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<sup>1</sup> British Columbia, Department of Recreation and Travel Industry, Beautiful British Columbia -- Road Map -- The Four Season Vacationland -- 1976-1977. (Victoria, 1975).

<sup>2</sup> See appendix 1 (table 9) for a list of these parks.

More importantly, no park substitutes such as private campgrounds, resorts, cottage areas, or proximity to the ocean were taken into account. It is assumed that the resulting increase in the accuracy of the substitution variable from including these substitute goods would not warrant the great amount of additional work required.

#### Park Attractiveness Measure

The relative ability of a park to attract visitors, all other things being equal, is determined by the park's attractiveness. There is a growing literature concerning the quantification of the attractiveness of recreation facilities.<sup>1</sup> The approach chosen for the thesis is the site specific technique, since it best measures park attractiveness in an unambiguous manner (for example see Cheung [1972]). With this method it is assumed that an individual's perception of a park's attractiveness is the summation of the quality and quantity of park characteristics, weighted by the individual's tastes and preferences. It is

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<sup>1</sup>For example see: Canada [Beaman, 1974]; Canada [Ross, 1973]; Cesario, Goldstone, and Knetsch [1969]; Cheung [1972]; Gearing, Swart, and Var [1974]; Michigan [Ellis, 1966]; Var, Beck, Loftus, and Beck [1976].

proposed that this aggregate measure can be approximated, in an admittedly somewhat subjective manner, by the composite park attractiveness measure  $ATT_i$ , given as

$$(37) \quad ATT_i = \sum_c TR_c \left( \sum_a PR_a \cdot Q_a \right)$$

where:  $ATT_i$  is the ordinal measure of the  $i^{th}$  park's attractiveness;  $TR_c$  is the tourist rating of park criterion  $c$ ;  $PR_a$  is the participation rate for activity  $a$ ;  $Q_a$  is the quantity or quality measure of activity  $a$ , at the  $i^{th}$  park. Equation (37) states park attractiveness as being a function of the quality and quantity of activities offered at a particular park. These park characteristics are weighted by the desirability of that activity being present, or what is assumed to be same, the rate of participation of Canadians in the activity. The weighted park activity measures are then summed into independent criteria which tourists deem to be important, and these are weighted by their relative touristic rating.

The tourist criteria ratings are taken from the work done by Var, Beck, Loftus, and Knetsch [1976] in determining the relative attractiveness of the tourist regions of British Columbia. These were calculated using tourism

"experts" in a process designed to elicit their consistent judgements on the relative importance of independent tourist criteria. The activity participation rates were taken from two Canadian studies; The Leisure Time Activities of Canadians (Canada [1968, vol. I and II]) and Canadian Participation in Outdoor Recreation (Canada [1972]). The tourist criteria and park activities, or characteristics, are listed below in table 2 along with the relevant weights used in constructing the park attractiveness measures, which are shown in appendix 1 (table 9).

#### Generation of Available Substitutes Variable

If the park attractivity measures were all summed, the resultant term would be a measure of park supply, but it would give no indication of relative supply across regions. Dividing the attractiveness measures by the region-park distances prior to a summation of these for each region, would yield a much more meaningful term. For example, if there is one park and two sending regions, the closer region is better supplied with park services. This approach of weighting attractiveness by the inverse of distance has been suggested in such works as Cesario, Goldstone, and Knetsch [1969], Cheung [1972] and Canada [Ross and Ewing, 1974].

TABLE 2

## PARK ATTRACTIVENESS MEASURE

Criteria	TR <sub>c</sub>	PR <sub>a</sub>	Activity
1. Natural Beauty	.164	subjective evaluation	Special features.
2. Climate	.134	--	Average monthly hours of bright sunshine plus average maximum monthly temperature.
3. Historical Prominence	.159	--	Barkerville Historic Park.
4. Sports Facilities	.060	.62 .53 .43	Swimming and feet of developed beach. Boating and boat ramps. Fishing.
5. Educational Facilities	.034	--	Nature study facilities.
6. Facilities conducive to health	.046	.54 .054	Miles of hiking trails. Acreage of park.
7. Shopping facilities	.036	--	Miles to nearest town of 250 people or more.
8. Infrastructure	.091	.26 1.0 1.0	Sanistations. Drinking water. Accessibility (average daily traffic flow on nearest major highway divided by distance to highway).
9. Food and Lodging	.101	--	Number of campsites.

<sup>a</sup>All factors were normalized before adding to one another and normalized before multiplying by any weights.

<sup>b</sup>Because not all of the Var et al. 1976 tourist criteria were applicable to parks, the tourist ratings do not sum to 1.0.

Since it is likely that the perceived supply of substitutes does not decline in such a simple manner (many writers suggest raising distance to various powers) it is proposed that the attractiveness term be divided by the fixed travel cost of visiting the park. Since the fixed travel cost is a function of average party size, and as attendance at a park reveals certain preferences, the regional measure of available substitutes,  $SUB_{ij}$ , is unique for each park and sending regional district.

$$(38) \quad SUB_{ij} = \sum_{i=1}^m (ATT_i / FC_{ij})$$

where:  $SUB_{ij}$  is the measure of substitutes available to those groups from the  $j^{th}$  region who camp at the  $i^{th}$  park;  $ATT_i$  is the attractiveness of the  $i^{th}$  park;  $FC_{ij}$  is the relevant fixed travel cost. To calculate the  $SUB_{ij}$  terms, the fixed travel cost from each region to all 134 campgrounds had to be determined for all the regional average camping group sizes at each park for which there is primary data. That is 85, 134 by 28 matrices had to be calculated. Each  $SUB_{ij}$  term is the summation of a column from one of these matrices.

The availability of substitutes variable describes the relative supply of park facilities across regions. It

is expected that regions which are relatively well supplied will tend not to travel as far in order to consume the destination park good. Conversely, those regions which are poorly supplied, will out of necessity, travel relatively greater distances and hence, will tend not to use the provincial parks as much as their better supplied counterparts.

### Socioeconomic Variables

The three socioeconomic variables which were suggested previously in the theoretical demand analysis concerned the age distribution, income levels, and the extent of urbanization. It was pointed out earlier that these have proved to be important in studies on the characteristics of outdoor recreators, such as ORRRC [1962]. The regional values of these variables are given in appendix 3 (table 13) and their description follows.

The variable  $AGE_j$  is the percentage of regional population between five and nineteen years of age in 1975, as determined by B.C. Research [1974]. This variable is a proxy for families with dependent children. The conjectured significant relationship between family camping and total group camping suggests this is a relevant explanatory variable.

The variable  $FY_j$  is the regional percentage of families with income in excess of \$10,000, which is just shy of the British Columbia average of \$10,019.<sup>1</sup> This variable is a combination of both absolute and relative income measures. The implication is that since relatively wealthy families tend to camp more, (see: ORRRC [1962], or Shafer[1969]) the more of these there are in a region, the more camping that will be done. Again, the conjectured relationship between family and total group camping suggests this to be a significant explanatory variable.

To represent the extent of urbanization, the variable  $URBAN_j$  was constructed from the B.C. Research [1974] population data. This variable is the percentage of regional population which lives in towns or cities with a population of 4,000 or more. It is expected that as urbanization increases (see ORRRC [1962]) so does park use.

### Econometric Overnight Camping

#### Demand Results

Ordinary least-squares (OLS) regression analysis was

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<sup>1</sup>Canada, Statistics Canada, "Families, Incomes of Families, Family Heads and Non-Family Persons", Census 1971, Vol. II, Part 2, Table 85.

used in an attempt to determine the demand parameter coefficients of both the group camping days and group visit overnight camping demand models. Quite simply, this line fitting technique involves minimizing the sum of squared deviations about the mean, and is predicated upon the following "strong" set of assumptions: the error term is a normally distributed random variable, with mean zero and constant variance; the error terms are uncorrelated.

Although both overnight camping demand models were estimated in various mathematical forms, the multiplicative specification proved to give the best results, as was expected on an a priori basis. The multiplicative form, or as actually estimated, the log-linear specification is commonly used in recreation economics for it allows for interaction amongst variables, and results in constant elasticity coefficients. In addition, the affects of outliers are diminished since more normal distributions of the dependent and independent variables are attained. The results presented below are from the estimation of the overnight camping demand models in log-linear form.

Group Camping Days  
Overnight Demand Model

In the previous chapter the regional group camping days overnight demand model was given as

$$(25) \quad Q_{C_i}^D = F(P_{C_j}, FC_{ij}, SUM_j, \bar{M}_j, T_j, Rpop_j)$$

$$; \quad SUM_j = \sum_{h=1}^m FC_{hj} ; h=1, \dots, m ; h \neq i$$

where:  $Q_{C_i}^D$  is overnight group camping days consumed at the  $i^{th}$  park;  $P_{C_j}$  is the marginal cost of a camping day faced by groups from the  $j^{th}$  region who use the  $i^{th}$  park;  $FC_{ij}$  is the fixed travel cost from the  $j^{th}$  region to the  $i^{th}$  park;  $SUM_j$  is the sum of fixed travel costs to the other parks faced by camping groups from the  $j^{th}$  region;  $\bar{M}_j$  is the regional group income proxy;  $T_j$  represents the regional taste and preference variables;  $Rpop_j$  is thousands of regional population. Using the particular variables outlined in the section prior to this, the group camping days overnight demand model to be estimated is

$$(39) \quad CD_i^D = B_0 \cdot P_{C_j}^{-B_1} \cdot FC_{ij}^{-B_2} \cdot SUM_j^{B_3}$$

$$\cdot AGE_j^{B_4} \cdot FY_j^{B_5} \cdot URBAN_j^{B_6} \cdot e_j$$

or in log-linear form

$$\begin{aligned}
 (40) \quad \ln CD_i^D &= \ln B_0 - B_1 \ln P_{Cj} - B_2 \ln FC_{ij} \\
 &+ B_3 \ln SUM_j + B_4 \ln AGE_j \\
 &+ B_5 \ln FY_j + B_6 \ln URBAN_j \\
 &+ \ln e_j
 \end{aligned}$$

where:  $CD_i^D$  is overnight group camping days, per thousand regional population, spent at the  $i^{th}$  park (as the model is multiplicative both sides of the equation where merely divided by  $Rpop_j$ :  $CD_i^D = Q_{C_i}^D / Rpop_j$ );  $P_{Cj}$  is marginal camping cost;  $FC_{ij}$  is fixed travel cost;  $SUM_j$  is the sum of fixed costs to all other parks;  $AGE_j$  is the percentage of regional population between five and nineteen years of age;  $FY_j$  is the percentage of regional families whose income exceeds \$10,000;  $URBAN_j$  is the percentage of regional population who live in centres with a population of 4,000 or more;  $B_0$  is the intercept;  $B_1$  through  $B_6$  are the demand coefficients for the relevant variables, with their expected sign;  $e_j$  is the error term.

Of the 71 parks for which there is visitation data only 15 parks evidenced enough sending regions with an average length of stay of 1.5 days or greater to allow for a minimum of ten degrees of statistical freedom. The results of using ordinary least-squares regression to fit equation (40) for these 15 parks, are shown below in table 3.

The coefficient of the individual fixed travel cost variable,  $FC_{ij}$ , is consistently of the predicted sign (except for Haynes Point) and nearly always significantly greater than zero (at the 10 percent, or less, level of statistical significance).<sup>1</sup> The next most significant explanatory variable is  $SUM_j$ , (summed fixed travel cost to the other parks) which is statistically significant, with the expected sign, for over one half of the parks. The socioeconomic variables,  $AGE_j$ ,  $FY_j$ , and  $URBAN_j$  proved to be of little help in explaining observed variations in the dependent variable and were generally insignificant.

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<sup>1</sup>The residuals from all the equations, and from both overnight camping demand models, were examined to determine whether the OLS assumptions, stated earlier, were valid, with special reference to the homoscedasticity assumption. No consistent significant violation of these assumptions could be found.

TABLE 3

ORDINARY LEAST SQUARES ESTIMATES OF THE GROUP  
CAMPING DAYS OVERNIGHT DEMAND MODEL  
(Equation 40)

Park	Intercept ( $\ln B_0$ )	$\ln P_{Cj}$ (-) <sub>a</sub>	$\ln FC_{ij}$ (-) <sub>i</sub>	$\ln SUM_j$ (+)	$\ln FY_j$ (+)	$\ln AGE_j$ (+)	$\ln URBAN_j$ (+)	R <sup>2</sup>	F
Haynes Point d.f.=18 <sub>b</sub>	29.50* (2.75) <sup>c</sup>	2.97* (1.66)	0.27 (0.70)	-1.34 (-1.32)	-1.37 (-0.92)	-4.84* (-2.90)	-0.08 (-0.64)	.597	4.44 <sup>e</sup>
Okanagan Lake d.f.=21	0.72 (0.12)	1.51 (1.22)	-0.28* (-1.87)	-0.04 (-0.08)	0.70 (0.81)	-0.96 (-0.91)	0.04 (0.61)	.392	1.84 <sup>f</sup>
Okanagan Falls d.f.=10	9.55 (0.58)	-1.38 (-0.31)	-0.27 (-0.64)	-0.56 (0.35)	-2.73 (-1.18)	-0.96 (-0.32)	0.21 (1.11)	.511	1.74 <sup>f</sup>
Ellison d.f.=17	-12.43* (-3.99)	2.61* (3.11)	-0.80* (-9.74)	0.53* (1.38)	1.71* (2.82)	0.23 (0.34)	-0.03 (-0.62)	.892	23.45
Shuswap Lake d.f.=21	-2.90 (-0.60)	5.41* (4.64)	-0.97* (-4.64)	-1.20* (-1.91)	2.35* (2.86)	1.39* (1.47)	0.02 (0.27)	.857	17.17
Kokanee Creek d.f.=12	-8.68 (-1.03)	0.94 (0.37)	-0.73* (-2.30)	0.40 (0.35)	1.61 (0.85)	0.12 (0.06)	0.01 (0.06)	.393	1.30 <sup>f</sup>
Lakelse Lake d.f.=11	-10.38* (-1.55)	1.15 (0.69)	-0.94* (-6.44)	1.16* (1.78)	0.22 (0.17)	0.44 (0.24)	-0.05 (-0.31)	.919	20.74

TABLE 3 - Continued

Park	Intercept ( $\ln B_o$ )	$\ln P_{Cj}$ (-)	$\ln FC_{ij}$ (-)	$\ln SUM_j$ (+)	$\ln FY_j$ (+)	$\ln AGE_j$ (+)	$\ln URBAN_j$ (+)	$R^2$	F
Goldstream d.f.=14	-2.05 (-0.39)	-0.49 (-0.32)	-0.56* (-4.46)	1.21* (1.97)	-1.30 (-1.28)	-0.62 (-0.45)	0.07 (0.96)	.689	5.18
Gordon Bay d.f.=10	-20.01* (-2.31)	-3.36 (-1.33)	-1.30* (-7.43)	4.36* (3.50)	-2.35 (-1.28)	-2.06 (-0.92)	0.09 (0.78)	.916	18.19
Rath Trevor Beach d.f.=19	-6.37 (-1.31)	2.00 (1.03)	-0.89* (-9.18)	0.92* (1.68)	-0.58 (-0.60)	0.09 (0.07)	0.08 (1.05)	.843	17.03
Strathcona d.f.=15	-8.21 (-0.95)	0.03 (0.01)	-1.66* (-5.71)	2.79* (2.20)	-1.51 (-0.59)	-2.01 (-0.81)	-0.04 (-0.24)	.783	9.00
Miracle Beach d.f.=19	-3.15 (-0.65)	0.22 (0.09)	-0.78* (-7.28)	1.05* (1.77)	0.17 (0.17)	-1.22 (-0.84)	0.02 (0.28)	.775	10.91
Porpoise Bay d.f.=12	2.17 (0.22)	-0.83 (-0.42)	-1.16* (-5.11)	-0.44 (-0.54)	0.45 (0.34)	2.58 (1.16)	-0.13 (-1.06)	.817	8.93
Cultus Lake d.f.=57	-18.26* (-4.32)	-0.74 (-1.03)	-1.33* (-16.00)	1.70* (3.97)	0.44 (0.61)	1.69* (1.78)	0.11* (2.00)	.846	44.15
Golden Ears d.f.=14	-3.23 (-0.66)	2.22* (1.91)	-0.96* (-9.55)	-0.43 (-0.62)	2.50* (2.58)	0.13 (0.11)	-0.21* (-2.81)	.906	22.46

TABLE 3 - Continued

- a The expected sign of the coefficient is given below the independent variable.
- b Degrees of freedom are denoted by : d.f.
- c t - statistics are in parantheses.
- d That a variable is significant at, at least the ten percent level of significance, is denoted by an asterisk.
- e All regression equations are significant at, at least the five percent level of significance, as given by the F-statistic, unless otherwise noted.
- f The regression equation is not significant at the five percent level of significance.

Definitions of variables:

- $P_{C_j}$  = marginal cost of a group camping day
- $FC_{ij}$  = fixed travel cost
- $SUM_j$  = sum of all fixed travel costs, other than to the park in question
- $FY_j$  = percent of regional families whose income exceeds ten thousand dollars
- $AGE_j$  = percent of regional population between the ages of 5 and 19
- $URBAN_j$  = percent of regional population living in towns or cities with a population of at least four thousand

The coefficient for the marginal cost of camping,  $P_{C_j}$ , is generally not significantly different than zero and often has the opposite sign than was expected. Though a positive marginal cost coefficient implies that the park is an inferior good, (negative income effect) it appears very unlikely that all these parks are inferior. It was argued earlier that the group camping days marginal cost variable would tend to be statistically insignificant due to a conjectured very small standard deviation (the standard deviation proved to be at most only half as large as for the other variables). In addition it was argued that the apparent high correlation between  $FC_{ij}$  and  $SUM_j$ , and between  $P_{C_j}$  and  $SUM_j$ , would tend to produce sensitive large coefficient variances, which would tend to produce results very sensitive to the demand model specification: linear, log-linear, and semi-log. These statistical factors could account for the generally statistically insignificant and positively signed marginal cost coefficients. Another explanation may be that camping group size should not be treated as exogenous to the group camping days overnight demand model. That is, large camping groups may tend to stay longer at parks and hence, consume more camping days, either due to having more resources to spend relative to small groups, or large families may not

be able to afford camping substitutes and so use camping as a "poor man's holiday". Park visitation information pertaining to individual camping parties would allow for a more satisfactory test of the group camping days overnight demand model since the statistical problems related to the use of aggregated data would be avoided, and the relationship of group size to overnight camping days demand could be more closely investigated.

The multiple correlation coefficients, which indicate the percentage of variation explained by the regression equation, are generally quite high considering this is a cross-sectional analysis. By means of the overall F-test, the null hypothesis that the multiple correlation coefficient is not significantly different than zero, can be rejected at the five percent level of significance for twelve of the fifteen equations, thus verifying in general the group camping days overnight demand model. For three parks, Okanagan Lake, Okanagan Falls, and Kokanee Creek, the null hypothesis can not be rejected since the F-probabilities, the level of significance at which the null hypothesis may be rejected, are respectively, thirteen percent, twenty-one percent, and thirty-three percent. The econometric results improved very little when the equations were re-estimated without including the socioeconomic variables,

or when  $SUM_j$  (sum of fixed travel costs to substitute parks) was replaced by  $SUB_j$  (sum of substitute parks attractiveness weighted by the inverse of fixed travel cost).

Although the econometric results verify in general the unique group camping days overnight demand model, the statistical insignificance of the marginal cost ( $P_{C_j}$ ) variable precludes the use of it for primary camping benefit estimation. The Marshallian demand function is a marginal-cost-quantity relationship and since this particular relationship has not been statistically verified, using the aggregated park visitation data, use of the marginal valuation concept in benefit estimation is not possible with the group camping days overnight demand model. For this reason the overnight group visit demand model will, by necessity, be relied upon in the calculation of primary camping benefit. Since the fixed travel cost term, marginal cost in the group visit model, has proven to be significant and of the expected sign, strength is lent to the prior made proposition that the overnight group visit demand model is the second most appropriate demand model to be estimated. The results of fitting the overnight group visit demand model follow.

## Overnight Group Visit Demand Model

The group visit demand model presented below is the same as equation (30) shown in the previous chapter, with the exception that the weighted substitute parks variable has replaced the fixed travel cost terms for the alternate parks. Overnight group visit demand for the  $i^{\text{th}}$  park is

$$(41) \quad Q_{V_i}^D = G (FC_{ij}, SUB_j, \bar{M}_j, T_j, Rpop_j)$$

where:  $FC_{ij}$  is the marginal group visit cost (fixed travel cost) at the  $i^{\text{th}}$  park for groups from the  $j^{\text{th}}$  region;  $SUB_j$  is the measure of available substitute parks for camping groups from the  $j^{\text{th}}$  region who camp at the  $i^{\text{th}}$  park;  $\bar{M}_j$  is the group income proxy;  $T_j$  represents the taste and preference variables;  $Rpop_j$  is regional population in thousands.

The group income and taste variables have been shown to be inadequate explanatory variables for group camping days overnight demand. Although these variables were again used in the estimation of overnight group visit demand, they proved to be equally unsatisfactory: the coefficients were neither consistent in sign or significance. The two variables which proved to be most successful in the estimation of group

camping days overnight demand,  $FC_{ij}$  and  $SUB_j$ , were utilized in estimating overnight group visit demand, and provided the best results with respect to consistency and explained variation. The overnight group visit demand model for which the results are shown is

$$(42) \quad V_i^D = B_0 \cdot FC_{ij}^{-B_1} \cdot SUB_j^{-B_2} \cdot e_j$$

or in the log-linear form

$$(43) \quad \ln V_i^D = \ln B_0 - B_1 \ln FC_{ij} - B_2 \ln SUB_j + \ln e_j$$

where:  $V_i^D$  is overnight group visit demand for the  $i^{\text{th}}$  park, per thousand regional population (since the demand model is multiplicative both sides of equation were merely divided by  $Rpop_j$ :  $V_i^D = Q_{V_i}^D / Rpop_j$ );  $SUB_j$  is the measure of the availability of substitute parks;  $FC_{ij}$  is the marginal group visit, or fixed travel cost;  $e_j$  is the error term. Again  $B_0$  is the intercept term, while  $B_1$  and  $B_2$  are the demand parameter coefficients shown with their expected sign.

In table 4 the estimated parameter coefficients, the intercept, the t-statistics, the multiple correlation coefficient, and the over-all F-statistic are presented for the fitted overnight group visit demand equations. As with the group camping days overnight demand model, it was ensured

TABLE 4  
 ORDINARY LEAST SQUARES ESTIMATES OF THE OVERNIGHT GROUP  
 VISIT DEMAND MODEL  
 (Equation 43)

Park	Intercept (ln B <sub>0</sub> )	ln FC <sub>ij</sub> (-)a <sup>d</sup>	ln SUB <sub>j</sub> (-)j	R <sup>2</sup>	F
<u>Okanagan</u>					
Haynes Point d.f.=22 <sub>b</sub>	-2.28 (-0.56)	-0.45* <sup>d</sup> (-1.67)	0.66 (1.28)	.407	7.54 <sup>e</sup>
Okanagan Lake d.f.=25	1.74 (1.17)	-0.31* (-3.37)	-0.02 (-0.11)	.422	9.12
Vaseaux Lake d.f.=11	-1.03 (-0.23)	-0.25 (-0.89)	0.07 (0.12)	.124	0.78 <sup>f</sup>
Okanagan Falls d.f.=14	0.23 (0.08)	-0.54* (-3.08)	0.19 (0.50)	.625	11.68
Ellison d.f.=21	8.21* (6.41)	-0.74* (-9.68)	-0.85* (-4.65)	.817	46.84
Monck d.f.=13	-3.43 (-0.70)	-0.33 (-0.87)	0.82* (1.39)	.421	4.73
<u>Central Interior</u>					
Shuswap Lake d.f.=25	10.84* (5.44)	-1.26* (-8.14)	-0.71* (-2.88)	.745	36.48

TABLE 4 - Continued

Park	Intercept (ln B <sub>0</sub> )	ln FC <sub>ij</sub> (-)	ln SUB <sub>j</sub> (-)	R <sup>2</sup>	F
Clearwater Lake Campground d. f. = 12	13.82* (3.90)	-1.61* (-5.17)	-0.98* (-2.55)	.693	13.54
Mahood Lake Campground d. f. = 11	3.23 (0.78)	-0.95* (-1.99)	0.02 (0.05)	.385	3.44 <sup>g</sup>
<u>South-East</u>					
Syringa Creek d. f. = 12	9.36* (2.28)	-1.00* (-3.77)	-0.83* (-1.47)	.553	7.44
Wasa Lake d. f. = 10	3.66 (1.03)	-1.20* (-5.53)	0.33 (0.72)	.793	19.19
Kokanee Creek d. f. = 16	8.53* (2.31)	-0.94* (-3.05)	-0.79* (-1.86)	.370	4.69
<u>North Coast</u>					
Lakelse Lake d. f. = 15	10.14* (6.57)	-0.99* (-6.17)	-0.77* (-2.23)	.861	46.58
<u>Vancouver Island</u>					
Goldstream d. f. = 18	3.27* (2.05)	-0.58* (-5.53)	-0.03 (-0.13)	.660	17.49

TABLE 4 - Continued

Park	Intercept ( $\ln B_0$ )	$\ln FC$ (-) $ij$	$\ln SUB_j$ (-)	$R^2$	F
Montague Harbour Marine d.f.=10	10.24* (2.76)	-1.43* (-5.54)	-0.83* (-1.54)	.754	15.33
Gordon Bay d.f.=14	14.98* (4.42)	-1.52* (-6.81)	-1.48* (-2.78)	.779	24.63
Rathtrevor Beach d.f.=23	7.29* (4.43)	-0.89* (-9.41)	-0.48* (-1.98)	.806	47.68
Sproat Lake d.f.=10	6.72* (2.94)	-0.86* (-6.30)	-0.49* (-1.43)	.812	21.58
Miracle Beach d.f.=23	8.28* (5.51)	-0.84* (-8.45)	-0.62* (-2.77)	.757	35.78
Strathcona d.f.=19	23.90* (4.98)	-2.23* (-6.88)	-2.20* (-3.38)	.714	23.78
<u>Lower Mainland</u>					
Porpoise Bay d.f.=16	8.91* (3.46)	-1.19* (-8.82)	-0.65* (-1.58)	.832	39.53
Alice Lake d.f.=12	7.10* (2.64)	-1.24* (-7.32)	-0.41 (-0.99)	.820	27.41

TABLE 4 - Continued

Park	Intercept ( $\ln B_o$ )	$\ln FC$ (-) $ij$	$\ln SUB$ (-) $j$	$R^2$	F
Birkenhead Lake d.f.=10	25.31* (3.89)	-2.84* (-4.61)	-2.24* (-2.88)	.689	11.06
Cultus Lake d.f.=61	12.74* (8.44)	-1.28* (-15.27)	-1.36* (-6.53)	.826	144.59
Golden Ears d.f.=18	8.03* (6.21)	-0.96* (-11.88)	-0.70* (-3.95)	.907	87.50

- a The expected sign of the coefficient is given below the independent variables.
- b Degrees of freedom are denoted by: d.f.
- c t - statistics are in parantheses.
- d That a variable is significant at, at least the ten percent level of significance is denoted by an asterisk.
- e All regression equations are significant at, at least the five percent level of significance, as given by the F-statistic, unless otherwise noted.

TABLE 4 - Continued

- f The multiple correlation coefficient for the Vaseaux Lake demand equation is not significantly greater than zero at the five percent level of significance: F-probability = 0.48.
- g The multiple correlation coefficient for the Mahood Lake Campground demand equation is not significant at the five percent level, but is significant at the seven percent level.

Definitions of variables:

$FC_{ij}$  = marginal cost of a group park visit (fixed travel cost).

$SUB_j$  = measure of the availability of substitute parks.

that there were at minimum ten degrees of statistical freedom. Since there are only two regressors in the estimated overnight camping demand equation, 10 more parks could be added to the analysis, bringing the number of park demand equations to 25, from 15 when all 6 explanatory variables were used.

The results of econometrically estimating the overnight group visit demand model are generally very good. The multiple correlation coefficients are very respectable given that this is a cross-sectional analysis. Only the demand equation for Vaseaux Lake Park has a multiple correlation coefficient which is not significantly greater than zero at the five percent level of significance; the F-probability is 0.48.<sup>1</sup> This park demand equation will be excluded from the benefit analysis for this reason, leaving 24 overnight camping demand equations with which primary camping benefit can be directly calculated.

The coefficient of the fixed travel cost is of the expected sign (negative) in all cases and is significant at, at least the ten percent level for all parks except Monck.

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<sup>1</sup>The demand equation for Mahood Lake Campground is significant at the seven percent level of significance.

Wonnacott and Wonnacott [1970, p. 65] propose that a variable which carries the expected sign, but which is not statistically significant should nonetheless be retained in the analysis because the relationship between it and the dependent variable has not been disproven. That is, there is not sufficient evidence to alter the prior belief that marginal cost has a negative affect on visit demand at Monck Park, or conversely, there is not adequate evidence to prove that it is a Giffen good. The small t-statistic for  $FC_{ij}$  in the Monck overnight camping demand equation is likely the result of the high, though not critical, correlation between the two independent variables. To conclude, for this system of 24 parks the econometric results with respect to  $FC_{ij}$ , are quite consistent and verify the affect and importance of this variable in overnight group visit park demand.

The inclusion of the fixed travel cost variable in the overnight camping demand model was a direct result of the first-order group utility maximization conditions, and its relevance has been proven. On the other hand, though inclusion of the availability of substitute parks variable,  $SUB_j$ , is intuitively pleasing, it is not a direct result of utility maximization, but rather a response to the inability of separately including the fixed travel costs to all other

parks. Hence, any prior beliefs pertaining to the variable's sign or significance were not as strong as they were for the single fixed travel cost variable. The results presented in table 4 for  $SUB_j$  are not as consistent in sign and significance as those for  $FC_{ij}$ , but then expectations were not as strong either. Thus, from the lack of consistency it should not be concluded that the availability of substitutes variable should be dropped from the system of equations.

Whereas the lack of consistency in the results of including the socioeconomic variables could not be explained (especially because of the aggregated nature of the variables) and led to their exclusion, the initial apparent lack of consistency in the results for the availability of substitutes variable can be explained and will be done so shortly.

In table 4 it is shown that for 19 of the 24 parks (after Vaseaux is excluded) the coefficient of the availability of substitutes variable is of the expected negative sign, and 16 of these are significant at the ten percent level of significance, or less. There are five parks which exhibit a positively signed coefficient, implying that as the availability of substitutes increase, so does visitation at the park in question; however, only for Monck Park is the positive coefficient significant (at the ten

percent level). To summarize briefly,  $SUB_j$  is statistically significant with the expected sign in two-thirds of the estimated overnight group visit park demand equations.

The econometric demand estimation results presented in table 4 are arranged into six distinct geographical areas: the Okanagan, the central interior, the south-east, the north coast, Vancouver Island, and the lower mainland. The elasticity of demand with respect to both independent variables and their level of significance can be explained provincially and inter-regionally with reference to these geographical areas.<sup>1</sup> The demand for group visits at the five parks in the Okanagan is inelastic with respect to cost and the affect of substitute parks is not significant. The Okanagan is a highly regarded summer vacation area because of high temperatures, low precipitation, and numerous days of bright sunlight. The popularity of the area, and especially of the southern Okanagan Valley (Haynes Point, Okanagan Lake, and Okanagan Falls Parks) is evident from the very cost inelastic demand functions. Many camping groups travel much greater distances to camp in this region of the province, vis-a-vis other camping regions, as witnessed by

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<sup>1</sup>The maps in appendix 6 display the location of all of the parks.

the fact that the overnight camping demand functions for these parks are the most inelastic in the province, of those estimated. Also, the southern Okanagan Valley is the most consistent in the statistical insignificance of the availability of substitute parks to sending regions, or to rephrase this, the most consistent in exhibiting almost completely inelastic demand with respect to this variable. Ellison Lake Park is located further north than the three in the southern Okanagan Valley and although the substitute parks variable is significant, the cost inelasticity of demand denotes its relative uniqueness and desirability of being located in the Okanagan. While Monck Park is about as far north as Ellison Lake, it is quite a bit west and in spite of its inclusion in the Okanagan region being initially tenuous, the park does exhibit demand coefficients similar to the other Okanagan parks. Demand is quite cost inelastic and the availability of substitutes variable is not significant in the expected manner. To conclude, the estimated overnight group visit demand equations for these five parks bears witness to the attractability of summer overnight camping in the Okanagan area.

The next three parks presented in table 4 are north of the Okanagan and are in an area labelled here as the

central interior. Both Shuswap Lake Park and Clearwater Lake Campground have an elastic demand with respect to cost, and a statistically significant inelastic demand with regard to substitute parks available to park users. Even though Clearwater Lake and Mahood Lake Campgrounds are both located in Wells Gray Park, they are separated by the Cariboo Mountain Range and many miles of road. The visit demand at Mahood Lake is cost inelastic, or relatively more inelastic than that at Clearwater Lake, which has been ranked as less attractive; thus, verifying the attractiveness measure in this case. However, Shuswap Lake which is ranked as the most attractive in the area and has the greatest total park average length of stay (average length of stay for all campers) in the province, is estimated to have a more elastic demand than Mahood Lake.

Syringa Creek, Wasa Lake, and Kokanee Creek Parks are located to the east of the Okanagan in the south-east corner of the province. The three estimated demand functions are consistent, with a relatively elastic fixed travel cost demand. Syringa Creek exhibits unitary price elasticity, while the price elasticity of demand for Wasa Lake is elastic, and for Kokanee Creek it is inelastic. Both Syringa Creek and Kokanee Creek have inelastic demand with respect to

the availability of substitute parks, while this is insignificant for Wasa Lake.

Lakelse Lake, located just south of Terrace, is unique because it is in an area where most lakes are glacially fed and hence, too cold for swimming. Both independent variables are significant in the demand for overnight group visits at the park on this lake, and although inelastic, the relative elasticity bears out the fact that park use is generally local, and not provincial as with those parks in the Okanagan.

The results from the estimation of overnight camping demand equations for parks on Vancouver Island are quite consistent, with one exception. Overnight group visit demand at Goldstream Park is quite inelastic and the availability of substitutes variable is insignificant. These results are likely attributable to the heavy transient use that is made of the park during the summer season due to the parks proximity to Victoria. Strathcona Park exhibits the most elastic demand with respect to both variables of all the parks on the Island for which demand was estimated. This would appear to be the result of a lack of facilities for family camping, which is evidenced by its low park attractiveness rating. Gordon Bay Park is next in the order of elastic demand

for Island parks, and again this appears to be attributable to a lack of park facilities; Gordon Bay ranks only slightly higher than Strathcona in terms of park attractiveness. The campground at Montague Harbour Marine Park also has a relatively high cost elasticity of demand, but this is unexpected due to its unique location in the Gulf Islands. This high elasticity may be the result of the need to use either a private boat or a Gulf Islands ferry to reach the park. For the remaining three Island parks, Rath Trevor Beach, Sproat Lake, and Miracle Beach, demand is inelastic with respect to both explanatory variables. This result was expected for both of the ocean front beach parks, but it is somewhat less expected for Sproat Lake. This result could be explained by the onsite prehistoric petroglyphs and the transient use made of the park by travellers to Longbeach, in the Pacific Rim National Park.

The remaining five parks for which overnight group visit demand was estimated are all roughly located in the lower mainland area and have generally similar results. Birkenhead Lake Park has the most elastic demand in both variables of any of the parks analyzed. This is likely due to its very out-of-the-way location and its apparently low level of attractiveness. The only park in this region which

has a cost inelastic demand, though quite close to unitary elasticity, is Golden Ears and this is likely attributable to it having one of the highest levels of measured park attractiveness. The demand elasticity in both variables for Cultus Lake Park was unexpected, as it was thought to receive large transient use because of its proximity to Vancouver. The relatively high values of both the cost and availability of substitutes coefficients tends to counter this theory, and suggests instead that park visitation is more evenly balanced, including much local use. Porpoise Bay and Alice Lake Parks have similar demand coefficients, though demand is more cost inelastic at Alice Lake. This is as expected due to its relatively higher level of park attractiveness.

In conclusion, the results of econometrically estimating the overnight group visit demand model for 24 provincial parks are generally quite consistent with a priori beliefs, explain a significant portion of visitation variation across regions, and are robust in their explanatory power of provincial camping patterns. Generally both the fixed travel cost of a park overnight group visit and the relative supply of substitute parks facilities affect group visit demand in a negative manner. The actual influence of these variables is dependent not only upon their magnitude,

but also upon the regional location of the park.

The estimated overnight group visit demand equations will be utilized in the calculation of the status quo primary overnight destination camping benefits accruing from the provincial park system of British Columbia during the summer of 1975. As noted previously, use of the group camping days overnight demand model is precluded by the statistical insignificance of the marginal cost of group camping days. The calculated primary camping benefits, received from the recreational opportunity per se, will be presented in the following chapter.

## CHAPTER V

### PRIMARY OVERNIGHT DESTINATION

#### CAMPING BENEFITS

With the completion of the econometric estimation of the overnight camping park demand models it becomes possible to achieve the purpose of the thesis: the determination of the primary overnight destination camping benefits accruing to the residents of British Columbia from their system of provincial parks during the summer of 1975, and the calculation of the spatial distribution of these benefits. Calculating the primary economic benefit derived from the parks for which overnight camping park demand curves were actually estimated, can be done in a straightforward manner as outlined in chapter 3. The derivation of the primary camping benefits accruing from the other 47 parks for which there is visitation data (but not enough regional destination camping observations to allow for demand estimation) will involve the assignment of one of the estimated demand functions to each of these parks. The primary benefit estimation techniques used in both cases will be discussed below and the benefit distribution results will follow. The calculated primary camping benefit will be

that received from the group camping opportunity per se (utilizing the overnight group visit demand model) and not from the length of the actual camping experience (group camping days overnight demand model). There is however, no a priori reason to expect that the regional distribution of primary camping benefits would differ between the primary benefit estimation models.

### Benefit Determination

#### Parks For Which Demand Equations Were Directly Estimated

It was argued previously that true primary economic benefit is approximated by the area under the Marshallian uncompensated demand function. That is, primary camping benefit per thousand regional population received by the  $j^{\text{th}}$  region from visiting the  $i^{\text{th}}$  park,  $B_{V_i}^j$ , is the integral of the inverted overnight group visit demand function from zero visits to the number of visits made by the region, say

$V_j$ . This is

$$(44) \quad B_{V_i}^j = \int_{V_i^D = 0}^{V_i^D = \hat{V}_j} H'(V_i^D, \text{SUB}_j) dV_i^D$$

where:  $H'$  is the inverted overnight group visit demand equation (42) presented in chapter 4;  $V_i^D$  is overnight destination group park visits per thousand regional population;  $SUB_j$  is the availability of substitute parks. Total regional primary camping benefit per thousand population,  $(B^j)^v$ , accruing to the  $j^{\text{th}}$  region from the 24 parks for which overnight group visit demand could be directly estimated, is simply the summation of equation (44) over those parks.<sup>1</sup>

$$(45) \quad (B^j)^v = \sum_{i=1}^{m'} B_{v_i}^j = \sum_{i=1}^{m'} \int_{V_i^D=0}^{V_i^D=\hat{V}_j} H' (V_i^D, SUB_j) dV_i^D$$

The twenty-four estimated overnight group visit demand equations are non-linear equations, estimated in log-linear form. Since this form of equation results in constant elasticity coefficients, the areas under the estimated demand equations are infinite. It is unlikely however, that a region receives an infinite amount of benefit, and what is more pertinent, the derivation of an infinite value involves a gross extrapolation of the demand equations beyond observed fixed travel cost values. If the overnight group visit

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<sup>1</sup>

$m'$  in equation (45) is a subset of the  $m$  parks, comprised of the 24 parks for which overnight group visit demand could be directly estimated.

demand functions are truncated (become horizontal at some level of fixed travel cost) in order to avoid serious extrapolation, finite benefit figures will result. The question is, At which level of fixed travel cost should this truncation occur? No matter which fixed travel cost value is used, the implication is that whichever camping groups pay this amount, they receive no consumer surplus.

The highest observed (calculated) fixed travel cost is \$1117.81, (Terrace, in Region 29, to Champion Lakes Park) and the highest value estimated with observed park visitation rates and the 24 fitted demand equations is \$7729.63 (Terrace, in Region 29, to Haynes Point Park). The difference between observed and predicted values is due to measurement error, stochastic error, and/or the absence of a significant explanatory variable. Both of the maximum fixed travel cost values are relevant candidates as levels at which to truncate the demand functions for they ensure minimal extrapolation (no extrapolation beyond observed or estimated values).<sup>1</sup>

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<sup>1</sup> Pearse [1966, p. 92] also uses the assumption that those groups which paid the greatest travel cost, receive no benefit in the form of consumer surplus.

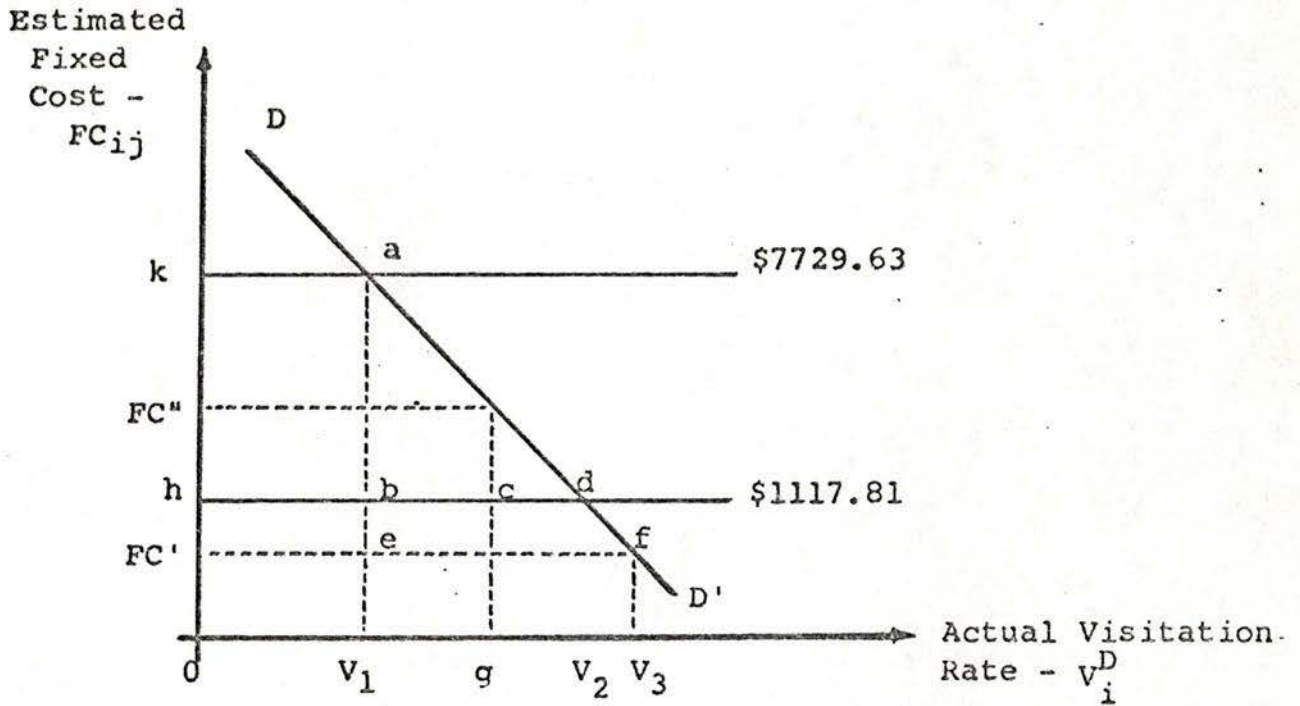
If the value \$1117.81 is used, the primary camping benefit received by all those regions with greater estimated fixed travel costs must be calculated as being equal to the region's visitation rate times \$1117.81 (for example, area hcg0 in figure 11, if estimated fixed travel cost is FC''); otherwise, if calculated by integration the benefit value is usually negative, since the lower bound of integration exceeds the upper bound.<sup>1</sup> Therefore, when \$1117.81 is used as the upper limit of the demand functions, some of the calculated regional primary camping benefit figures will be less than estimated expended revenue (estimated price times quantity).

The only way by which to determine whether the demand curve truncation causes any violence to the regional primary camping benefit distribution ranking is to compare these for both cut-off levels. The measures of primary camping benefit which will be affected the most by truncating the demand functions at the lower level of \$1117.81, will be those generated from the inelastic overnight camping park demand functions for regions which have an estimated fixed

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<sup>1</sup> If the benefit value is positive when estimated fixed travel cost exceeds \$1117.81, it is the result of a chance offsetting negative multiplication or positive addition and nonetheless, the resulting figure is meaningless.

Fig. 11. Effect of Demand Curve Truncation



- $DD'$  - estimated demand curve
- $V_1$  - lower bound of integration when demand curve truncated at  $\$7729.63$ .
- $V_2$  - lower bound of integration when demand curve truncated at  $\$1117.81$ .
- $V_3$  - upper level of integration if  $V_i^D = V_3$
- $KaD'$  - demand curve when truncation level is  $\$7729.63$
- $hdD'$  - demand curve when truncation level is  $\$1117.81$

travel cost that is less than the level of truncation. When the lower level of truncation is used (estimated fixed travel cost is  $FC'$  in figure 11;  $FC' < \$1117.81$ ) the triangle (aef) estimated when the truncation level is \$7729.63, is ignored and this ignored area increases as both the cost inelasticity increases and the region's fixed travel cost decreases.

Therefore, as the level of truncation is lowered, the ordinal ranking of regional primary camping benefit will worsen for those regions which tend to specialize in camping at parks having an inelastic demand. Regions which patronize a more varied type of parks, or specialize in overnight camping at parks with elastic demand, will display a relative increase in the primary camping benefit distribution ranking.

#### Parks For Which Demand Functions

#### Could Not Be Directly Estimated

There are 47 major provincial parks remaining for which overnight group visit demand functions could not be directly estimated, because there were not enough regional destination camping observations to allow for ten degrees of statistical freedom. Since primary economic benefit is the area under the demand function, the only way in which primary overnight destination camping benefit can be determined

for these parks, is by utilizing the information contained in the 24 estimated demand functions. Based on the fact that identical goods face identical demand functions, *ceteris paribus*, it is conjectured that the estimated overnight camping park demand coefficients can be used to calculate the primary camping benefit accruing from comparable parks for which demand could not be estimated. It has been noted earlier that the park attractiveness measures are only approximate, and that the estimated demand parameter coefficients vary with the regional location of a park. It is thus evident that to allocate the estimated demand functions accurately amongst the remaining parks, both of these concerns must be judiciously taken into account. For example, the uniqueness of the southern Okanagan Valley precludes utilization of the estimated demand functions from that region for a park in another location.

A complicating factor to the allocation of the estimated overnight park demand equations is the capacity constraints at both the parks for which demand functions were estimated, and at those for which it was not possible. The capacity of a park for overnight group visits is rather nebulous since the length of stay is not defined beforehand. Maximum capacity is the product of the number of campsites

and number of days the park is open, if each group stays only one day. The fact that capacity has been achieved is evidenced by queuing at the park entrance and possibly a decline in park services.

Assuming for the moment that park services do not decline as attendance nears capacity, it is conjectured that demand will be unaffected except when capacity is actually reached (all campsites are full). To restate this, for any equally attractive parks located in the same region, demand functions will be indistinguishable regardless of relative park size, as long as the campgrounds are not full. Camping groups are equally free to visit any of these parks; hence, their marginal valuation of a visit will be unaffected by the relative size of the campgrounds (except where size may be taken as an indication of quality and quantity of park services offered).

If a park's capacity is reached, queuing will be used to allocate campsites and this will result in additional time and monetary costs which are attributable to the park visit. Still assuming that reaching capacity does not affect the level of services offered, this would imply graphically, a movement up and along the true overnight camping park demand curve, DD in figure 12, from point a, at

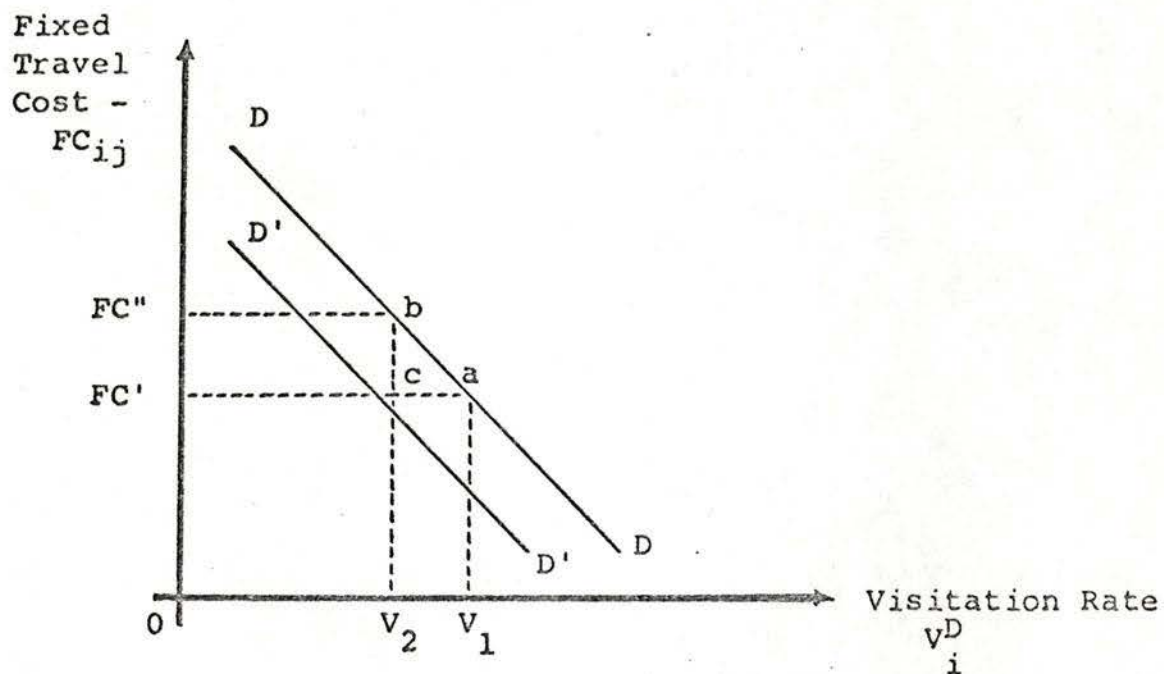
which there is no crowding, to point b, at which capacity is reached. Since the marginal group visit cost has been underestimated for each level of attendance by the amount of the queuing costs, the estimated demand function, D'D', will be to the left of the true demand curve, resulting in a downward biased measure of primary camping benefit for each region.<sup>1</sup>

If the attainment of park capacity results in decreased park services, or the perception of such a decrease, park attendance would be less relative to if there was excess capacity at all levels of the fixed travel cost. That is, the overnight camping park demand curve for such a park would be to the left of those demand curves for parks of seemingly similar attractiveness. In itself this does not bias the estimated benefit measures, but it may cause problems when allocating estimated demand functions among the other parks if this is done solely by means of park attractiveness.

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<sup>1</sup> This downward benefit bias may have some affect on benefit levels attributable to the souther Okanagan parks since attendance at these more closely approximates capacity than at any other.

Fig. 12. Effect of Attaining Park Capacity



DD - true demand curve

D'D' - estimated demand curve when capacity is approached or attained

for a given  
sending  
region:

a - demand when there is excess capacity

b - demand when capacity is reached

c - observed visit - cost point when queuing cost ignored

$(FC'' - FC')$  = cost of queuing

The important implication of the park capacity constraints in assigning the estimated overnight group visit demand functions is that if this factor is not taken into account, estimated primary camping benefit may be biased, up or down. If the demand function estimated for a park at which capacity was attained, (affecting the level of park services) is used to estimate benefit derived from a park at which there is excess capacity, benefits will be underestimated. This is the result of an inaccurate attractiveness measure which does not take into account the affect of crowding on park services at the original park, and the downward biased fixed travel costs used to estimate the demand function. If the situation is reversed, such that a demand function which was estimated for a park exhibiting excess capacity is used to calculate benefit accruing from a park at which capacity is reached, the result will again be an incorrect benefit measure, though biased somewhat ambiguously. Therefore, when allocating demand functions to the parks for which overnight group visit demand could not be directly estimated, three factors were taken into account: park attractiveness, regional characteristics, and the extent of capacity attainment.<sup>1</sup> The results of the overnight park

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<sup>1</sup> In appendix 5 (table 17) are listed the percentage number of nights, May through August, for which the campgrounds were full.

demand function allocation process are shown in appendix 5 (table 17).

Once the estimated overnight camping park demand functions are allocated to the remaining 47 parks, the same technique of calculating primary overnight destination camping benefit can be used as was outlined for the 24 parks for which demand was directly estimated. The overnight camping park demand equations are integrated over the relevant range and primary camping benefit is summed on a regional basis.

#### Benefit Estimation Results

The results of the individual benefit calculations, primary overnight destination camping benefit per park, per thousand regional population, are given in appendix 5 (tables 18 to 21) for both demand curve truncation levels, \$7729.63 and \$1117.81. Under the transient-destination camping demarcation assumption, 8 of the 71 parks generated no destination camping benefit since no sending region had an average length of stay of 1.5 days or greater: Bromley Rock, Canim Beach, Emory Creek, Lac La Hache, Mount Fernie, Skihist, Stemwinder, and Yard Creek.

## Spatial Distribution of Primary Camping Benefits

The results of calculating the status quo spatial distribution of primary overnight destination camping benefits emanating from the provincial parks of British Columbia during the summer of 1975 are presented in table 5 for both demand curve truncation levels.<sup>1</sup> The table includes the regional totals of primary camping benefits per thousand regional population accruing from the 71 major provincial parks, regional benefit relative to the region receiving the most benefit, the ordinal regional benefit ranking, and average regional benefit.

It is evident from table 5 that the ordinal primary camping benefit ranking of regions does vary between the demand curve truncation levels, but this is usually a small change, leaving generally consistent and stable results, especially with respect to those regions which receive the most and least primary camping benefit. This consistency is also true for those regions which receive above or below the provincial average. The Spearman rank correlation

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<sup>1</sup>Until stated otherwise, all benefit discussion and figures presented are with regard to primary overnight destination camping benefits per thousand regional population.

TABLE 5  
 REGIONAL TOTALS OF PRIMARY OVERNIGHT  
 DESTINATION CAMPING BENEFITS, PER  
 THOUSAND POPULATION, ACCRUING FROM THE  
 71 MAJOR BRITISH COLUMBIAN PROVINCIAL  
 PARKS, SUMMER 1975

Regional District	Demand Curve Truncated at \$7729.63			Demand Curve Truncated at \$1117.81		
	Camping Benefits	Relative Ranking	Ordinal Ranking	Camping Benefits	Relative Ranking	Ordinal Ranking
1. Alberni-Clayoquot	\$18,280	79.9	11	\$9,748	86.4	4
2. Buckley-Nechako	20,512	89.6	7	8,563	75.9	9
3. Capital	22,099	96.5	3	11,286	100.0	1
4. Cariboo	17,729	77.5	15	7,198	63.8	18
5. Central Coast	9,705	42.4	28	3,688	32.7	28
6. Central Fraser Valley	19,258	84.1	10	8,680	76.9	8
7. Central Kootenay	15,116	66.0	21	6,016	53.3	24
8. Central Okanagan	15,322	66.9	19	6,766	59.9	19
9. Columbia-Shuswap	14,934	65.2	23	5,976	52.9	26
10. Comox-Strathcona	17,141	74.9	16	8,334	73.8	11
11. Cowichan Valley	14,966	65.4	22	8,240	73.0	12
12. Dewdney- Alouette	17,935	78.4	14	7,777	68.9	15

TABLE 5 - Continued

Regional District	Demand Curve Truncated at \$7729.63			Demand Curve Truncated at \$1117.81		
	Camping Benefits	Relative Ranking	Ordinal Ranking	Camping Benefits	Relative Ranking	Ordinal Ranking
13. East Kooteney	\$12,759	55.7	27	\$ 5,196	46.0	26
14. Fraser-Cheam	19,982	87.3	8	8,209	72.7	13
15. Fraser-Fort George	22,888	100.0	1	10,937	96.9	2
16. Greater Vancouver	20,969	91.6	5	9,623	85.3	5
17. Kitimat-Stikine	21,538	94.1	4	8,974	79.5	7
18. Kootenay Boundary	13,909	60.8	25	6,093	54.0	23
19. Mount Waddington	19,426	84.9	9	8,497	75.3	10
20. Nanaimo	13,284	58.0	26	6,258	55.4	22
21. North Okanagan	14,897	65.1	24	6,002	53.2	25
22. Okanagan-Similkameen	16,064	70.2	18	6,403	56.7	21
23. Peace River-Liard	17,940	78.4	13	7,433	65.9	17
24. Powell River	20,680	90.3	6	9,688	85.8	6
25. Skeena-Queen Charlotte	22,716	99.2	2	9,978	88.4	3

TABLE 5 - Continued

Regional District	Demand Curve Truncated at \$7729.63			Demand Curve Truncated at \$1117.81		
	Camping Benefits	Relative Ranking	Ordinal Ranking	Camping Benefits	Relative Ranking	Ordinal Ranking
26. Squamish-Lillooet	\$16,099	70.3	17	\$ 7,614	67.4	16
28. Sunshine Coast	15,188	66.3	20	6,729	59.6	20
29. Thompson-Nicola	18,232	79.6	12	7,917	70.1	14
Provincial Average	17,485	76.4	15	7,779	68.9	15

coefficient, expressing the monotonicity of the relationship between the two ordinal benefit rankings is 0.92. That the relationship is not perfectly monotonic is generally explained by considerations discussed prior to this section of the chapter. It was hypothesized that the changes in the regional ranking between truncation levels would be the result of a region's relatively concentrated use of parks exhibiting either high demand elasticity, or inelasticity. Regions which specialize in using parks having an inelastic demand will exhibit a relative decrease in benefit ranking as the demand curve truncation is moved to the lower level. The opposite effect will occur for those regions heavily patronizing parks with an elastic demand. This hypothesis is verified by examining the ordinal rankings of those regions located close to the Okanagan with easy inexpensive access to the very popular, cost inelastic parks: regions number 8, 14, 21, 22, and 29. The ordinal regional benefit rankings decline as the demand curve truncation level is decreased. Conversely, since the parks on Vancouver Island generally exhibit cost elastic demand, the ordinal benefit rankings of the regional districts located on the Island, 1, 3, 10, 11, and 20, increase as the truncation level is lowered. The park patronization hypothesis explains much

of the regional ranking variation between the two demand curve cut off levels, although it is much more difficult to explicitly use this explanation for the remaining regional districts due to the number of factors involved, and the generally more varied types of parks which are patronized.

The spatial distribution of primary camping benefit accruing from the 24 parks for which overnight camping park demand could be directly estimated is presented in table 6. As with the whole system of 71 parks, the results are generally quite stable and consistent, with some change in the rankings occurring between the two demand curve truncation levels. The Spearman rank correlation coefficient is 0.87, and again the non-perfect monotonic relationship between the ordinal regional rankings can be explained by park patronage.

In order to easily compare all the primary camping benefit distribution results, the ordinal regional rankings for both the complete 71 park system and those for the 24 parks have been consolidated into table 7. Included in this table are the percentages of total (all 71 parks) regional primary camping benefit attributable to the 24 parks for which overnight camping park demand could be directly estimated.

TABLE 6  
 REGIONAL TOTALS OF PRIMARY OVERNIGHT DESTINATION  
 CAMPING BENEFITS, PER THOUSAND POPULATION, ACCRUING  
 FROM THE 24 BRITISH COLUMBIAN PROVINCIAL PARKS FOR  
 WHICH DEMAND FUNCTIONS WERE DIRECTLY ESTIMATED,  
 SUMMER 1975

Regional District	Demand Curve Truncated at \$7729.63			Demand Curve Truncated at \$1117.81		
	Camping Benefits	Relative Ranking	Ordinal Ranking	Camping Benefits	Relative Ranking	Ordinal Ranking
1. Alberni-Clayoquot	\$16,171	83.0	12	\$ 8,145	92.4	3
2. Buckley-Nechako	16,694	85.7	9	6,427	72.9	15
3. Capital	18,833	96.7	2	8,818	100.0	1
4. Cariboo	15,158	77.8	14	5,529	62.7	19
5. Central Coast	7,500	38.5	28	2,294	26.0	28
6. Central Fraser Valley	17,127	87.9	8	7,571	85.8	7
7. Central Kootenay	15,052	77.3	16	5,952	67.5	16
8. Central Okanagan	13,886	71.3	19	5,853	66.4	18
9. Columbia-Shuswap	11,483	58.9	27	4,431	50.2	27
10. Comox-Strathcona	15,077	77.4	15	7,186	81.5	9
11. Cowichan Valley	12,967	66.6	21	6,711	76.1	12
12. Dewdney-Alouette	16,215	83.2	11	6,845	77.6	11

TABLE 6 - Continued

Regional Districts	Demand Curve Truncated at \$7729.63			Demand Curve Truncated at \$1117.81		
	Camping Benefits	Relative Ranking	Ordinal Ranking	Camping Benefits	Relative Ranking	Ordinal Ranking
13. East Kootenay	\$12,622	64.8	22	\$ 5,064	57.4	24
14. Fraser-Cheam	17,145	88.0	7	6,680	75.7	13
15. Fraser-Fort George	16,076	82.5	13	6,638	75.3	14
16. Greater Vancouver	18,302	94.0	4	8,035	91.1	5
17. Kitimat-Stikine	18,610	95.5	3	8,040	91.2	4
18. Kootenay Boundary	12,345	63.4	23	5,113	58.0	23
19. Mount Waddington	17,844	91.6	5	7,736	87.7	6
20. Nanaimo	12,224	62.7	25	5,918	67.1	17
21. North Okanagan	12,313	63.2	24	4,853	55.0	26
22. Okanagan-Similkameen	14,428	74.1	17	5,484	62.2	21
23. Peace River-Liard	14,206	72.9	18	4,943	56.0	25
24. Powell River	16,357	84.0	10	7,044	79.9	10
25. Skeena-Queen Charlotte	19,479	100.0	1	8,363	94.8	2

TABLE 6 - Continued

Regional Districts	Demand Curve Truncated at \$7729.63			Demand Curve Truncated at \$1117.81		
	Camping Benefits	Relative Ranking	Ordinal Ranking	Camping Benefits	Relative Ranking	Ordinal Ranking
26. Squamish-Lillooet	\$11,835	60.7	26	\$5,350	60.7	22
28. Sunshine Coast	13,060	67.0	20	5,526	62.7	20
29. Thompson-Nicola	17,369	89.2	6	7,528	85.4	8
Provincial Average	15,013	77.1	16	6,360	72.1	15

TABLE 7

REGIONAL ORDINAL RANKINGS OF PRIMARY  
OVERNIGHT DESTINATION CAMPING BENEFITS,  
PER THOUSAND POPULATION, SUMMER 1975

Regional District	Demand Curve Truncated at \$7729.63			Demand Curve Truncated at \$1117.81		
	(1) 71 Parks	(2) 24 Parks	(3) Percentage: (2/1)	(4) 71 Parks	(5) 24 Parks	(6) Percentage: (5/4)
1. Alberni-Clayoquot	11	12	88.5	4	3	83.5
2. Buckley-Nechako	7	9	81.4	9	15	75.0
3. Capital	3	2	85.2	1	1	78.1
4. Cariboo	15	14	85.5	18	19	76.8
5. Central Coast	28	28	77.3	28	28	62.2
6. Central Fraser Valley	10	8	88.9	8	7	87.2
7. Central Kootenay	21	16	99.6	24	16	98.9
8. Central Okanagan	19	19	90.6	19	18	86.5
9. Columbia-Shuswap	23	27	76.9	26	27	74.1
10. Comox-Strathcona	16	15	87.9	11	9	86.2
11. Cowichan Valley	22	21	86.6	12	12	81.4
12. Dewdney-Alouette	14	11	90.4	15	11	88.0

TABLE 7 - Continued

Regional District	Demand Curve Truncated at \$7729.63			Demand Curve Truncated at \$1117.81		
	(1) 71 Parks	(2) 24 Parks	(3) Percentage: (2/1)	(4) 71 Parks	(5) 24 Parks	(6) Percentage: (5/4)
13. East Kootenay	27	22	98.8	26	24	97.4
14. Fraser-Cheam	8	7	85.8	13	13	81.4
15. Fraser-Fort George	1	13	70.2	2	14	60.7
16. Greater Vancouver	5	4	87.3	5	5	83.5
17. Kitimat-Stikine	4	3	86.4	7	4	89.6
18. Kootenay Boundary	25	23	88.7	23	23	83.9
19. Mount Waddington	9	5	91.8	10	6	91.0
20. Nanaimo	26	25	92.0	22	17	94.6
21. North Okanagan	24	24	82.6	25	26	80.8
22. Okanagan-Similkameen	18	17	89.8	21	21	85.6
23. Peace River-Liard	13	18	79.2	17	25	66.5
24. Powell River	6	10	79.1	6	10	72.7
25. Skeena-Queen Charlotte	2	1	85.7	3	2	83.8

TABLE 7 - Continued

Regional District	Demand Curve Truncated at \$7729.63			Demand Curve Truncated at \$1117.81		
	(1) 71 Parks	(2) 24 Parks	(3) Percentage: (2/1)	(4) 71 Parks	(5) 24 Parks	(6) Percentage: (5/4)
26. Squamish-Lillooet	17	26	73.5	16	22	70.3
28. Sunshine Coast	20	20	86.0	20	20	82.1
29. Thompson-Nicola	12	6	95.3	14	8	95.1

a This table is a compilation of table 5 and table 6.

b The Spearman rank correlation coefficients for the ordinal primary camping benefit rankings (denoted by column number) are:  $r_{1,4} = 0.92$ ;  $r_{2,5} = 0.87$ ;  $r_{1,2} = 0.89$ ;  $r_{4,5} = 0.87$ .

There is no a priori reason to expect the regional benefit ranking for the whole 71 park system to be similar to that for the 24 parks; however, the similarity is readily apparent.<sup>1</sup> The difference in regional ranking between the whole system and the 24 parks (for either demand truncation level) is generally due to the percentage of total benefit attributable to the 24 parks. When the primary camping benefit accruing from the 24 parks accounts for relatively little of total regional primary camping benefit, the ordinal ranking decreases from the 71 to 24 park systems. For example, the ordinal ranking of region number 15, Fraser-Fort George, decreased by thirteen. The opposite change in ordinal ranking occurs when primary camping benefit from the 24 parks accounts for relatively a high percentage of total benefit, as with region 29, Thompson-Nicola, for which the ranking increased by six. In between, when approximately eighty-two percent of total benefit is attributable to the 24 parks, there is no change in regional ranking when comparing it between the whole system and just those parks for which demand could be directly estimated.

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<sup>1</sup>The Spearman rank correlation coefficients for the 71 and 24 park systems at the high and low demand curve truncation levels are respectively, 0.89 and 0.87.

Some reviewers may take exception to the somewhat arbitrary assumptions required to facilitate regional primary camping benefit estimation for the 71 major provincial parks, and for this reason the relatively subjectively pure benefit distribution results were presented for the 24 parks for which overnight camping park demand functions were directly estimated. As the 24 parks account for such a large amount of the total primary camping benefit for most regions, the regional ranking for the whole system is lent verification by these results, especially when taking into account the reasons given for the divergency between rankings. This general verification is particularly relevant for those regions receiving the most and least benefit, and those which receive above or below the provincial average.

It would be inadvisable to use the primary camping benefit distribution results without some reservation since exactness can by no way be implied or stated. In calculating the primary camping benefit distribution assumptions had to be made, subjectivity used, the overnight group visit demand model utilized, and there is always present statistical error. The results do strongly suggest however, that there is an unequal regional distribution of primary overnight destination camping benefit accruing from the British

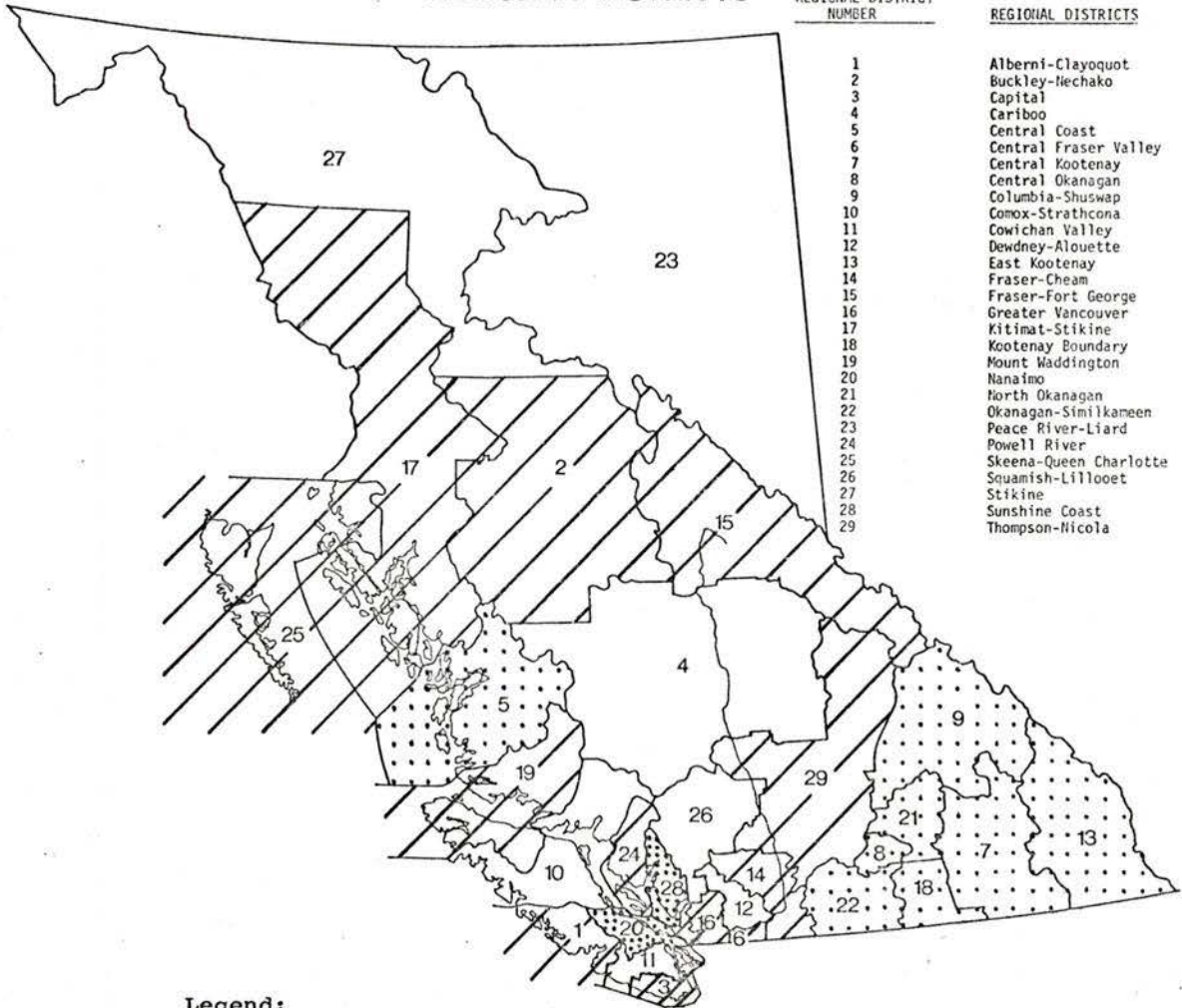
Columbia provincial park system. Regardless of at which level of fixed travel cost that the overnight park demand functions were truncated, the following general results are born out. The six regions which are shown to be the chief recipients of primary overnight destination camping benefit are: 3. Capital, 15. Fraser-Fort George, 16. Greater Vancouver, 17. Kitimat-Stikine, 24. Powell River, and 25. Skeena-Queen Charlotte. Of these, the Capital and Fraser-Fort George Regions receive the most primary camping benefit per thousand population. That both Victoria and Greater Vancouver are among the six regions which receive the most camping benefit is contrary to popular opinion. It is generally believed that these regions are poorly supplied with overnight recreation facilities. In contrast to these findings, the six regions which receive relatively the least amount of primary overnight destination camping benefits are: 5. Central Coast, 9. Columbia-Shuswap, 13. East Kootenay, 18. Kootenay Boundary, 20. Nanaimo, and 21. North Okanagan. The Central Coast Regional District clearly receives the least amount of primary camping benefit from the provincial park system. The remaining regions fall in between these, though as shown in tables 5 and 7, these can be divided essentially into those regions receiving more than

the provincial average of primary camping benefit, and those receiving less, with a few indeterminate.

The generalized results presented above are graphically displayed in map 2. The salient feature of this graphical portrayal is that the whole south-east corner of the province receives below average primary overnight destination camping benefit from the provincial park system. In addition, four of the six regions which receive the least amount of primary camping benefit in the province are in this area. The nearby national parks were taken into account when determining benefits and thus, this would not appear to explain this area's provincial park primary camping benefit deficit. Possibly, the parks further to the east in Alberta, or those south of the border which were not taken into account, are affecting these results. The centre of the province and the far north appears to receive the provincial average amount of primary camping benefit. There is a band of regions running up from the Okanagan and across the middle of the province which receives an above average amount of primary camping benefit from the provincial park system. The lower mainland and Vancouver Island regional districts are less consistent in the amount of primary camping benefit received. In this area there are three of the regional

THE SPATIAL DISTRIBUTION OF PRIMARY OVERNIGHT  
DESTINATION CAMPING BENEFITS, PER THOUSAND  
POPULATION, ACCRUING FROM THE 71 MAJOR BRITISH  
COLUMBIAN PROVINCIAL PARKS, SUMMER 1975

REGIONAL DISTRICTS



REGIONAL DISTRICT  
NUMBER

REGIONAL DISTRICTS

- |    |                        |
|----|------------------------|
| 1  | Alberni-Clayoquot      |
| 2  | Buckley-Iechako        |
| 3  | Capital                |
| 4  | Cariboo                |
| 5  | Central Coast          |
| 6  | Central Fraser Valley  |
| 7  | Central Kootenay       |
| 8  | Central Okanagan       |
| 9  | Columbia-Shuswap       |
| 10 | Comox-Strathcona       |
| 11 | Cowichan Valley        |
| 12 | Dewdney-Alouette       |
| 13 | East Kootenay          |
| 14 | Fraser-Cheam           |
| 15 | Fraser-Fort George     |
| 16 | Greater Vancouver      |
| 17 | Kitimat-Stikine        |
| 18 | Kootenay Boundary      |
| 19 | Mount Waddington       |
| 20 | Nanaimo                |
| 21 | North Okanagan         |
| 22 | Okanagan-Similkameen   |
| 23 | Peace River-Liard      |
| 24 | Powell River           |
| 25 | Skeena-Queen Charlotte |
| 26 | Squamish-Lillooet      |
| 27 | Stikine                |
| 28 | Sunshine Coast         |
| 29 | Thompson-Nicola        |

Legend:

- //// - above provincial average
- clear - provincial average
- ..... - below provincial average

Note: Regional  
District 27,  
Stikine  
excluded from  
analysis

districts which receive the greatest amount of primary camping benefit, including Victoria and Greater Vancouver, and one of the regions which receive the least.

This analysis of the spatial distribution of primary overnight destination camping benefits must again be qualified by a word of caution, but to reiterate, the most salient feature of the benefit distribution analysis is the below average amount of primary camping benefit received by residents of south-eastern British Columbia from the public system of major provincial parks during the summer of 1975. Although the spatial distribution overnight destination camping benefit results are for only 71 of the British Columbian provincial parks, 85 percent of all overnight camping occurred at these parks.<sup>1</sup> Since there is no reason to expect that the remaining overnight destination camping occurred in a regionally concentrated manner, it is conjectured that the spatial distribution results for the 71 parks, are representative of the distribution of primary overnight destination camping benefits emanating the complete provincial park system.

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<sup>1</sup> British Columbia, Attendance Procedures for 1975, p. 10.

### Absolute Primary Camping Benefits

By taking the product of regional primary camping benefit per thousand population and thousands of regional population, the total absolute amount of primary overnight destination camping benefit received by each region in the summer of 1975 can be calculated. Table 8 presents these results for the four cases: the 24 parks for which overnight camping park demand could be directly estimated and the 71 park system, using the two demand curve truncation levels for each.

When the regional primary camping benefit results are not standardized for population differentials the distribution ranking changes markedly, as shown in table 8

[Greater Vancouver receives more than half of the total provincial primary camping benefit.] Under either assumption of at which level the demand curve should be truncated, \$7729.63 or \$1117.81, aggregate provincial primary overnight destination camping benefit is very significant, \$47,110,358 or \$21,560,172, respectively. In both cases the primary camping benefit accruing from the 24 parks for which overnight camping park demand could be directly estimated, accounts for approximately eighty-five percent of the total provincial

TABLE 8

REGIONAL TOTALS OF PRIMARY OVERNIGHT  
DESTINATION CAMPING BENEFITS IN  
ABSOLUTE TERMS, SUMMER 1975

Regional District	Complete 71 Park System		24 Parks For Which Demand Was Directly Estimated	
	Demand Curve Truncation at:		Demand Curve Truncated at:	
	\$7729.63	\$1117.81	\$7729.63	\$1117.81
1. Alberni-Clayoquot	\$ 587,355	\$ 313,196	\$ 519,583	\$ 261,691
2. Buckley-Nechako	649,307	271,052	528,447	203,448
3. Capital	4,824,780	2,464,159	4,111,754	1,925,284
4. Cariboo	779,549	316,502	666,497	243,120
5. Central Coast	32,657	12,410	25,239	7,720
6. Central Fraser Valley	1,302,264	586,941	1,158,111	511,975
7. Central Kootenay	676,406	269,186	673,545	266,337
8. Central Okanagan	959,274	423,623	869,344	366,429
9. Columbia-Shuswap	518,790	207,616	398,909	153,942
10. Comox-Strathcona	918,905	446,785	808,232	385,206
11. Cowichan Valley	623,425	343,252	540,136	279,530
12. Dewdney-Alouette	787,116	341,301	711,614	300,424
13. East Kootenay	568,818	231,631	562,694	225,741
14. Fraser-Cheam	947,432	389,237	812,923	316,725
15. Fraser-Fort George	1,872,144	894,583	1,314,956	542,951

TABLE 8-Continued

Regional District	Complete 71 Park System		24 Parks For Which Demand Was Directly Estimated	
	Demand Curve Truncation at:		Demand Curve Truncated at:	
	\$7729.63	\$1117.81	\$7729.63	\$1117.81
16. Greater Vancouver	\$23,557,664	\$10,811,517	\$20,561,571	\$9,026,554
17. Kitimat-Stikine	980,121	408,365	846,910	365,874
18. Kootenay Boundary	417,400	182,856	370,462	153,449
19. Mount Waddington	210,868	92,238	193,701	83,975
20. Nanaimo	722,225	340,204	664,598	321,737
21. North Okanagan	550,971	222,006	455,393	179,477
22. Okanagan-Similkameen	729,610	290,803	655,332	249,074
23. Peace River-Liard	872,350	361,463	690,786	240,349
24. Powell River	414,962	194,411	328,212	141,348
25. Skeena-Queen Charlotte	543,576	238,760	466,104	200,110
26. Squamish-Lillooet	235,281	111,274	172,972	78,185
28. Sunshine Coast	160,203	70,977	137,761	58,286
29. Thompson-Nicola	1,666,905	723,824	1,588,016	688,272
Total	47,110,358	21,560,172	40,833,802	17,777,213

camping benefit emanating from the system of 71 major provincial parks. As noted earlier, this 47 million dollars (at maximum) of primary economic benefit accruing to the observed overnight destination camping groups is from the opportunity to camp and not from the actual camping per se. If the group camping days overnight demand model could have been utilized in the benefit calculations, it is conjectured that the estimated absolute primary camping benefit would be even greater, for the group camping days overnight demand model takes into account the daily camping expenditures and duration of visit. Nonetheless, the absolute primary camping benefit results reveal that overnight destination camping is a very significant product of the provincial government, in terms of social welfare. [ If this primary camping benefit could have been partitioned equally across the province, every man, woman, and child would have directly received approximately twenty dollars of social welfare from the operation of these overnight destination camping facilities during the summer of 1975. ]

The status quo primary overnight destination camping benefit distribution results explicitly reveal that not all of the regional districts of British Columbia benefit equally from the publicly funded system of major provincial parks.

In particular, the whole south-east corner of the province receives less than the provincial average of per capita primary overnight destination camping benefit. A band of regional districts running up from the Okanagan and across the centre of the province clearly receives an above average amount of per capita primary overnight destination camping benefit, while for the rest of the province the primary camping benefit distribution is much more patchwork-like. It is also noteworthy that both Victoria and Greater Vancouver ranked highly in the per capita primary camping benefit. In addition to these benefit distribution calculations, the empirical analysis revealed that the absolute level of primary overnight destination camping benefit accruing to the regional districts from the major provincial parks is quite substantial, affirming the importance of overnight destination camping to British Columbians.

## CHAPTER VI

### CONCLUSION

A general summary of the thesis is presented in the first section of this concluding chapter. This is followed by a review of problems encountered in conducting the theoretical and empirical analysis, and a discussion of relevant qualifications to the estimated spatial distribution of primary overnight destination camping benefits. In the final section of the chapter the applicability of the thesis's theoretical and empirical results are discussed.

#### Synopsis

The purpose of the thesis was to empirically estimate the spatial distribution of primary overnight destination camping benefits accruing to the residents of British Columbia from their system of provincial parks. This was an attempt to further rationalize cost-benefit analysis, and the public outdoor recreation investment process, by investigating the non-efficiency public investment criterion of regional equity. With reference to this goal, the thesis secured the status quo information (the spatial distribution of primary camping benefits) requisite to the consideration

of regional equity in future provincial park investment. Only by taking into account all factors relevant to public investment, such as the six objective-related criteria suggested by Hill and Shechter [1971, p. 111], (national economic benefits, regional economic benefits, distributional equity, preservation of natural areas, availability of choice and public participation) can maximization of net social benefit be truly achieved.

Numerous techniques have been utilized in order to estimate the primary benefits accruing from public outdoor recreation facilities. It was argued at the outset that of these, the travel-cost method, which uses the cost of travel as a proxy for willingness to pay, is the only unambiguous and theoretically sound method of estimating primary economic benefit. Only this method attempts to measure campers' marginal valuations of park services from observed visitation data, and so take into account both revenue expended and consumer surplus. After noting the peculiarities of overnight camping, including that there is both a fixed entrance fee and a fixed daily fee, a group camping days overnight demand function was developed through a constrained utility maximization process. This demand function is predicated upon basic microeconomic assumptions,

plus the assumptions that overnight camping demand is defined over group camping days and that camping group size is exogenous to the demand model. This group camping days overnight demand model is a significant improvement over previous attempts to formulate overnight camping demand because it is theoretically correct (solidly based upon accepted economic theory) and behaviorally appropriate (group camping days are the unit of demand in overnight camping). It was predicted that overnight group camping days demand is inversely affected by changes in both the marginal cost of a group camping day and the fixed travel cost, if the park is a normal good.

Since observations on individual camping groups were unavailable (the park visitation data was aggregated on a regional district basis) it was conjectured that the lack of variation in average camping party size would lead to statistical problems. For this reason it was proposed that the only theoretically sound overnight camping demand model in the outdoor recreation literature should also be statistically estimated, even though it was conjectured to be behaviorally faulty since overnight group camping is defined over park visits. Use of this overnight group visit-demand model results in an estimate of campers'

benefits received from the opportunity to camp, and not from the actual camping per se. If it is conjectured, however, that the marginal group camping day costs are considered by camping groups to be insignificant relative to the fixed travel cost, then it may be assumed that there would be little difference between benefit estimation models. Although the group camping days overnight demand model was fitted with some success, the lack of statistical significance for the marginal cost variable precluded the use of this demand model for primary camping benefit estimation.

The statistical results of econometrically estimating the overnight group visit demand model were significant and consistent. Overnight group visit demand varies inversely both with marginal cost (the fixed travel to the park being analyzed) and generally (except for parks in the Okanagan region) with the availability of substitute parks. The results also proved to be very robust in explaining provincial and regional camping patterns. The uniqueness of the Okanagan Valley as a summer recreation area was clearly evidenced by these econometric results.

In econometrically fitting both the group camping days and group visit demand models, the park visitation data was constrained to those regional visitation observations

which had an average length of stay of 1.5 nights or more. This discontinuous data restriction was necessary in order to limit the analysis to campers whose parks visits were the sole purpose of their trip: destination campers.

Calculation of the primary economic benefits received by regional districts' camping groups required the integration of the estimated overnight camping park demand equations over the relevant visitation ranges. Overnight group visit park demand functions could only be statistically estimated for twenty-four of the seventy-one parks for which overnight visitation data was available, owing to the degrees of freedom consideration; but by allocating the twenty-four estimated demand equations among the remaining forty-one parks, (at seven parks there was no destination camping) judiciously taking into account park attractiveness, regional characteristics, and park capacity, primary camping benefit accruing from all the major provincial parks was calculated for the summer of 1975.

Since a log-linear specification of the overnight group visit park demand model was used, calculation of infinite benefit levels, involving gross extrapolation, would have occurred if the estimated demand equations were not truncated at an appropriate fixed travel cost level.

This necessitated the assumption that those regions which paid the fixed travel cost at which the demand functions were truncated, received no consumer surplus. Primary camping benefit was calculated using two demand curve truncation levels: the highest observed fixed travel cost, and the highest estimated fixed travel cost.

After accounting for relevant considerations, the primary overnight destination camping benefit distribution results for the whole seventy-one park system proved to be consistent between demand curve truncation levels, and verification was lent to these results by the benefit distribution resulting from the twenty-four parks for which demand could be directly estimated. It was shown that over the period May to September 1975, there was an uneven regional per capita distribution of primary overnight destination camping benefit accruing from the British Columbian provincial park system. In particular, the whole southeast corner of the province enjoyed less than the provincial average of per capita primary overnight destination camping benefit. It is also evident that there were a band of regional districts running up from the Okanagan and across the centre of the province which received above average per capita camping benefit. The remaining regional districts received primary

camping benefit in a much less ordered pattern.

### Qualifications

Inherent in investigating any social phenomena is stochastic error and numerous extraneous influences; hence, only through judicious simplifying assumptions can social issues be thoroughly investigated and modelled. In order that the determination of the status quo spatial distribution of primary overnight destination camping benefits could be achieved, many simplifying assumptions had to be made with respect to both the theoretical and empirical analysis, and data limitations overcome.

After examining and defining economic benefit, investigating various methods used to estimate it, and noting the peculiarities of overnight camping, a theoretically sound overnight camping demand and benefit estimation model was formulated. All of this was important in defining the parameters of the issue at hand and the methodology with which to approach it. Given the conjectured statistical problems related to the data being aggregated on a regional district basis, and that, in retrospect, this data proved insufficient to thoroughly test the relationship between group camping days overnight demand and marginal cost, the

overnight camping demand model had to be restructured. The result was a primary camping benefit estimation technique based upon a group visit overnight demand model. Whereas the overnight group camping days benefit estimation model derives the primary camping benefit received from the whole camping experience, the overnight group visit benefit model estimates only the benefit received from the campers' opportunity to recreate at the park, for those campers who have travelled to the park. It is thus expected that there would be an absolute difference between benefit levels estimated from these two overnight camping demand models, but there is no a priori reason to expect a relative difference across regions. Therefore, although the overnight group visit demand model is not as behaviorally robust, that this demand model needs to be utilized should have no bearing on the empirical outcome of the thesis.

The outcome of the absolute primary camping benefit results have also been affected by necessary simplifying assumptions. In order to estimate mileage and time costs assumptions had to be made with regard to, for example, daily maximum distance travelled and party composition. In order to delete transient campers from the data, for whom this benefit estimation methodology is inappropriate, except with

very specific micro data, all of the regional park visitation observations which had an average length of stay of less than 1.5 nights were deleted. Although this technique of distinguishing between transient and destination campers within aggregate data is more acceptable than other methods previously used, it is still rather arbitrary. Clearly some transient campers will stay longer than one night, and it is unlikely that all of a region's park use is either destination or transient in nature. However, as with the assumptions made with respect to travel costs, this assumption will not affect the relative results as long as any deviations from the assumptions are common to all sending regions.

In assigning the estimated overnight camping park demand functions to the parks for which it was not possible to directly statistically estimate overnight group visit demand, many simplifying assumptions had to be made and subjectivity used. This demand function allocation process was carried out only after a close examination of the major factors differentiating overnight park demand amongst parks: park attractiveness, regional characteristics, and park capacity. As long as these considerations were accurately accounted for, no disservice to the results is expected from not being able to directly estimate overnight camping demand

for all parks.

In attempting to estimate both overnight camping demand models it was determined that the socioeconomic variables, concerning age distribution, extent of urbanization, and group income, did not significantly explain park visitation variations across regions. This lack of significance has been shown in other studies, in particular in an overnight camping demand analysis of Bowron Lake Provincial Park by Walter and Schofield [1977]. These findings do not necessarily prove a lack of correlation between socioeconomic factors and park visitation because regional averages of these variables had to be used. Indeed, questionnaire studies of individual campers, such as ORRRC [1962] and Schafer [1969], reveal that socioeconomic factors are relevant. Therefore, since apparently significant explanatory variables have been excluded from the analysis, there may be model specification bias present in the empirical results. It is possible that the calculated regional primary camping benefit inequality is the result of variations in the socioeconomic characteristics of camping groups across regions. The overnight park demand estimation results imply that the only factors significantly affecting overnight destination park use are the fixed travel cost required to visit the park and the availability of

substitute parks. If other factors which were not included in the analysis, such as socioeconomic characteristics of individual camping groups,<sup>1</sup> or the availability of other park substitutes (such as: commercial campgrounds; provincial, national or state parks excluded so far from the analysis; proximity to the ocean) explain a significant proportion of park visitation, then as suggested there may be model specification bias affecting the results. More accurate and less subjective park attractiveness indices may also affect the results by improving the explanatory power of the availability of substitutes variable and also the allocation of estimated park demand equations. It is not possible however, to state on an a priori basis the affect that these model specification improvements would have on the benefit distribution results.

It may be thought that the role of the Parks Branch is to provide an equal distribution of park services only with regard to accessibility, and hence, ignore the socio-economic heterogeneity of the province. That is, although

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<sup>1</sup> If park visitation data on individual camping groups had been available, therefore greatly increasing the number of observations and hence decreasing the importance of the degrees of freedom consideration, overnight park demand could have been directly estimated for all parks.

the distribution of received primary camping benefits may be unequal due to variations in family income across the province, for example, the Parks Branch should not be concerned as long as there is equal access throughout the province to the various types of parks: the per capita distribution of facilities in relation to access cost should be made equal, and not the per capita distribution of primary camping benefit. In order to investigate the benefit distribution solely with regard to access, the socioeconomic factors would need to be standardized; but if the socioeconomic factors are truly insignificant, as suggested by the empirical analysis of the thesis, then this standardization is unnecessary. Therefore, the unequal distribution of primary camping benefits is solely due to an unequal distribution of park facilities: all regions do not have equal access to the publicly supplied overnight destination park facilities. Of course it should be noted that just because there is an unequal distribution of primary camping benefits in the summer (May through September) of 1975, this does not necessarily mean that this is always so; however, unless there are particular reasons to suggest why relative camping patterns have changed, these results are likely to hold true.

It should not be concluded from this discussion of data limitations, simplifying assumptions, and problems encountered, that the primary overnight destination camping benefit distribution results are totally unreliable; in fact it appears that the overnight camping demand and benefit estimation analysis is a significant improvement over previous studies (see in chapter 3: "Critical Review of Park Demand and Benefit Estimation Literature") and a positive contribution to outdoor recreation research. The purpose of this discussion has been to point out that the primary camping benefit results should not be used without reasonable qualification. Exactness is by no means implied and the results must be evaluated in light of any particular use which may be made of them.

#### Applicability of Theoretical and Empirical Results

The theoretical and empirical research carried out in investigating the spatial distribution of primary overnight destination camping benefits is applicable in three ways. The theoretical investigation of overnight camping demand, with the ensuing overnight camping demand and benefit estimation models, is of use to other researchers in the

field of outdoor recreation. Secondly, the preliminary empirical analysis yielded data and estimates of overnight camping park demand which are of value to park planners and managers in British Columbia. Thirdly, the determination of the status quo distribution of primary overnight destination camping benefits in British Columbia secures information which is requisite to consideration of the regional equity of future public investment in outdoor recreation facilities. A discussion of each of these follows.

#### Theoretical Results

The theoretical investigation of overnight camping demand led to the formulation of two overnight camping demand models: the group camping days overnight demand model (group size exogenous), and the overnight group visit demand model (group size and length of stay exogenous). The former, the group camping days overnight demand model, is a unique representation of overnight camping demand in that it encompasses all the major factors pertaining to overnight camping and it is theoretically sound. While the latter, the overnight group visit demand model, is a less complete representation of overnight camping demand, it also is theoretically sound, and as noted previously there is only

one instance in the literature of an approximation of this model being correctly used for overnight camping. All other attempts at estimating overnight camping demand, and many attempts at estimating day-use demand, fail to accurately postulate camping demand within the accepted constructs of economic theory. For these reasons, the group camping days overnight demand model is a significant addition to, and quite applicable for, outdoor recreation research. Utilization of the overnight group visit demand model is also of value since it is a unique practical application of the only other theoretically correct overnight camping demand model. In addition, the determination of the spatial distribution of primary camping benefits emanating from an existing system of parks is singular in outdoor recreation research, and the formulated methodology is readily applicable to other jurisdictions and the analysis of other benefit distributions.

In investigating the travel-cost approach to camping demand and benefit estimation, two significant factors, which are only infrequently discussed in the outdoor recreation literature, became apparent. These were the applicability of this methodology to the various categories of campers, day-use or overnight, transient or destination, and the effect of crowding on park demand and benefit estimation.

These considerations were analyzed with reference to the travel-cost approach, and where relevant, solutions were suggested. In addition, the outdoor recreation literature pertaining to camping demand and benefit estimation was critically reviewed, with the conclusion being reached that many of the previous camping demand and benefit estimates were inaccurate.

#### Preliminary Empirical Results

The most immediately applicable result from the preliminary empirical analysis is the park-regional distance matrix. This presents the road mileage between 28 urban centres in British Columbia and 134 campgrounds (appendix 4, table 16). This information formed the basis of the cost data used to estimate overnight camping demand.

The twenty-four econometrically estimated overnight group visit demand equations, used either separately or when allocated among other provincial parks, are potentially of great use for park planning and management in British Columbia. By altering the cost variable, the effect of a change in the campsite permit fee can be assessed for a single park, or for the whole system. This is also true for any other change in the real cost of a park visit. In

addition, through altering the availability of substitutes variable the effect of a new park, or a change in the attractiveness of an existing park can be analyzed with respect to the ensuing park visitation changes at existing parks. The estimated park demand functions can also be utilized to construct a hypothetical overnight camping demand function for a proposed park in order to predict demand for it, depending upon its expected location and attractiveness. There is a great deal of information contained within the estimated overnight camping park demand equations and this is potentially valuable and directly applicable for the management and planning of provincial parks in British Columbia.

#### Status Quo Primary Camping Benefit Distribution Results

The purpose of the thesis was to estimate the status quo spatial distribution of primary overnight destination camping benefits accruing from the provincial park system of British Columbia. This information is necessary in order to investigate the present regional equity of provincial park services, and to analyze the effect on regional equity of future park investment. The spatial primary camping

benefit distribution results explicitly reveal, given the qualifications previously mentioned, that not all resident overnight destination camping groups have equal access to the publicly funded provincial park system: in the summer of 1975 there was a non-uniform distribution of primary overnight destination camping benefits emanating from the major provincial parks of British Columbia.

As has been argued, the status quo primary camping benefit distribution information is requisite to the consideration of present and future regional equity of provincial park investment. In addition, however, when these results are used in conjunction with supplementary cost and benefit information it is possible to derive the overall net economic effect of the provincial park system. By calculating the spatial distribution of the primary costs of the provincial park system from government revenue and expenditure data, the spatial distribution of net primary benefits could be estimated. With the addition of secondary costs and benefits, the overall net spatial benefit distribution could be calculated. In this manner, the non-efficiency public investment criterion of spatial distributional equity could be explicitly taken into account in the public outdoor recreation investment process. By also accounting for the

other net benefit distributions, such as the income distribution of camping benefits, all aspects of distributional equity could be considered. Furthermore, by directly including all of the public objective-related criteria in the public recreation investment process, maximization of total net social benefit would result.

More rational, explicit public investment examination will lead to increased socially efficient use of scarce resources, and to the determination of optimum social policy. This investigation of the spatial distribution of primary overnight destination camping benefits is, in general, an example of a means by which to further rationalize the public investment process; and specifically, is a first step towards more explicit and rational provincial park investment in British Columbia.

## SELECTED BIBLIOGRAPHY

Beardsley, Wendell. "Bias and Noncomparability in Recreation." Land Economics 47 (May 1971): 173-180.

B.C. Research. British Columbia Projections 1974-1996. Prepared for the Department of Travel and Industry, British Columbia. Vancouver, 1974.

B.C. Research. Visitors 74, by A.M. Pollock, A. Turner, and G.S. Crawford. Prepared for the Department of Travel and Industry, British Columbia. Vancouver, 1975.

Beyers, William B. An Economic Impact Study of Mt. Rainer and Olympic National Parks. Prepared for National Park Service, United States. University of Washington, 1970.

British Columbia. Department of Recreation and Conservation. Parks Branch. Planning Division. Attendance Procedures for 1975. Victoria, 1975.

\_\_\_\_\_. Department of Recreation and Conservation. Parks Branch. Planning Division. British Columbia's Park System - A Graphic Presentation. Planning Report No. 1. Victoria, 1975.

\_\_\_\_\_. Department of Recreation and Conservation. Parks Branch. Planning Division. Data Handbook - Park Facilities. Victoria, 1975.

\_\_\_\_\_. Department of Recreation and Conservation. Parks Branch. Planning Division. Attendance Procedures for 1976. Victoria, 1976.

\_\_\_\_\_. Department of Recreation and Conservation. Parks Branch. Planning Division. A Guide to the Campground Attendance Profiles - 1975. Victoria, 1976.

\_\_\_\_\_. Department of Recreation and Conservation. Parks Branch. Planning Division. Campground Profiles - 1975. Victoria, 1976.

- \_\_\_\_\_. Department of Recreation and Conservation.  
Parks Branch. Planning Division. Data Handbook - Attendance 75. Victoria, 1976.
- \_\_\_\_\_. Department of Recreation and Travel Industry.  
Beautiful British Columbia - Road Map - The Four Season Vacation Land - 1976 - 1977. Victoria, 1975.
- Brown, William G., and Nawas, Farid. "'A New Approach to the Evaluation of Non-Priced Recreational Resources': A Reply." Land Economics 48 (November 1972):403-405.
- Brown, William G., and Nawas, Faird. "Impact of Aggregation on the Estimation of Outdoor Recreation Demand Functions." American Journal of Agricultural Economics 55 (May 1973):246-249.
- Burt, O., and Brewer, D. "Estimation of Net Social Benefits From Outdoor Recreation." Econometrica 39 (September 1971):813-827.
- Canada. Department of Indian Affairs and Northern Development. National and Historic Parks Branch. The Leisure Time Activities of Canadians. vols. 1, 11. Ottawa, 1966, 1968.
- \_\_\_\_\_. Department of Indian Affairs and Northern Development. Parks Canada. Canadian Participation in Outdoor Recreation. Canadian Outdoor Recreation Demand Study (C.O.R.D.). Ottawa, 1972.
- \_\_\_\_\_. Department of Indian Affairs and Northern Development. Parks Canada. Final Report on Estimating Park Attractiveness, Population Centre Emissiveness and the Effect of Distance (Location) on Outdoor Recreation Travel, C.O.R.D. Technical Note No. 4, by Frank J. Cesario. Ottawa, 1973.
- \_\_\_\_\_. Department of Indian Affairs and Northern Development. Parks Canada. Three Methods For Measuring The Attractiveness of a Park - A Comparison, C.O.R.D. Technical Note No. 9, by Jay Beaman. Ottawa, 1974.

\_\_\_\_\_. Department of Indian Affairs and Northern Development. Parks Canada. A Comparison of the Regression Results of Applying Two Attractiveness Factors to Estimate Park Use, C.O.R.D. Technical Note No. 28, by Hym K. Cheung. Ottawa, 1974.

\_\_\_\_\_. Department of Indian Affairs and Northern Development. Parks Canada. Potential Functions in Evaluating the Need for Recreation Facilities, C.O.R.D. Technical Note No. 5, by J.H.C. Ross, and G.O. Ewing. Ottawa, 1974.

\_\_\_\_\_. Department of Indian Affairs and Northern Development. Parks Canada. National Parks Campground Use Statistics 1968-1975. Ottawa, 1976.

\_\_\_\_\_. Environment Canada. Canada Land Inventory. "The Present and Future of Outdoor Recreation in British Columbia." P.J. Bandy, introductory remarks in proceedings from a seminar sponsored by the Wildlife and Recreation Committee. Victoria, 1971. (Mimeographed.)

\_\_\_\_\_. Environment Canada. Lands Directorate. A Measure of Site Attraction, by John H. Ross. Ottawa, 1973.

\_\_\_\_\_. Environment Canada. Lands Directorate. Measuring Recreation Opportunity, C.O.R.D. Technical Note No. 6, by J.H.C. Ross, and G.O. Ewing. Ottawa, 1975.

✓ \_\_\_\_\_ . Environment Canada. Fisheries and Marine Service. Northern Affairs Branch. Chief of Economics and Sociology. The Significance of Outdoor Recreation to the Economy, by William F. Sinclair. Vancouver, 1975?

\_\_\_\_\_. Department of Industry, Trade and Commerce. Travel Industry Branch. Canadian Travel Survey, 1971 - Highlights. Ottawa, 1972.

\_\_\_\_\_. Department of Industry, Trade and Commerce. Travel Industry Branch. The Canadian Tourism FACTS Book - 1972. Ottawa, 1972.

- \_\_\_\_\_. Revenue Canada. Taxation. Taxation Statistics - 1974. Ottawa 1976.
- \_\_\_\_\_. Statistics Canada. "Families, Incomes of Families, Family Heads and Non-Family Persons." Census 1971. Ottawa, 1975.
- \_\_\_\_\_. Statistics Canada. Prices and Price Indexes. Ottawa, 1975.
- Canadian Automobile Association. Car Costs 1974-75.
- Cesario, Frank J.; Goldstone, S.E.; and Knetsch, J.L. A Report on Outdoor Recreation Demands and Values to the Middle Atlantic Utility Group. Columbus: Batelle Memorial Institute, 1969.
- Cesario, Frank J. "Operations Research in Outdoor Recreation." Journal of Leisure Research 1 (Winter 1969):33-51.
- Cesario, Frank J., and Knetsch, Jack L. "Time Bias in Recreation Benefit Estimates." Water Resource Research 6 (June 1970):700-704.
- Cesario, Frank J. "Value of Time in Recreation Benefit Studies." Land Economics 52 (February 1976):33-41.
- Cesario, Frank J., and Knetsch, Jack L. "A Recreation Site Demand and Benefit Estimation Model." Regional Studies 10 (Spring 1976):97-104.
- Cicchetti, Charles J.; Seneca, J.; and Davidson P. The Demand and Supply of Outdoor Recreation. Washington: Bureau of Recreation, 1969.
- Cicchetti, Charles J., and Freeman III, A. Myrick. "Option Demand and Consumer Surplus: Further Comments." Quarterly Journal of Economics 85 (August 71):528-539.
- Cicchetti, Charles J. "A Multivariate Statistical Analysis of Wilderness Users in the United States." In Natural Environments: Studies in Theoretical and Applied Analysis, pp. 142-70. Edited by John V. Krutilla. Baltimore: John Hopkins Press for Resources for the Future Inc., 1972.

- Cicchetti, Charles J.; Smith, V.K.; Knetsch, J.L.; and Patton, R.A. "Recreation Benefit Estimation and Forecasting: Implications of the Identification Problem." Water Resources Research 8 (August 1972): 840-50.
- Cheung, Hym K. "A Day-Use Visitation Model." Journal of Leisure Research 4 (Spring 1972):139-156.
- Clawson, Marion. Methods of Measuring the Demand for and Value of Outdoor Recreation. Reprint 10. Washington: Resources for the Future Inc., 1959.
- Clawson, Marion. "The Crisis in Outdoor Recreation." American Forests 65 (March and April 1959):2-20.
- Clawson, Marion, and Knetsch, Jack L. Economics of Outdoor Recreation. Baltimore: John Hopkins Press for Resources for the Future Inc., 1966.
- Dickinson, Wayne Edward. "Criticisms of the Travel-Cost Technique: Implications for Outdoor Recreation Policy." M.A. extended essay, Simon Fraser University, 1972.
- Farrar, Donald E., and Glauber, Robert R. "Multicollinearity in Regression Analysis: The Problem Revisited." Review of Economics and Statistics. 49 (February 1967): 92-107.
- Fisher, Anthony C., and Krutilla, John V. "Determination of Optimal Capacity of Resource-Based Recreation Facilities." In Natural Environments: Studies in Theoretical and Applied Analysis, pp. 115-41. Edited by John V. Krutilla. Baltimore: John Hopkins Press for Resources for the Future Inc., 1972.
- Fisher, Anthony C., and Krutilla, John V. "Resource Conservation, Environmental Preservation, and the Rate of Discount." Quarterly Journal of Economics 89 (August 1975):358-370.
- Freeman III, A. Myrick. "Income Distribution and Planning for Public Investment." American Economic Review 57 (June 1967):495-508.

- Freeman III, A. Myrick. "Project Design and Evaluation With Multiple Objectives." In The Analysis and Evaluation of Public Expenditures: The PPB System, pp. 565-78. United States, Congress, Joint Economic Committee, Washington, 1969.
- Gearing, Charles E.; Swart, William W.; and Var, Turgut. "Establishing a Measure of Touristic Attractiveness." Journal of Travel Research 12 (Spring 1974):1-18.
- Gearing, Charles E.; Swart, William W.; and Var, Turgut. Planning For Tourism Development - Quantitative Approaches. Praeger Special Studies in International Economics and Development. New York: Praeger Publishers Inc., 1976.
- Green, John H.A. Consumer Theory. Penguin Modern Economics Texts. Middlesex: Penguin Books Ltd., 1971.
- Gum, Russell L., and Martin, William E. "Problems and Solutions in Estimating the Demand for and Value of Rural Outdoor Recreation." American Journal of Agricultural Economics 57 (November 1975):558-66.
- Gundermann, Egor. "Economic Procedures Used in Outdoor Recreation Evaluations Throughout the World." Institut für Forstpolitik und Forstliche Betriebswirtschaftslehre der Forstlichen Forschungsanstalt. München, 1976. (Mimeographed.)
- Harberger, Arnold C. "Three Basic Postulates for Applied Welfare Economics: An Interpretive Essay." Journal of Economic Literature 9 (September 1971): 785-97.
- Harrison, A.J. The Economics of Transport Appraisal. London: Croom Helm Ltd., 1974.
- Haveman, Robert H. Water Resources Investment and the Public Interest. Nashville: Vanderbilt University Press, 1965.
- Hecock, Richard D. "The Spatial Dimension - A New Reservoir and Recreational Behavior." Growth and Change 5 (July 1974):17-20.

- Henderson, James M., and Quandt, Richard E. Microeconomic Theory - A Mathematical Approach. 2nd ed. Economics Handbooks Series. Toronto: McGraw-Hill Book Co., 1971.
- Herfindahl, Orris C., and Kneese, Allen V. Economic Theory of Natural Resources. Columbus: Charles E. Merrill Publishing Co. for Resources for the Future Inc., 1974.
- Hill, M., and Schechter, M. "Optimal Goal Achievement in the Development of Outdoor Recreation Facilities." In Urban and Regional Planning, pp. 110-20. Edited by A.G. Wilson. London: Pion Ltd., 1971.
- Hoffman, Wayne L., and Romsa, Gerald H. "Some Factors Influencing Attendance at Commercial Campgrounds." Land Economics 48 (May 1972):189-90.
- Holman, Mary A., and Bennett, James T. "Determinants of Use of Water-Based Recreational Facilities." Water Resources Research 9 (October 1973):1208-18.
- Johnson, Bruce M. "Travel Time and the Price of Leisure." Western Economic Journal 4 (Spring 1966):134-45.
- Johnston, W.E., and Parkey, V.S. "Some Considerations Affecting Empirical Studies of Recreational Use." American Journal of Agricultural Economics 50 (December 1968):1739-44.
- Kalter, Robert J., and Gosse, Lois E. "Recreation Demand Functions and the Identification Problem." Journal of Leisure Research 2 (Winter 1970):43-53.
- Knetsch, Jack L., and Davis, Robert K. "Comparison of Methods for Recreation Evaluation." In Economics of the Environment, pp. 384-402. Edited by Robert Dorfman and Nancy S. Dorfman. New York: W.W. Norton and Co. Inc., 1972.
- Knetsch, Jack L. "Interpreting the Demands for Outdoor Recreation." The Economic Record 48 (September 1972): 429-32.

- Knetsch, Jack L. Outdoor Recreation and Water Resources Planning. Water Resources Monograph, vol. 3. Washington: American Geophysical Union, 1974.
- ✓ Knetsch, Jack L., and Cheung, Hym K. "The Economic Value of Recreation Areas: the Case of Saskatchewan Parks." 1975. (Mimeograph.)
- Knetsch, Jack L.; Brown, Richard E.; and Hansen, William J. "Estimating Expected Use and Value of Recreation Sites." In Planning for Tourism Development - Quantitative Approaches, Praeger Special Studies in International Economics and Development, pp. 103-15. Edited by C.E. Gearing, W.W. Swart, and T. Var. New York: Praeger Publishers Inc., 1976.
- Krutilla, John V., and Eckstein, Otto. Multiple Purpose River Development: Studies in Applied Economic Analysis. Baltimore: John Hopkins Press for Resources for the Future Inc., 1958.
- ✓ Krutilla, John V., and Fisher, Anthony C. The Economics of Natural Environments - Studies in the Valuation of Commodity and Amenity Resources. Baltimore: John Hopkin's University Press for the Resources for the Future Inc., 1975.
- Maass, A. "Benefit-Cost Analysis: Its Relevance to Public Investment Decisions." Quarterly Journal of Economics 80 (May 1966):208-26.
- ✓ Mansfield, N.W. "The Estimation of Benefit from Recreation Sites and the Provision of a New Recreational Facility." Regional Studies 5 (1971):55-69.
- Marglin, Stephen A. "Objectives of Water Resource Development: A General Statement." In Design of Water-Resource Systems, pp. 17-87. Edited by Arthur Maass. Cambridge: Harvard University Press, 1962.
- Masser, Ian. Analytical Models for Urban and Regional Planning. Glasgow: David and Charles Ltd., 1972.
- McConnell, Kenneth E. "Some Problems in Estimating the Demand for Outdoor Recreation." American Journal of Agricultural Economics 57 (May 1975):330-34.

- Merewitz, Leonard. "Recreational Benefits of Water Resource Development." Water Resources Research 2 (Fourth Quarter 1966):625-40.
- Michigan. Department of Conservation. Recreation Resource Planning. Outdoor Recreation Planning in Michigan By a Systems Analysis Approach, Part 1: A Manual For "Program RECSYS", by J.B. Ellis. Lansing, 1966.
- Mishan, E.J. Cost-Benefit Analysis, An Informed Introduction. London: George Allen and Unwin Ltd., 1971.
- Nautiyal, J.C., and Chowdhary, R.L. "A Suggested Basis for Pricing Campsites: Demand Estimation in an Ontario Park." Journal of Leisure Research 7 (Spring 1977): 95-107.
- Oi, Walter. "A Disneyland Dilemma: Two-Part Tariffs For a Mickey Mouse Monopoly." Quarterly Journal of Economics 85 (February 1971):77-96.
- O'Riordan, Timothy. "An Analysis of the Use and Management of Campgrounds in British Columbia Provincial Parks." Economic Geography 49 (October 1973):298-308.
- Outdoor Recreation Resources Review Commission (ORRRC). Outdoor Recreation for America. Washington, 1962.
- Paul, A.H. "Relationships of Weather to Summer Attendance at Some Outdoor Recreation Facilities in Canada." Ph.D. dissertation, University of Alberta, 1971.
- Pearse, Peter H. "A New Approach to the Evaluation of Non-Priced Recreational Resources." Land Economics 44 (February 1968):87-99.
- Pearse, Peter H. "'A New Approach to the Evaluation of Non-Priced Recreational Resources': Rejoinder." Land Economics 48 (November 1972):406-7.
- Phlips, Louis. Applied Consumption Analysis. Advanced Textbooks in Economics, vol. 5. Amsterdam: North Holland Publishing Co., 1974.

- Ross, Carlyle. "The Estimation of Demand for and Benefits Derived From Outdoor Recreation at Proposed Sites in the Souris River Basin." Ph.D. dissertation, University of Manitoba, 1974.
- Scott, Anthony. "The Valuation of Game Resources: Some Theoretical Aspects." Canadian Fisheries Reports. No. 4, Ottawa (1965):27-47.
- Seckler, David W. "On the Uses and Abuses of Economic Science in Evaluating Public Outdoor Recreation." Land Economics 42 (November 1966):485-94.
- Seneca, Joseph J. "Water Recreation Demand, and Supply." Water Resources Research 5 (December 1969):1179-85.
- Seneca, Joseph J., and Cicchetti, Charles J. "User Response in Outdoor Recreation: a Production Analysis." Journal of Leisure Research 1 (Summer 1969):238-245.
- Shafer, Elwood L. Jr. "The Average Camper Who Doesn't Exist." Forest Research Paper NE-142 (1969), United States, Department of Agriculture, Forest Service, Northeastern Forest Experiment Station, 1969. Reprinted in Land and Leisure: Concepts and Methods in Outdoor Recreation, pp. 112-29. Edited by D.W. Fisher, J.E. Lewis, and G.B. Priddle. Chicago: Maaroufa Press Inc., 1974.
- Sinden, J.A., and Ranken, R.L. "Casual Factors in the Demand For Outdoor Recreation." The Economic Record 47 (September 1971):418-26.
- Smith, R.J., and Kavanagh, N.J. "The Measurement of Benefits of Trout Fishing: Preliminary Results of a Study at Grafham Water, Great Ouse Water Authority, Huntingdonshire." Journal of Leisure Research 1 (Autumn 1969):316-332.
- Smith, R.J. "The Evaluation of Recreation Benefits: The Clawson Method in Practice." Urban Studies 8 (June 1971):89-102.
- Smith, V. Kerry. "Travel Cost Demand Models for Wilderness Recreation: A Problem of Non-Nested Hypotheses." Land Economics 41 (May 1975):103-11.

- Stankey, George H. "A Strategy for the Definition and Management of Wilderness Quality." In Natural Environments: Studies in Theoretical and Applied Analysis, pp. 88-114. Edited by John V. Krutilla. Baltimore: John Hopkins University Press for Resources for the Future Inc., 1972.
- Tatreau, Doug, and Tatreau, Bobbe. The Parks of British Columbia. Vancouver: Mitchell Press Ltd., 1973.
- Trice, Andrew H., and Wood, Samuel E. "Measurement of Recreation Benefits." Land Economics 34 (August 1958): 195-207.
- Var, Turgut; Beck, R.A.D.; Loftus, P.; and Knetsch, Jack L. "Determination of Touristic Attractiveness of the Touristic Areas in British Columbia." Journal of Travel Research Forthcoming. (Mimeograph.)
- Vickerman, R.W. "The Evaluation of Benefits From Recreational Projects." Urban Studies 11 (October 1972):277-88.
- Walter, Gerald R., and Schofield, John A. "Recreation Management: A Programing Example." Land Economics 53 (May 1977):212-225.
- Watson, Peter L. The Value of Time; Behavioral Models of Modal Choice. Toronto: Lexington Books, 1974.
- Weisbrod, Berton A. "Income Redistribution Effects and Benefit-Cost Analysis." In Problems in Public Expenditure Analysis Brookings Series in Studies of Government Finance, pp. 117-222. Edited by Samuel B. Chase. Washington: Brookings Institution, 1968.
- Wetzel, James N. "'Evaluation of Recreational Benefits Accruing to Recreationists on Federal Water Projects - A Review Article': A Comment." The American Economist 18 (Fall 1974):129.
- Williams, Alan, and Anderson, Robert. Efficiency in the Social Services. Bristol: Western Printing Services Ltd., 1975.

Wonnacott, Ronald J., and Wonnacott, Thomas H.  
Econometrics Wiley Series in Probability and  
Mathematical Statistics. New York: John Wiley and  
Sons Inc., 1970.

Young, Kan Hua, and Young, Lin Ying. "Estimation of  
Regressions Involving Logarithmic Transformation  
of Zero Values in the Dependent Variable."  
The American Statistician 29 (August 1975):118-120.

APPENDIX . 1

PARK LIST AND PARK  
ATTRACTIVENESS MEASURES

TABLE 9

PARK LIST AND PARK  
ATTRACTIVENESS MEASURES

Park and/or Campground	Park Number and Map Grid Reference <sup>a</sup>	Park Attractiveness Measure		
		Cardinal	Relative	
Provincial Parks For Which Visitation Data is Available <sup>b</sup>				
1. Ten Mile Lake	106-H7	342.1	.76 <sup>c</sup>	
Barkerville Historic				
2. Forest Rose	4-H8	268.8	.60	
3. Government Hill	4-H8	247.2	.55	
4. Lowhee	4-H8	261.6	.58	
5. Bowron Lake	11-H8	416.8	.93	
6. Canim Beach <sup>d</sup>	14-J8	283.8	.63	
7. Lac La Hache <sup>d</sup>	47-J8	278.9	.62	
8. Haynes Point	36-L9	447.5	1.00	
9. Okanagan Lake	78-L9	386.9	.86	
10. Vaseaux Lake	111-L9	390.4	.87	
11. Okanagan Falls	77-L9	325.8	.73	
12. Inkaneep	38-L9	274.1	.61	
13. Ellison	24-K9	339.7	.76	
14. Otter Lake	79-L8	308.0	.69	

TABLE 9-Continued

Park and/or Campground	Park Number and Map Grid Reference <sup>a</sup>	Park Attractiveness Measure	
		Cardinal	Relative
Provincial Parks For Which Visitation Data is Available <sup>b</sup>			
15. Allison Lake	2-L8	284.7	.64
16. Bromley Rock <sup>d</sup>	13-L8	306.4	.68
17. Stemwinder <sup>d</sup>	102-L9	291.2	.65
18. Yard Creek <sup>d</sup>	117-K9	320.2	.71
19. Shuswap Lake	96-K9	420.7	.94
20. Bridge Lake Wells Gray	12-J8	288.4	.64
21. Clearwater Lake	113-J8	398.2	.89
22. Mahood Lake	54-J8	409.7	.91
23. Spahats Creek	99-J8	302.1	.67
24. North Thompson River	76-J8	299.8	.67
25. Monck	62-K8	312.8	.70
26. Skihist <sup>d</sup>	98-K8	335.2	.75
27. Goldpan	31-K8	313.6	.70
28. Paul Lake	81-K8	335.6	.75
29. Champion Lakes Kokanee Creek <sup>e</sup>	16-L10	316.8	.71
30. Redfish	46-L10	337.5	.75

TABLE 9-Continued

Park and/or Campground	Park Number and Map Grid Reference <sup>a</sup>	Park Attractiveness Measure		
		Cardinal	Relative	
Provincial Parks For Which Visitation Data is Available <sup>b</sup>				
31.	Sandspit	46-L10	337.5	.75
32.	Syringa Creek	105-L10	303.8	.68
33.	Kettle River	42-L9	293.9	.66
34.	Wasa Lake	112-K11	344.8	.77
35.	Jim Smith Lake	40-L11	293.9	.66
36.	Dry Gulch	22-K11	264.7	.59
37.	Yahk	116-L11	272.3	.61
38.	Mount Fernie <sup>d</sup>	69-L11	288.5	.64
39.	Moyie Lake	68-L11	327.1	.73
40.	Crooked River	19-G7	308.0	.69
41.	Whiskers Point	114-F7	302.4	.68
42.	Purden Lake	87-G7	318.6	.71
43.	Charlie Lake	B-E8	305.1	.68
44.	Moberly Lake	61-E8	335.3	.75
	Mount Robson			
45.	Lucerne Lake	70-H9	382.4	.85
46.	Robson Meadow	70-H9	412.6	.92
47.	Robson River	70-H9	369.3	.82

TABLE 9--Continued

Park and/or Campground	Park Number and Map Grid Reference <sup>a</sup>	Park Attractiveness Measure	
		Cardinal	Relative
Provincial Parks For Which Visitation Data is Available <sup>b</sup>			
48. Beaumont	6-G6	307.9	.69
49. Lakelse Lake	49-G4	359.7	.80
50. Prudhomme Lake	86-G4	246.6	.55
51. Maclure Lake	53-F5	321.6	.72
52. McDonald	58-L2	253.7	.57
53. Ivy Green	39-L1	363.3	.81
54. Goldstream	32-M2, M7	353.9	.79
55. Montague Harbour Marine <sup>f</sup>	64-L2	390.6	.87
56. Newcastle Island Marine <sup>f</sup>	73-K1	354.2	.79
57. Bamberton	3-M2	315.8	.70
58. Gordon Bay	34-L1, L6	329.9	.74
59. Mouat	67-L2	332.9	.74
60. Englishman River Falls	27-L6	323.4	.72
61. Little Qualicum Falls	51-L6	318.9	.71
62. Rath Trevor Beach	88-K1	445.2	.99
63. Sproat Lake Strathcona	100-L6	329.7	.74

TABLE 9--Continued

Park and/or Campground	Park Number and Map Grid Reference <sup>a</sup>	Park Attractiveness Measure		
		Cardinal	Relative	
Provincial Parks For Which Visitation Data is Available <sup>b</sup>				
64.	Buttle Lake	103-L6	303.6	.68
65.	Ralph River	103-L6	326.0	.73
66.	Elk Falls	23-L6	317.3	.71
67.	Miracle Beach	59-L6	374.9	.84
68.	Roberts Creek	89-L7	290.1	.65
69.	Saltery Bay	93-L6	297.2	.66
70.	Porpoise Bay	83-K1	311.8	.70
71.	Alice Lake	1-L7	330.8	.74
72.	Birkenhead Lake	8-K7	307.2	.69
73.	Nairn Falls Cultus Lake <sup>e</sup>	71-K7	401.2	.90
74.	Clear Creek	20-L8	382.0	.85
75.	Delta Grove	20-L8	382.0	.85
76.	Entrance Bay	20-L8	382.0	.85
77.	Maple Bay E.C. Manning	20-L8	382.0	.85
78.	Goldspring	56-L8	443.4	.99
79.	Gibson Pass	56-L8	442.5	.99

TABLE 9-Continued

Park and/or Campground	Park Number and Map Grid Reference <sup>a</sup>	Park Attractiveness Measure		
		Cardinal	Relative	
Provincial Parks For Which Visitation Data is Available <sup>b</sup>				
80.	Hampton	56-L8	446.8	.99
81.	Lightning Lakes	56-L8	443.6	.99
82.	Muledeer	56-L8	437.9	.98
83.	Emory Creek <sup>d</sup>	26-L8	303.5	.68
84.	Rolley Lake	91-L7, K3	258.1	.58
85.	Golden Ears	33-L7, K3	443.1	.99
Major Provincial Parks For Which Visitation Data Was Unavailable <sup>g</sup>				
86.	Big Bar Lake <sup>h</sup>	7-J8	297.3	.66
87.	Blanket Creek	9-K10	308.3	.69
88.	Boundary Creek	10-L10	267.9	.60
89.	Cinnemousun Narrows	17-K9	336.5	.75
90.	Cottonwood River	18-H7	228.5	.51
91.	Ethel F. Wilson	28-G6	259.1	.58
92.	Exchamsiks River	29-F4	224.7	.50
93.	Fillongley River	30-L6	311.3	.70
94.	Green Lake	35-J8	297.7	.66

TABLE 9-Continued

Park and/or Campground	Park Number and Map Grid Reference <sup>a</sup>	Park Attractiveness Measure	
		Cardinal	Relative
Major Provincial Parks For Which Visitation Data Was Unavailable <sup>g</sup>			
95. Horsefly Lake	37-H8	245.1	.55
96. Johnstone Creek	41-L9	258.8	.58
97. Kikomun Creek	43-L11	322.2	.72
98. King George VI	44-L10	264.8	.59
99. Kleanza Creek	45-F5	234.4	.52
100. Lac La Jeune	48-K8	294.0	.66
101. Lockhart Beach	52-L10	271.3	.61
102. Marble Canyon	57-K8	305.7	.68
103. Morton Lake	63-K6	238.7	.53
104. Monte Lake	66-K9	304.8	.68
105. Nancy Greene	72-L10	293.4	.65
106. Nicolum River	74-L8	264.2	.59
107. Norbury Lake	75-L11	292.8	.65
108. Pendleton Bay	82-F6	266.9	.60
109. Premier Lake	84-K11	294.8	.66
110. Prior Centennial	85-L2	358.2	.80
111. Roseberry	92-K10	249.8	.56

TABLE 9-Continued

Park and/or Campground	Park Number and Map Grid Reference <sup>a</sup>	Park Attractiveness Measure	
		Cardinal	Relative
Major Provincial Parks For Which Visitation Data Was Unavailable <sup>g</sup>			
112. Sasquatch	94-L8	331.7	.74
113. Seeley Lake	95-F5	272.4	.61
114. Skagit Valley	97-L8	241.4	.54
115. Stamp Falls	101-L6	273.3	.61
116. Thunderhill	107-K11	271.2	.61
117. Topley Landing	108-F6	255.5	.57
118. Tweedsmuir	109-H5	333.6	.74
119. Buckinghorse River	A-D7	234.4	.52
120. Hyland River	C-B5	228.4	.51
121. Kiskatinaw	D-E8	239.2	.53
122. Kledo Creek	E-C7	227.8	.51
123. Laird River Hot Springs <sup>h</sup>	F-B6	325.0	.73
124. Prophet River	G-C7	242.9	.54
125. Swan Lake	H-C6	218.9	.49
126. Sudeten	I-E8	238.6	.53
127. 115 Creek	J-C6	218.9	.49

TABLE 9-Continued

Park and/or Campground	Park Number and Map Grid Reference <sup>a</sup>	Park Attractiveness Measure	
		Cardinal	Relative
National Parks			
128. Jasper	H9 <sup>i</sup>	678.1	1.51
129. Banff	J11	741.7	1.66
130. Yoho	J10	581.9	1.30
131. Kootenay	J10	604.8	1.35
132. Glacier	J10	541.2	1.21
133. Wateron Lakes	L12	581.2	1.30
134. Pacific Rim	L6	558.6	1.25

<sup>a</sup> Park number and grid reference refer to the park location maps in appendix 6, and to the official provincial road map, Beautiful British Columbia--Road Map--The Four Season Vacation Land--1976-1977, issued by the Department of Recreation and Travel Industry, Victoria, 1975.

<sup>b</sup> Parks for which there is visitation data available, are listed in order of park district.

<sup>c</sup> The relative park attractiveness measure is calculated with respect to the park which was determined to be the most attractive of those for which there is visitation data available: 8. Haynes Point Park.

<sup>d</sup> Purely transient park: no regional district has an average length of stay equal to, or greater than 1.5 nights.

TABLE 9-Continued

- e Single park attractiveness measure calculated for whole park.
- f Visitation data for marine parks pertains to campground use only.
- g Parks for which visitation data is unavailable are listed in alphabetical order, followed by the national parks.
- h Visitation data collected, but not properly recorded.
- i There is no number given for the national parks on the official British Columbian road map and hence, only the grid reference is given.

APPENDIX 2

PRIMARY PARK VISITATION

DATA

TABLE 10

TOTAL CAMPING PARTY NIGHTS  
(MAY THROUGH SEPTEMBER 1975) SPENT  
AT EACH CAMPGROUND AND PERCENTAGE OF  
CAMPING PARTY NIGHTS ATTRIBUTABLE  
TO EACH REGIONAL DISTRICT, AT EACH  
CAMPGROUND

Note: The total party nights are given in the left hand column of the first three pages of the table. These are for the 85 campgrounds (number 1 to number 85 inclusive) listed in appendix 1 (table 9). The percentage of total party nights attributable to each region are listed for the first fourteen regions (number 1 to number 14 inclusive) in matrix form next to party nights in the first three pages. The next three pages list the percentage party nights for regions number 15 to number 29 inclusive, again in matrix form (campgrounds 1 to 85 are given by the columns and regions 15 to 29 given by the rows). The 29 regional districts are listed in appendix 3 (table 13) and shown in maps 1 and 2.

PARTY NIGHTS (M, J, J, A, S) PER PARK AND PERCENTAGE PARTY NIGHTS PER REGION- REGIONS 1 TO 14

6854.	0.26	1.25	3.22	9.67	0.02	1.54	0.26	1.10	0.48	0.48	0.78	1.02	0.15	0.74
1151.	0.76	1.89	5.05	5.05	0.0	2.15	0.63	2.40	1.14	1.01	1.64	0.63	1.14	0.63
2457.	0.54	1.55	4.09	6.10	0.0	2.78	0.23	2.86	1.16	1.00	1.55	1.31	0.39	1.55
5067.	0.69	1.41	4.98	4.14	0.14	2.42	0.67	1.63	0.67	1.24	0.79	1.84	0.69	2.66
1393.	0.0	0.39	2.35	9.68	0.0	2.15	0.20	0.98	0.29	1.76	0.39	1.27	0.20	1.17
1287.	0.37	0.19	2.78	2.41	0.0	2.51	0.56	5.48	0.37	0.28	0.84	2.51	0.19	0.56
7572.	0.65	1.38	4.84	2.60	0.10	2.47	0.58	1.48	0.53	0.83	1.06	1.69	0.30	1.38
6444.	0.33	0.16	3.56	0.39	0.04	4.97	1.31	0.84	0.14	0.45	0.59	1.66	0.16	1.56
15217.	0.45	0.33	3.41	0.40	0.02	1.57	0.22	2.27	0.36	0.56	0.53	0.99	0.26	0.80
1384.	0.49	0.0	3.52	0.10	0.0	3.33	0.10	1.96	0.20	0.20	0.0	3.52	0.0	1.65
3256.	0.04	0.34	3.99	0.76	0.0	3.57	0.38	1.27	0.34	0.55	0.25	4.25	0.04	0.59
864.	0.0	0.46	6.81	0.31	0.0	5.11	0.31	1.39	0.62	1.24	0.77	3.40	0.62	1.70
7723.	0.25	0.37	2.39	0.63	0.0	1.21	0.29	5.19	0.69	0.37	0.45	0.63	0.64	0.68
2646.	0.23	0.23	2.09	0.23	0.0	5.06	0.09	1.44	0.23	0.56	0.28	3.48	0.28	2.88
1604.	0.37	0.66	2.65	0.66	0.0	5.82	0.0	1.18	0.44	0.44	0.96	2.43	0.29	3.24
1864.	0.88	0.07	4.95	0.34	0.0	3.46	0.75	2.17	0.14	0.75	1.56	1.76	0.75	1.97
2297.	0.84	0.28	5.92	0.39	0.0	3.30	1.23	0.84	0.11	1.51	1.23	3.30	0.34	1.95
6423.	0.55	0.20	2.93	0.61	0.0	1.03	0.46	1.22	2.91	0.46	0.44	0.70	0.52	0.90
23493.	0.15	0.26	2.06	1.03	0.01	1.53	0.42	2.74	1.77	0.30	0.25	1.06	0.32	0.88
1325.	0.35	0.96	3.13	2.43	0.0	1.39	0.26	2.52	0.96	0.09	0.35	0.61	0.26	2.35
3878.	0.45	0.07	1.71	0.97	0.0	2.46	0.71	2.90	1.53	0.11	0.11	0.41	0.74	1.15
2098.	0.0	0.24	1.60	9.60	0.0	1.36	0.0	0.48	0.80	0.08	0.0	1.36	0.16	1.52
1643.	0.53	0.44	3.33	0.44	0.09	1.49	0.88	2.72	0.70	0.44	1.14	0.70	0.35	0.70
4971.	0.74	0.48	3.72	0.57	0.0	1.43	0.54	0.80	1.01	0.68	0.71	0.80	0.21	0.63
5635.	0.22	0.26	3.87	0.36	0.0	5.58	0.44	0.72	0.22	0.24	0.56	2.62	0.06	1.93
8404.	0.81	0.18	4.74	0.53	0.0	2.76	0.43	0.34	0.26	0.81	1.01	2.51	0.20	1.44
1773.	0.32	0.16	5.06	0.24	0.08	3.80	0.16	0.47	0.55	0.47	1.34	1.98	0.16	1.82
7437.	0.72	0.44	3.63	1.28	0.0	1.50	0.34	0.95	0.70	0.52	0.60	0.67	0.17	0.69
3475.	0.60	0.30	2.13	0.45	0.04	1.46	5.54	0.79	0.19	0.34	0.60	0.71	0.75	0.52
1506.	0.22	0.22	1.51	0.43	0.0	0.86	6.24	1.29	0.97	0.43	0.43	0.54	1.40	0.43
5643.	0.23	0.18	1.94	0.26	0.03	1.14	7.85	1.58	0.60	0.26	0.21	0.70	2.59	0.36
3482.	0.24	0.47	1.81	0.28	0.04	0.75	35.42	1.73	0.95	0.04	0.43	0.59	0.91	0.51

TABLE 10-Continued

2742.	0.23	0.23	4.80	0.23	0.0	2.82	0.76	10.13	0.30	0.53	1.07	1.98	0.46	0.91
7799.	0.15	0.04	0.93	0.16	0.01	0.35	1.26	0.28	0.35	0.13	0.16	0.51	12.21	0.29
2454.	0.10	0.33	2.19	0.57	0.0	0.81	2.76	0.57	0.62	0.90	0.48	0.52	9.67	0.52
1983.	0.27	0.09	2.56	0.18	0.18	0.64	1.55	0.91	0.82	0.37	0.18	0.73	1.28	0.18
2624.	0.44	0.0	2.12	0.15	0.0	0.89	1.78	1.48	0.30	0.49	0.84	0.79	2.22	0.69
3345.	0.31	0.38	1.61	0.23	0.0	0.96	1.34	0.92	0.23	0.42	0.23	0.35	1.50	0.38
4797.	0.44	0.12	2.04	0.32	0.05	0.83	1.72	0.54	0.25	0.42	0.25	0.88	15.73	0.56
4590.	0.43	0.94	1.93	0.60	0.0	0.92	0.17	0.53	0.17	0.53	0.34	0.72	0.31	0.29
4502.	0.38	0.30	1.75	0.76	0.0	0.85	0.27	0.68	0.35	0.38	0.63	0.35	0.35	0.30
2927.	0.35	0.69	2.49	0.50	0.08	0.38	0.27	0.46	0.38	0.19	0.61	0.84	0.54	0.19
3532.	0.21	0.29	3.33	1.40	0.0	0.62	0.16	0.82	0.33	0.33	0.78	0.37	0.29	0.12
3876.	0.09	0.13	0.87	0.61	0.13	0.39	0.13	0.13	0.35	0.26	0.13	0.13	0.17	0.0
2804.	0.35	0.87	2.83	0.39	0.13	1.26	0.44	0.61	0.35	0.48	0.83	0.87	0.22	0.83
6306.	0.31	0.86	2.10	0.97	0.02	0.80	0.29	1.02	0.48	0.46	0.42	0.51	0.37	0.48
1465.	0.18	0.55	3.29	0.82	0.0	0.46	0.27	0.82	0.37	0.37	0.64	0.37	0.55	0.37
4881.	0.45	4.69	2.68	1.56	0.02	1.29	0.35	0.77	0.42	0.35	0.32	0.50	0.27	0.50
9118.	0.85	2.60	1.94	0.70	0.07	0.39	0.24	0.39	0.16	0.47	0.19	0.26	0.29	0.64
1371.	0.23	2.30	2.76	0.80	0.0	1.61	0.46	0.92	0.57	0.46	0.23	0.11	0.11	0.11
3962.	0.41	14.37	2.81	2.16	0.07	0.86	0.27	0.82	0.65	0.34	0.31	0.27	0.21	0.48
3064.	0.23	0.17	7.95	0.23	0.0	0.69	0.23	0.57	0.57	0.80	0.11	0.57	0.11	0.80
5625.	1.26	0.22	14.15	0.35	0.02	0.67	0.72	0.50	0.57	2.15	4.24	0.35	0.28	0.70
17518.	1.14	0.13	13.28	0.20	0.01	0.55	0.58	0.34	0.15	1.34	0.72	0.38	0.39	0.32
3067.	0.15	0.04	13.59	0.04	0.0	1.22	0.50	0.08	0.04	0.04	0.42	1.03	0.15	0.34
2209.	1.17	0.0	11.56	0.0	0.0	0.12	0.12	0.0	0.0	0.87	2.16	0.12	0.0	0.0
4507.	1.54	0.27	42.96	0.27	0.0	0.25	0.42	0.25	0.22	0.99	5.81	0.37	0.22	0.35
6658.	0.78	0.0	44.01	0.09	0.0	0.49	0.22	0.17	0.07	1.79	27.25	0.22	0.15	0.19
1674.	1.23	0.0	20.00	0.35	0.0	0.88	0.35	0.09	0.26	1.06	2.56	0.35	0.0	0.53
5838.	2.22	0.08	17.17	0.19	0.02	1.25	0.19	0.29	0.21	1.37	2.26	0.48	0.15	0.42
6157.	6.51	0.0	26.74	0.17	0.06	0.81	0.50	0.44	0.13	1.86	3.25	0.83	0.07	0.33
16056.	6.87	0.12	20.82	0.33	0.01	1.03	0.28	0.47	0.22	1.26	4.95	0.54	0.25	0.83
4374.	8.21	0.13	14.46	0.16	0.03	1.29	0.64	0.38	0.13	2.52	3.54	0.72	0.11	0.51
2043.	4.26	0.18	29.29	0.0	0.0	0.30	1.38	0.06	0.06	9.72	5.34	0.24	0.0	0.48
4165.	6.19	0.14	19.31	0.17	0.0	0.48	2.88	0.26	0.14	15.17	6.59	0.14	0.31	0.29
5638.	0.75	0.14	9.23	0.18	0.02	1.06	0.49	0.95	0.18	3.48	2.34	0.39	0.55	0.22

TABLE 10-Continued

13250.	4.12	0.12	18.40	0.36	0.01	1.17	1.27	0.65	0.38	8.63	3.60	0.84	0.35	0.55
1671.	0.53	0.38	2.72	0.76	0.0	2.12	0.60	1.13	0.23	1.81	0.68	2.04	1.36	0.30
3156.	0.52	0.09	3.73	0.61	0.0	0.76	0.52	0.33	0.38	1.46	0.19	1.32	0.09	1.13
5009.	0.34	0.27	1.88	0.67	0.0	2.17	0.31	0.31	0.34	0.51	0.22	1.48	0.36	0.76
7436.	0.24	0.0	0.80	0.03	0.0	0.83	0.14	0.10	0.13	0.21	0.06	0.67	0.16	0.38
2403.	0.50	0.0	0.60	0.25	0.0	1.76	0.0	0.05	0.0	0.80	0.15	1.16	0.10	0.25
3642.	0.35	0.0	1.85	0.35	0.12	1.92	0.75	0.27	0.08	0.47	0.59	0.79	0.55	0.94
7382.	0.32	0.30	1.08	0.48	0.0	6.72	0.12	0.08	0.02	0.16	0.08	1.42	0.04	9.31
5054.	0.16	0.18	1.40	0.09	0.0	8.07	0.20	0.09	0.11	0.95	0.14	1.55	0.11	15.48
5297.	0.57	0.13	1.59	0.15	0.02	6.97	0.09	0.40	0.04	0.37	0.57	1.30	0.07	11.73
7234.	0.14	0.26	1.73	0.09	0.02	7.38	0.17	0.09	0.05	0.41	0.21	2.04	0.11	5.98
5326.	1.20	0.09	5.57	0.35	0.02	3.68	0.52	1.08	0.73	1.22	1.41	1.50	0.26	2.06
31.	0.11	0.0	4.99	0.34	0.0	9.30	0.23	0.11	0.11	0.23	0.0	3.52	0.23	8.03
3540.	0.52	0.13	4.45	0.22	0.09	3.28	0.56	0.91	0.13	0.56	0.69	1.81	0.26	3.69
7886.	0.39	0.14	4.13	0.18	0.0	5.25	0.48	0.46	0.30	0.21	0.53	2.72	0.09	2.86
4167.	1.27	0.04	5.66	0.45	0.07	3.71	0.56	0.45	0.41	1.27	1.54	2.06	0.64	1.31
4056.	0.59	0.89	4.48	0.49	0.05	1.92	0.79	0.15	0.39	0.44	1.03	0.69	1.08	2.27
3682.	0.13	0.06	0.64	0.10	0.0	4.08	0.13	0.03	0.06	0.19	0.10	9.26	0.03	0.74
21973.	0.10	0.12	0.81	0.05	0.01	2.14	0.12	0.08	0.07	0.20	0.12	4.02	0.08	0.36

TABLE 10-Continued

PERCENTAGE PARTY NIGHTS - REGIONS 15 TO 29

12.19	13.28	2.73	0.30	0.09	0.73	0.56	0.63	3.16	0.26	1.06	0.39	0.06	0.07	1.69
5.68	24.74	1.26	0.38	0.13	1.26	0.88	1.26	0.76	0.13	0.76	0.25	0.0	0.0	4.29
6.72	29.44	2.01	0.70	0.15	1.31	1.08	1.85	1.39	0.54	0.54	0.23	0.0	0.15	3.79
9.09	21.41	2.01	0.69	0.17	1.22	0.74	0.84	2.13	0.43	0.50	0.31	0.0	0.0	4.74
5.48	22.60	0.68	0.0	0.20	0.10	0.88	0.20	0.78	0.29	0.10	0.88	0.0	0.0	1.17
1.11	41.12	0.56	1.58	0.0	0.19	1.30	6.31	0.56	0.37	0.09	1.49	0.0	0.09	1.02
5.97	20.61	2.31	0.41	0.17	0.98	0.78	0.98	2.06	0.37	1.19	0.20	0.03	0.25	2.17
0.61	56.07	0.08	0.55	0.0	1.12	0.43	2.58	0.33	0.06	0.14	0.10	0.0	0.49	0.82
1.27	18.76	0.45	0.33	0.15	0.85	0.38	2.16	0.73	0.30	0.22	0.19	0.0	0.11	0.84
0.59	36.71	0.0	0.49	0.20	0.98	0.49	3.33	0.10	0.39	0.0	0.29	0.0	1.17	0.69
0.51	37.08	0.38	0.17	0.0	0.59	0.30	7.05	0.93	0.08	0.0	0.13	0.0	0.04	0.76
0.93	32.04	0.77	0.77	0.0	0.46	0.46	3.56	0.15	0.15	0.0	0.0	0.0	0.31	1.24
1.92	18.94	0.86	0.51	0.05	0.49	7.84	1.37	0.60	0.29	0.54	0.08	0.0	0.14	2.81
0.33	59.60	0.60	0.05	0.0	0.23	0.42	5.95	0.0	0.19	0.05	0.05	0.0	0.14	2.04
0.59	39.54	0.22	0.37	0.0	0.59	0.74	6.26	0.07	0.37	0.07	0.59	0.0	0.37	2.72
1.36	34.02	0.47	0.34	0.20	1.42	0.54	1.02	0.07	0.81	0.14	0.27	0.0	0.27	1.49
0.61	35.63	0.39	0.56	0.06	1.90	0.28	1.23	0.22	0.45	0.22	0.28	0.0	0.39	0.50
0.59	13.57	0.31	0.33	0.13	0.81	1.03	1.73	0.24	0.35	0.07	0.17	0.0	0.15	1.49
2.12	19.03	0.40	0.25	0.20	0.33	1.82	1.00	0.67	0.09	0.20	0.25	0.0	0.03	16.34
2.43	23.91	0.78	0.17	0.26	0.87	1.22	0.35	0.35	0.09	0.52	0.26	0.0	0.0	5.74
1.60	20.20	0.30	0.37	0.22	1.12	1.67	1.04	0.37	0.04	0.04	0.0	0.0	0.15	13.09
1.44	25.43	0.40	0.32	0.0	0.64	0.40	0.16	0.0	0.08	0.0	0.0	0.0	0.0	2.80
2.45	17.96	0.35	0.35	0.26	1.14	1.23	1.40	1.23	0.09	0.0	0.53	0.0	0.0	7.45
2.56	16.79	0.68	0.39	0.09	0.77	0.68	0.95	0.95	0.36	0.21	0.09	0.0	0.36	4.05
1.27	50.94	0.46	0.08	0.16	0.36	0.30	1.47	0.40	0.16	0.0	0.40	0.0	0.40	9.62
0.99	25.42	0.49	0.05	0.09	1.15	0.31	0.14	0.27	0.34	0.17	0.12	0.02	0.23	1.28
1.34	30.20	0.24	0.16	0.40	1.42	0.24	0.32	0.24	0.24	0.08	0.32	0.0	0.55	1.66
1.47	19.99	0.42	0.41	0.20	0.86	0.20	0.38	0.75	0.23	0.34	0.25	0.0	0.13	17.13
0.71	13.62	0.22	11.60	0.11	0.79	0.34	0.60	0.41	0.11	0.07	0.30	0.04	0.04	0.86
0.54	11.94	0.11	4.63	0.0	0.22	1.40	1.94	0.22	0.43	0.11	0.65	0.0	0.22	2.26
0.70	10.26	0.39	5.34	0.10	0.47	0.86	0.70	0.44	0.21	0.10	0.08	0.0	0.05	1.87
0.67	13.24	0.20	15.33	0.08	0.28	0.28	1.06	0.95	0.16	2.72	0.24	0.0	0.04	1.89

TABLE 10-Continued

1.07	33.35	0.30	3.12	0.08	0.69	1.75	8.91	0.46	0.38	0.30	0.69	0.0	0.08	0.69
0.44	5.35	0.17	1.24	0.0	0.17	0.29	0.20	0.09	0.10	0.07	0.12	0.03	0.01	0.42
0.67	10.81	0.52	0.71	0.10	0.86	0.57	0.62	0.43	0.14	0.10	0.10	0.0	0.10	1.52
0.73	9.77	0.18	0.37	0.0	0.46	0.27	0.64	0.73	0.27	0.09	0.0	0.0	0.27	0.73
0.64	10.80	0.49	0.99	0.20	0.79	0.69	0.89	0.64	0.25	0.15	0.05	0.0	0.05	1.53
0.81	6.41	0.19	0.73	0.04	0.35	0.46	0.54	0.46	0.08	0.15	0.23	0.0	0.04	1.00
0.88	9.86	0.22	1.32	0.07	0.59	0.25	1.15	0.71	0.27	0.02	0.12	0.0	0.05	0.71
23.71	5.93	0.65	0.10	0.02	1.06	0.24	0.24	9.72	0.63	0.48	0.10	0.02	0.02	1.11
18.62	7.23	0.30	0.22	0.08	0.57	0.46	0.35	5.57	0.08	0.14	0.05	0.0	0.0	0.93
21.37	8.75	1.46	0.31	0.08	1.00	0.31	0.42	2.23	0.23	1.11	0.12	0.0	0.15	1.50
1.97	5.42	0.21	0.08	0.0	0.33	0.66	0.49	15.00	0.08	0.0	0.16	0.08	0.04	0.86
2.32	5.33	0.04	0.09	0.0	0.70	0.13	0.44	28.92	0.09	0.0	0.04	0.0	0.0	0.26
3.01	10.46	0.57	0.17	0.09	0.52	0.52	0.52	0.52	0.31	0.57	0.09	0.0	0.09	1.92
3.90	9.39	1.21	0.26	0.09	0.71	0.48	0.62	0.66	0.16	0.33	0.11	0.0	0.11	2.21
4.75	11.50	0.73	0.0	0.0	0.55	0.91	0.55	0.09	0.27	0.46	0.09	0.0	0.0	2.56
10.47	8.98	7.99	0.57	0.07	0.67	0.50	0.30	2.23	0.30	4.54	0.10	0.0	0.17	1.96
2.83	5.43	46.10	0.04	0.05	0.87	0.36	0.16	1.01	0.14	9.72	0.04	0.0	0.02	0.91
2.76	7.70	2.87	0.0	0.11	0.69	0.46	0.34	1.38	0.11	5.74	0.23	0.0	0.0	1.15
4.28	9.41	17.14	0.14	0.03	0.41	0.62	0.14	1.74	0.24	4.82	0.10	0.27	0.03	1.33
0.86	9.04	0.46	0.06	0.06	0.69	0.29	0.92	1.09	0.29	0.06	0.17	0.0	0.17	1.20
0.85	9.65	0.39	0.04	0.50	4.72	0.22	0.28	0.28	0.61	0.02	0.09	0.02	0.07	0.70
0.47	8.89	0.46	0.23	0.06	0.93	0.31	0.39	0.15	0.34	0.11	0.05	0.0	0.16	0.87
0.27	42.87	0.04	0.0	0.0	0.31	0.11	0.19	0.0	0.0	0.04	0.69	0.0	0.0	0.23
0.06	25.03	0.0	0.0	0.68	16.87	0.12	0.0	0.0	0.31	0.06	0.06	0.0	0.25	0.49
0.57	6.51	0.15	0.20	0.12	0.89	0.22	0.47	0.07	0.30	0.02	0.05	0.02	0.02	0.52
0.09	7.05	0.29	0.14	0.19	5.36	0.07	0.05	0.05	0.49	0.07	0.03	0.0	0.0	0.24
0.09	37.36	0.09	0.09	0.0	1.67	0.44	0.44	0.0	0.26	0.53	0.79	0.0	0.26	0.0
0.54	13.47	0.21	0.08	0.14	3.38	0.19	0.37	0.14	0.52	0.04	0.13	0.0	0.08	0.69
0.24	16.12	0.17	0.24	0.02	6.18	0.24	0.18	0.13	0.39	0.04	0.07	0.0	0.09	0.57
0.94	13.64	0.39	0.15	0.12	9.44	0.21	0.40	0.30	0.33	0.09	0.12	0.0	0.12	0.79
0.54	16.55	0.13	0.40	0.46	5.39	0.24	0.24	0.11	0.59	0.24	0.21	0.0	0.32	0.91
0.12	12.18	0.24	0.18	0.60	12.91	0.0	0.24	0.18	0.66	0.12	0.06	0.0	0.0	0.18
0.14	13.32	0.14	0.14	0.20	11.89	0.11	0.09	0.03	0.60	0.09	0.03	0.0	0.29	0.31
0.73	18.39	0.08	0.28	0.47	2.26	0.24	0.51	0.08	0.53	0.04	0.26	0.0	0.12	0.77

TABLE 10-Continued

1.16	19.63	0.55	0.48	0.72	4.12	0.26	0.38	0.18	0.92	0.23	0.17	0.0	0.19	1.24
0.91	32.28	0.38	0.23	0.23	0.98	0.53	0.93	0.53	1.06	0.08	0.30	0.0	0.76	1.66
0.99	28.01	0.14	0.47	0.05	1.18	0.76	0.33	0.28	9.07	0.09	0.57	0.0	0.94	1.32
0.94	35.80	0.13	0.18	0.04	0.72	0.40	0.45	0.11	1.54	0.09	0.56	0.0	6.78	1.34
0.05	41.83	0.02	0.0	0.08	0.26	0.02	0.03	0.03	0.22	0.02	3.45	0.0	0.27	0.10
0.30	67.47	0.0	0.0	0.10	0.15	0.0	0.10	0.0	0.10	0.15	6.43	0.0	0.65	0.05
0.31	68.61	0.16	0.08	0.16	0.43	0.24	0.20	0.16	0.31	0.0	1.41	0.0	0.24	0.75
0.12	61.92	0.02	0.14	0.0	0.28	0.06	0.08	0.04	0.14	0.0	0.14	0.0	0.0	0.38
0.32	50.26	0.23	0.16	0.11	0.79	0.05	0.09	0.38	0.09	0.18	0.23	0.0	0.09	0.47
0.51	47.95	0.22	0.04	0.07	0.51	0.04	0.24	0.20	0.24	0.11	0.42	0.0	0.11	0.60
0.35	57.09	0.63	0.09	0.08	0.17	0.15	0.23	0.24	0.21	0.03	0.09	0.0	0.06	0.58
0.54	39.81	0.35	0.33	0.21	1.50	0.47	1.13	0.07	0.54	0.07	0.30	0.0	0.52	0.96
0.11	66.47	0.34	0.11	0.45	0.57	0.0	1.25	0.34	0.0	0.0	0.45	0.0	0.23	0.57
0.91	44.25	0.13	0.09	0.17	0.56	0.56	1.25	0.39	0.22	0.04	0.17	0.0	0.17	0.48
0.35	58.29	0.07	0.07	0.04	0.94	0.37	1.37	0.21	0.25	0.04	0.04	0.0	0.18	0.39
0.64	38.53	0.11	0.34	0.15	1.35	0.52	0.67	0.11	0.60	0.0	0.49	0.0	0.34	0.49
0.84	20.30	0.74	0.20	0.30	1.33	0.25	0.20	0.59	0.59	0.64	0.84	0.05	0.25	1.03
0.42	70.43	0.03	0.0	0.06	0.23	0.10	0.06	0.13	0.06	0.0	0.23	0.0	0.13	0.23
0.32	46.39	0.05	0.02	0.07	0.11	0.10	0.09	0.02	0.07	0.03	0.07	0.0	0.08	0.19

TABLE 10-Continued

## TABLE 11

AVERAGE LENGTH OF STAY OF  
CAMPING PARTIES FROM EACH  
REGION AT EACH CAMPGROUND

Note: The regional camping party average lengths of stay are presented in matrix form (85 by 29). The 85 campgrounds (listed in appendix 1, table 9) are given in the columns running through the three pages of the table, and the 29 regional districts (listed in appendix 3, table 13, and shown in maps 1 and 2) are given in row form on each page.

## AVERAGE LENGTH OF STAY

1.2	1.0	1.3	1.8	1.0	1.3	1.2	1.5	1.4	1.5	1.1	1.3	1.1	1.3	1.6	1.4	1.3	1.2	1.3	1.2	1.1	1.0	1.5	1.8	1.5	2.1	1.0	1.0	1.3	
1.2	1.4	1.3	1.1	0.0	1.1	1.3	1.3	1.1	1.3	1.2	1.0	1.1	1.0	1.2	1.2	1.3	1.0	1.0	1.1	1.2	1.4	1.2	1.0	1.5	1.0	0.0	0.0	1.4	
1.0	1.3	1.3	1.3	0.0	1.1	1.0	1.4	1.3	1.1	1.2	1.3	1.3	1.1	1.2	1.4	1.2	1.8	1.0	1.0	1.2	1.3	1.4	1.0	1.2	1.5	0.0	2.0	1.1	
1.1	1.3	1.3	1.1	1.5	1.4	1.2	1.2	1.4	1.1	1.1	1.3	1.1	1.6	1.3	1.2	1.2	1.4	1.2	1.1	1.3	1.2	1.2	1.3	1.4	1.2	0.0	0.0	1.2	
0.0	1.3	1.1	1.4	0.0	1.4	1.0	1.4	1.5	1.4	1.0	1.2	1.0	1.3	1.2	1.3	1.0	0.0	2.0	1.0	1.1	1.0	1.0	3.0	1.0	2.3	0.0	0.0	1.2	
1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	
1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
2.1	2.7	2.4	1.7	2.0	2.4	2.2	1.6	1.9	1.5	2.3	2.1	1.6	2.7	1.7	2.5	2.0	1.6	0.0	1.7	2.2	1.9	1.9	1.0	3.5	1.3	0.0	2.9	2.1	
2.2	2.4	2.2	1.9	1.5	1.9	1.8	1.6	1.7	1.8	1.8	2.1	1.7	2.1	2.3	2.0	2.2	2.3	2.1	1.9	1.7	1.8	2.4	2.2	2.2	1.6	0.0	1.8	1.7	
1.7	0.0	1.4	1.0	0.0	2.1	1.0	1.3	1.0	1.0	0.0	3.0	0.0	3.4	2.0	2.2	0.0	1.3	2.0	3.3	2.5	2.0	1.0	2.0	0.0	1.5	0.0	3.0	1.8	
1.0	2.0	2.3	2.6	0.0	2.9	1.3	1.7	1.0	1.6	1.2	4.2	1.0	1.6	1.7	2.8	3.0	1.3	0.0	2.0	1.2	2.4	4.4	2.0	0.0	3.0	0.0	1.0	1.5	
0.0	1.5	1.5	1.0	0.0	1.9	1.0	1.1	4.0	1.0	1.0	2.0	1.0	1.4	1.0	1.6	1.3	1.0	0.0	1.5	1.0	1.4	1.0	1.0	0.0	0.0	0.0	1.0	1.1	
1.5	1.7	1.7	2.7	0.0	1.7	1.2	1.8	1.4	1.6	2.1	2.2	3.0	2.4	2.3	2.1	2.9	2.1	1.0	1.7	1.8	1.8	2.3	1.9	2.1	1.0	0.0	4.5	2.0	
1.0	1.3	1.3	1.3	0.0	1.6	1.0	1.5	1.0	2.0	1.5	1.5	1.2	1.7	1.4	1.7	1.9	1.0	0.0	1.0	1.3	1.6	0.0	1.0	1.0	1.0	0.0	1.5	1.4	
1.0	1.8	1.2	1.1	0.0	1.3	0.0	1.2	1.5	1.2	1.1	1.4	1.0	1.6	1.0	1.5	1.0	1.0	0.0	1.0	1.4	1.4	1.0	1.3	1.0	2.7	0.0	1.7	1.3	
1.3	1.0	1.0	1.0	0.0	1.0	1.0	1.1	1.0	1.2	1.0	1.0	1.1	1.2	1.4	1.1	1.0	1.0	1.0	1.0	1.1	1.1	1.0	1.2	1.0	1.3	0.0	1.0	1.2	
1.0	1.0	1.1	1.0	0.0	1.1	1.0	1.1	1.0	1.2	1.0	1.3	1.0	1.1	1.1	1.1	1.0	1.0	1.0	1.1	1.0	1.2	1.0	1.1	1.0	1.0	0.0	1.0	1.0	
1.0	1.0	1.1	1.1	0.0	1.1	1.0	1.1	1.2	1.0	1.1	1.0	1.0	1.0	1.1	1.1	1.0	1.0	1.0	1.1	1.1	1.1	1.0	1.1	1.0	1.0	0.0	1.2	1.1	
2.6	3.0	3.0	3.2	2.0	3.2	2.9	2.7	2.4	3.9	2.3	3.5	3.0	3.7	3.7	3.6	3.1	2.4	4.6	2.2	2.9	2.9	4.1	1.6	4.2	3.5	0.0	2.3	2.4	
1.0	1.4	1.4	1.6	0.0	1.2	1.0	1.4	1.2	1.0	1.3	1.0	1.0	1.7	1.1	1.4	1.8	1.0	3.0	1.3	1.4	1.0	1.0	1.0	1.5	1.0	0.0	0.0	1.4	
2.0	1.0	1.6	1.4	0.0	2.4	2.4	1.8	1.3	1.0	1.5	1.2	1.7	2.1	1.4	1.2	1.1	1.3	1.5	2.1	1.7	2.0	1.7	1.0	1.0	0.0	0.0	1.3	1.6	
0.0	1.5	2.2	1.4	0.0	2.1	0.0	1.5	3.3	1.0	0.0	1.7	1.0	3.2	2.3	2.1	2.5	2.0	0.0	2.7	1.7	1.0	0.0	1.0	0.0	0.0	0.0	0.0	1.7	
1.0	1.0	1.3	1.0	1.0	1.4	1.3	1.3	1.1	1.3	1.4	1.1	1.0	1.0	1.2	1.2	1.0	1.3	1.0	1.2	1.1	1.2	1.3	1.0	0.0	1.5	0.0	0.0	1.2	
1.4	1.1	1.1	1.3	0.0	1.1	1.0	1.0	1.5	1.0	1.1	1.3	1.0	1.0	1.1	1.2	1.2	1.1	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.2	1.0	0.0	1.2	1.4
1.2	3.3	1.6	2.6	0.0	1.8	2.0	1.4	1.6	1.2	1.4	2.2	1.0	1.6	2.2	1.0	2.3	1.3	4.0	1.3	1.5	1.8	1.4	1.1	0.0	2.0	0.0	1.4	1.6	
1.0	1.0	1.0	1.1	0.0	1.1	1.2	1.3	1.0	1.0	1.0	1.2	1.0	1.2	1.0	1.1	1.1	1.0	1.0	1.0	1.1	1.1	1.0	1.1	1.0	1.0	1.0	1.0	1.2	
1.0	2.0	1.0	1.0	1.0	1.2	1.0	1.0	2.3	1.0	1.0	1.1	1.0	1.1	1.1	1.1	1.0	1.0	1.0	1.1	1.5	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.1	
1.4	1.3	1.3	1.7	0.0	1.4	1.2	1.3	1.5	1.4	1.3	1.2	1.0	1.5	1.5	1.5	1.3	1.4	1.0	1.3	1.2	1.2	2.3	1.3	2.0	1.1	0.0	1.1	1.3	
1.3	1.1	1.1	1.3	1.0	1.4	1.3	1.1	1.7	1.0	1.1	1.2	1.1	1.1	1.6	1.3	1.5	1.5	1.0	1.4	1.1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.3	
1.0	1.0	1.2	1.0	0.0	2.7	1.2	1.0	1.0	1.3	1.3	1.0	1.6	2.0	1.3	1.3	1.0	1.3	0.0	1.0	1.2	1.2	1.0	2.0	1.0	2.0	0.0	1.0	1.2	
1.0	1.8	1.5	1.4	1.0	1.6	1.4	1.5	1.6	2.0	1.6	1.3	1.6	1.6	1.6	1.5	2.5	1.4	1.0	1.4	1.1	1.3	1.3	1.1	1.3	1.5	0.0	2.0	1.4	

TABLE 11-Continued

TABLE 11-Continued

1.5	1.2	1.4	1.0	1.0	1.3	1.6	1.6	1.1	1.0	1.2	1.2	1.4	1.6	1.7	1.7	1.0	1.6	2.0	1.2	1.2	1.6	1.5	2.0	2.9	1.5	0.0	1.0	1.7	
1.0	1.0	1.3	1.5	0.0	1.4	1.0	1.4	1.0	1.2	1.1	1.4	1.0	1.5	1.3	1.4	1.1	1.2	1.0	1.1	1.5	1.4	1.5	1.0	2.0	1.5	0.0	1.0	1.0	
2.0	1.5	1.3	1.6	1.0	1.7	1.4	1.3	1.7	1.3	1.4	1.7	1.5	1.7	1.2	1.7	1.3	1.5	0.0	1.2	1.3	1.4	1.5	1.2	5.0	1.6	1.0	1.0	1.2	
1.0	1.8	1.3	1.3	0.0	1.1	1.4	1.0	1.3	1.2	1.4	1.0	1.4	1.1	1.1	1.2	1.4	1.3	1.0	1.4	1.5	1.1	1.1	1.0	1.0	1.0	0.0	1.0	1.2	
1.0	1.0	1.2	2.0	1.0	1.4	1.7	1.4	1.1	2.0	1.0	1.6	1.3	1.0	1.1	1.1	1.0	1.0	0.0	1.3	1.0	1.2	2.0	1.5	1.0	0.0	0.0	1.0	1.3	
1.0	0.0	1.0	1.0	0.0	1.0	1.1	1.1	1.0	1.0	1.2	1.1	1.1	1.2	1.0	1.1	1.4	1.0	1.0	1.1	1.0	1.1	1.2	1.7	1.0	1.0	0.0	1.0	1.2	
1.0	1.0	1.1	1.0	0.0	1.3	1.0	1.3	1.0	1.0	1.0	1.0	1.2	1.0	1.0	1.1	1.0	1.2	1.0	1.0	1.0	1.2	1.2	1.0	1.0	1.2	0.0	1.0	1.2	
1.1	1.0	1.1	1.0	1.0	1.1	1.3	1.0	1.1	1.1	1.1	1.1	1.3	1.4	1.1	1.1	1.0	1.3	1.0	1.0	1.0	1.1	2.9	1.2	1.0	1.0	0.0	1.0	1.2	
1.3	1.4	1.2	1.1	0.0	1.2	1.0	1.2	1.2	1.3	1.0	1.2	1.3	1.0	1.5	1.1	1.4	1.0	1.0	1.4	1.3	1.0	1.3	1.9	1.3	1.0	1.0	1.0	1.5	
1.1	1.0	1.2	1.1	0.0	1.1	1.3	1.3	1.2	1.0	1.6	1.2	1.2	1.1	1.6	1.2	1.0	1.6	1.0	1.0	1.1	1.0	1.2	1.0	1.0	1.0	0.0	0.0	1.1	
1.1	1.0	1.1	1.2	1.0	1.3	1.0	1.0	1.0	1.0	1.0	1.1	1.1	1.0	1.2	1.1	1.0	1.1	1.0	1.1	1.1	1.6	1.2	1.2	1.0	1.0	0.0	1.0	1.1	
1.0	1.0	1.6	1.9	0.0	1.0	1.0	1.8	1.0	1.1	1.1	1.0	1.0	1.0	1.5	1.1	1.1	1.3	1.0	0.0	1.1	1.1	1.0	1.6	1.0	0.0	1.0	2.0	1.0	1.2
1.0	1.0	1.1	1.1	3.0	1.0	1.0	1.0	1.1	1.0	1.0	1.0	1.3	0.0	1.3	1.4	1.0	1.0	0.0	1.2	1.0	1.0	1.3	1.0	0.0	1.0	0.0	0.0	1.2	
1.0	1.1	1.0	1.0	1.0	1.0	1.0	1.2	1.1	1.0	1.1	1.2	1.0	1.1	1.1	1.0	1.0	1.0	1.0	1.0	1.0	1.1	1.2	1.0	1.2	1.0	0.0	1.0	1.0	
1.1	1.0	1.1	1.1	1.0	1.2	1.1	1.2	1.2	1.1	1.1	1.1	1.1	1.0	1.1	1.1	1.1	1.0	1.0	1.1	1.1	1.2	1.0	1.0	1.1	1.2	0.0	1.0	1.2	
1.0	1.2	1.1	1.0	0.0	1.3	1.0	1.0	1.0	1.0	1.2	1.0	1.0	2.0	1.1	1.2	1.0	0.0	0.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	0.0	1.1	
1.1	1.5	1.1	1.2	1.0	1.1	1.2	1.2	1.1	1.2	1.0	1.2	1.0	1.1	1.5	1.2	1.1	1.1	1.0	1.1	1.1	1.0	1.3	1.5	1.4	1.3	0.0	1.2	1.3	
1.2	1.7	1.5	1.6	3.0	1.4	1.8	2.7	1.2	1.3	1.1	1.1	1.7	1.3	2.0	1.6	2.1	1.0	1.1	2.2	1.6	1.2	2.0	1.5	1.9	1.0	0.0	1.0	1.9	
1.0	1.2	1.0	1.0	0.0	1.0	1.3	1.3	1.3	2.0	1.0	1.0	1.0	1.0	1.1	1.1	1.1	0.0	1.0	1.0	1.3	1.0	1.3	1.0	1.2	1.0	0.0	0.0	1.3	
1.5	1.4	1.3	1.8	1.0	1.1	1.0	1.0	1.3	1.1	1.1	1.0	1.0	1.2	1.3	1.3	1.3	1.0	1.0	1.3	1.2	1.0	1.5	1.8	1.3	1.5	2.7	1.0	1.1	
1.0	1.0	1.5	1.0	0.0	1.2	1.0	1.3	1.0	1.1	1.0	1.3	1.0	1.3	1.5	1.3	1.3	1.0	1.0	1.2	1.0	1.1	1.6	1.3	1.0	1.0	0.0	1.5	1.4	
1.1	1.1	1.2	1.1	1.0	1.1	1.3	1.0	1.0	1.2	1.2	1.1	1.3	1.3	1.2	1.2	1.5	1.0	1.4	1.4	1.1	1.2	1.2	1.3	1.0	1.3	1.0	1.0	1.1	
1.6	2.1	1.7	1.6	1.0	1.6	2.1	1.5	1.4	1.7	1.4	1.6	1.7	1.5	1.4	1.7	2.2	1.9	1.5	1.4	1.4	1.6	1.8	1.6	1.6	1.3	0.0	1.6	2.1	
2.0	1.0	1.5	1.0	0.0	1.5	1.2	1.0	1.0	1.0	1.1	1.8	2.0	1.5	2.1	1.7	1.0	0.0	0.0	1.6	1.5	1.3	0.0	0.0	1.0	2.6	0.0	0.0	3.0	
1.5	0.0	1.3	0.0	0.0	1.0	1.0	0.0	0.0	1.1	1.2	1.0	0.0	0.0	1.0	1.4	0.0	0.0	1.2	1.2	2.0	0.0	0.0	1.3	1.0	1.0	0.0	1.0	1.3	
2.1	1.6	1.7	1.9	0.0	1.0	1.2	1.1	1.3	1.4	1.6	1.4	1.3	1.4	1.4	1.4	1.2	1.3	2.5	1.3	1.1	1.4	1.5	1.7	1.0	1.0	1.0	1.0	1.9	
2.3	0.0	1.9	1.3	0.0	2.1	1.6	1.4	1.7	2.2	1.0	1.9	2.3	2.9	1.7	1.7	1.4	2.0	2.2	1.9	1.3	3.0	1.0	2.4	1.0	2.0	0.0	0.0	1.3	
1.3	0.0	1.3	1.3	0.0	1.1	1.0	1.0	1.0	1.0	1.4	1.3	0.0	1.2	1.0	1.4	1.0	1.0	0.0	1.1	1.7	1.3	0.0	1.0	1.5	1.5	0.0	1.0	0.0	
1.3	1.0	1.5	1.0	1.0	1.6	1.0	1.2	1.2	1.5	1.3	1.2	1.1	1.4	1.6	1.4	1.0	1.0	1.4	1.4	1.1	1.9	1.4	1.1	1.0	1.3	0.0	1.3	1.3	
1.5	0.0	1.5	1.1	1.0	1.3	1.2	1.3	1.4	1.2	1.4	1.6	1.3	1.6	1.1	1.4	1.9	1.6	1.0	1.4	1.3	1.1	1.2	1.2	1.0	1.0	0.0	1.0	1.2	
2.8	1.7	2.4	2.0	1.0	2.4	2.0	1.8	1.6	2.0	2.9	2.0	1.3	4.1	2.9	2.3	3.0	1.8	1.5	2.6	1.3	2.0	4.2	1.8	1.9	1.7	0.0	2.9	2.1	
1.5	1.7	1.7	1.2	1.0	1.5	1.3	1.3	1.3	1.5	1.5	1.4	1.0	1.4	1.4	1.5	1.1	1.7	2.1	1.4	1.3	1.0	1.3	1.7	1.9	1.1	0.0	1.5	1.5	

1.5	1.5	1.7	0.0	0.0	1.0	1.4	1.0	1.0	1.3	1.5	1.0	0.0	1.0	1.0	1.3	1.3	1.0	1.0	1.4	0.0	1.0	1.0	1.2	1.0	1.0	0.0	0.0	1.0	
2.0	1.3	1.6	1.5	0.0	1.5	1.5	1.5	2.5	1.7	1.7	1.7	1.4	3.3	1.3	1.4	1.7	2.5	1.4	1.7	1.3	3.0	1.0	1.4	1.5	1.0	0.0	2.5	2.2	
1.2	1.4	1.4	1.3	1.0	1.6	1.4	1.5	1.3	1.4	1.5	1.4	1.5	1.1	1.6	1.6	1.0	1.3	1.1	1.4	1.3	1.6	1.3	1.2	2.0	1.3	0.0	1.2	1.4	
2.3	1.4	2.4	2.2	1.0	1.7	1.9	1.7	2.5	2.2	2.2	2.2	2.0	1.8	2.8	2.1	2.1	2.9	1.9	2.0	1.5	2.0	1.8	1.7	1.8	2.0	0.0	2.2	2.0	
1.0	1.7	1.3	1.4	0.0	1.3	1.3	1.5	1.5	1.7	1.8	1.6	1.3	1.0	1.2	1.3	1.3	1.0	1.0	1.1	1.0	1.1	1.2	1.0	1.0	1.0	0.0	1.3	1.0	
1.6	1.0	1.4	1.3	0.0	1.2	1.4	1.4	1.3	1.9	1.3	1.4	1.0	2.0	1.5	1.5	1.0	1.3	1.0	1.8	2.3	1.2	1.2	1.5	1.0	1.7	0.0	1.5	1.2	
1.4	1.7	1.6	3.0	0.0	2.0	1.6	1.4	1.7	1.5	1.7	2.0	2.7	1.3	1.9	1.9	1.0	1.1	1.0	1.8	1.8	1.4	1.0	2.0	4.0	1.5	0.0	1.9	2.4	
1.4	0.0	1.6	1.0	0.0	1.4	1.5	2.0	2.7	2.2	1.0	1.6	2.0	1.6	1.0	1.6	1.0	0.0	5.0	2.0	1.0	1.0	2.0	1.8	1.0	1.7	0.0	2.1	1.0	
1.7	0.0	1.2	1.7	0.0	1.8	0.0	1.0	0.0	2.3	3.0	1.2	1.0	1.7	1.5	1.6	0.0	0.0	1.0	1.0	0.0	2.0	0.0	2.0	3.0	1.6	0.0	1.6	1.0	
1.0	0.0	1.1	1.1	1.5	1.1	1.3	1.4	1.0	1.3	1.2	1.1	1.1	1.3	1.0	1.3	2.0	2.0	1.3	1.1	1.5	1.0	1.0	1.3	0.0	1.4	0.0	1.0	1.1	
2.0	2.5	1.7	3.0	0.0	1.6	1.2	1.0	1.0	1.6	2.0	2.0	2.0	1.8	1.0	1.9	1.0	1.4	0.0	1.4	1.5	1.3	1.0	1.4	0.0	1.4	0.0	0.0	1.6	
1.4	1.3	1.3	1.3	0.0	2.6	1.5	1.3	5.0	4.7	1.0	2.4	2.5	3.7	2.0	2.6	2.5	2.3	1.7	2.3	1.0	1.0	2.1	1.0	2.7	2.0	0.0	1.3	2.1	
1.5	2.0	1.2	1.0	1.0	2.0	1.0	1.4	1.0	1.9	1.5	1.5	1.0	2.4	1.8	2.2	1.4	2.0	1.0	1.4	1.0	1.2	2.3	1.2	1.7	4.8	0.0	1.3	1.8	
1.1	2.8	2.2	1.5	1.0	2.2	1.6	1.5	1.0	2.1	2.0	2.6	1.4	2.5	1.6	2.2	6.9	3.0	2.5	1.2	1.7	1.9	1.5	1.8	1.0	1.2	0.0	1.3	2.2	
1.1	1.0	1.1	1.2	1.0	1.3	1.0	1.1	1.0	1.0	1.2	1.2	1.2	1.2	1.0	1.2	1.0	1.1	1.1	1.1	1.1	1.1	1.3	1.0	1.0	1.0	0.0	1.2	1.0	
1.0	0.0	1.0	1.0	0.0	1.1	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.1	1.0	1.0	1.0	1.0	0.0	1.1	1.5	0.0	0.0	1.0	0.0	1.0	1.0	
1.1	1.0	1.0	1.0	1.0	1.1	1.0	1.1	1.0	1.0	1.0	1.0	1.3	1.0	1.1	1.0	1.2	1.0	1.0	1.0	1.0	1.2	1.3	1.3	1.0	1.0	1.0	0.0	1.0	1.1
1.0	1.6	1.2	1.0	0.0	1.3	1.2	1.4	1.1	1.3	1.3	1.3	1.3	1.2	1.2	1.3	1.0	1.3	1.0	1.3	1.5	1.2	1.5	1.4	1.0	1.0	0.0	1.1	1.3	
1.0	1.0	1.0	1.1	2.0	1.2	1.0	1.0	1.0	1.0	1.2	1.3	1.1	1.0	1.0	1.1	1.0	1.1	1.0	1.0	1.0	1.0	1.0	1.0	1.1	0.0	1.0	0.0	1.1	1.2
1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.2	1.0	1.0	1.0	1.2	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.1	1.0	1.0	1.0
1.3	2.0	1.3	1.0	0.0	1.3	1.0	1.0	1.0	1.2	1.0	1.4	1.0	1.4	1.2	1.5	1.0	0.0	1.0	1.4	1.5	2.0	1.3	1.0	0.0	1.8	0.0	2.0	1.8	
1.6	3.6	1.8	1.6	2.0	2.0	1.6	1.3	1.9	1.6	1.6	2.2	1.9	2.0	2.2	2.1	1.6	1.0	4.7	1.2	1.6	1.5	1.0	1.4	1.8	1.4	1.0	1.9	1.4	

TABLE 11--Continued

## TABLE 12

AVERAGE SIZE OF CAMPING  
PARTIES FROM EACH REGION AT  
EACH CAMPGROUND

Note: The regional average camping party size data is presented in matrix form (85 by 29). The 85 campgrounds (listed in appendix 1, table 9) are given in the columns running through the three pages of the table, and the 29 regional districts (listed in appendix 3, table 13, and shown in maps 1 and 2) are given in row form on each page.

AVERAGE PARTY SIZE

3.6	4.1	2.9	3.9	2.0	3.1	2.8	3.5	4.1	2.9	3.5	3.3	3.3	3.0	3.9	3.1	4.0	3.5	4.3	3.1	3.1	2.7	3.8	3.9	4.0	4.1	4.0	3.3	3.8
3.8	3.0	3.5	4.2	0.0	3.3	3.3	3.9	3.9	4.5	3.5	3.6	3.4	3.8	4.0	3.5	4.4	2.7	2.0	3.2	4.5	3.7	3.2	4.0	3.0	4.0	0.0	0.0	3.5
3.7	4.7	3.7	4.1	0.0	3.4	3.3	3.4	3.4	3.2	3.5	3.8	4.3	3.4	4.0	3.7	4.2	3.8	2.5	2.9	3.3	3.5	3.2	3.6	4.0	4.0	0.0	3.0	4.0
3.8	3.8	3.5	4.0	2.5	3.8	3.8	3.5	4.1	4.1	3.8	3.6	3.5	3.4	3.8	3.4	4.0	4.0	3.5	3.3	3.5	3.4	4.0	3.5	4.5	2.8	0.0	0.0	4.0
0.0	5.3	2.7	3.4	0.0	3.8	3.0	3.9	5.5	2.8	4.3	3.2	3.0	3.1	3.8	3.3	2.0	0.0	4.0	3.0	3.0	2.5	2.8	2.0	4.0	3.0	0.0	0.0	3.5
2.8	2.0	3.1	3.7	0.0	3.2	3.4	3.1	2.3	3.7	4.1	2.7	5.5	2.0	3.6	3.4	3.2	3.9	0.0	4.0	3.4	3.1	2.7	2.8	1.0	3.6	0.0	4.0	3.6
3.1	3.7	2.8	3.5	3.8	3.2	3.3	2.7	2.9	3.1	3.2	2.9	3.5	2.9	3.5	2.9	3.7	2.9	3.6	3.1	2.7	3.0	3.5	3.0	3.3	2.6	3.5	2.7	3.1
3.1	3.0	2.7	2.8	2.0	3.3	3.9	2.7	2.8	2.1	2.7	3.1	3.0	3.9	3.6	3.0	2.5	2.4	0.0	2.5	2.9	3.5	3.4	2.0	3.5	3.3	0.0	3.1	3.2
3.0	4.0	3.1	4.0	2.0	3.1	3.1	3.2	2.9	3.0	3.0	2.9	2.9	3.2	3.4	3.0	4.0	3.2	2.9	3.3	3.0	3.2	3.8	3.1	3.2	3.2	0.0	3.3	3.3
3.3	0.0	2.8	2.0	0.0	3.5	4.0	2.7	3.0	2.5	0.0	2.9	0.0	2.0	3.7	2.9	0.0	2.8	2.0	4.0	3.5	3.0	4.0	2.0	0.0	3.0	0.0	3.8	3.0
2.0	3.3	2.5	3.1	0.0	3.4	3.0	2.7	3.0	2.9	2.6	2.5	2.0	2.6	3.3	2.8	4.7	3.3	0.0	2.7	2.7	3.3	3.2	4.0	0.0	3.0	0.0	2.0	2.8
0.0	2.0	2.8	2.0	0.0	3.1	2.0	3.3	3.0	3.1	2.4	2.6	2.3	4.3	3.5	2.8	4.4	2.6	0.0	2.0	3.0	2.8	3.0	2.0	0.0	0.0	0.0	3.0	3.4
2.4	3.5	2.9	3.7	0.0	3.3	2.7	3.4	3.1	2.3	3.8	3.3	2.4	2.7	3.3	3.0	3.3	2.5	2.0	2.7	3.3	3.4	3.9	3.2	4.1	2.8	0.0	4.0	3.3
2.6	3.5	3.0	2.8	0.0	3.1	3.5	3.1	3.4	3.0	4.3	3.2	2.0	2.9	2.8	3.1	3.6	5.0	0.0	2.8	3.6	3.6	0.0	3.3	5.0	3.0	0.0	4.5	2.9
3.0	4.2	2.6	2.8	0.0	2.8	0.0	2.3	3.3	2.2	3.1	3.6	2.0	3.0	2.8	2.8	3.0	3.6	0.0	2.9	3.4	3.2	2.0	2.8	1.0	3.3	0.0	4.0	3.0
3.5	2.0	3.0	3.0	0.0	3.3	3.4	2.9	2.0	2.1	3.7	3.1	3.8	2.8	3.4	3.0	3.0	3.2	5.3	2.6	3.1	3.3	2.0	2.6	3.5	2.7	0.0	3.5	3.8
3.5	3.6	2.8	3.1	0.0	3.2	2.7	2.7	4.0	3.1	2.9	3.2	3.5	3.1	3.7	2.9	3.1	3.4	3.0	2.7	4.6	3.4	2.8	3.6	3.3	3.2	0.0	3.1	2.4
3.9	3.1	3.0	3.1	0.0	3.5	2.8	3.0	3.9	2.9	3.7	2.7	3.2	3.2	3.6	3.0	3.3	3.0	3.5	3.4	2.6	3.0	3.6	3.5	3.0	2.4	0.0	3.2	3.4
3.8	3.8	3.2	3.6	2.0	3.3	3.1	3.4	3.4	3.3	3.0	3.5	4.2	3.7	3.8	3.4	3.9	3.2	4.2	3.0	3.6	3.6	3.7	3.5	3.4	3.5	0.0	3.0	3.4
3.5	3.9	3.0	3.6	0.0	3.7	2.0	3.0	2.9	1.0	3.0	3.0	4.0	3.3	3.1	2.8	2.2	3.5	4.0	2.3	3.1	3.3	3.3	2.0	3.5	4.3	0.0	0.0	3.2
2.7	4.0	3.4	3.4	0.0	2.6	3.4	3.1	3.2	2.7	3.0	2.6	3.1	2.9	3.5	3.1	2.9	3.0	3.5	3.1	3.0	3.6	2.8	2.0	4.0	0.0	0.0	2.3	3.2
0.0	3.5	3.0	3.7	0.0	3.1	0.0	3.5	3.7	2.0	0.0	3.4	3.0	3.0	4.6	3.3	3.5	2.5	0.0	3.5	2.7	2.5	0.0	3.0	0.0	0.0	0.0	0.0	2.8
2.7	4.0	3.6	3.2	3.0	3.7	2.4	3.4	3.1	3.3	3.8	3.5	3.0	3.0	3.6	3.0	4.5	3.0	3.0	3.2	3.0	3.7	3.3	2.0	0.0	3.8	0.0	0.0	3.1
2.6	4.2	3.3	3.3	0.0	3.4	2.7	3.0	3.2	3.3	3.8	3.2	4.7	2.8	3.9	3.1	3.6	3.3	2.7	2.8	3.0	3.2	3.9	3.4	3.2	3.7	0.0	3.6	3.3
3.2	4.3	3.2	3.1	0.0	3.5	2.8	2.8	3.3	2.6	3.0	3.2	3.0	3.4	3.4	3.3	4.1	2.0	3.5	3.1	3.2	3.4	3.7	3.1	0.0	4.2	0.0	3.4	3.7
3.3	4.5	3.0	3.3	0.0	2.9	3.3	2.9	3.2	3.4	2.9	2.9	3.2	3.0	3.8	3.1	3.4	2.3	3.2	3.0	3.3	2.8	3.6	2.9	6.7	3.1	3.0	2.8	3.0
3.8	2.0	3.0	4.3	4.0	3.1	2.0	3.3	2.3	2.8	3.4	2.8	2.0	2.7	3.0	3.0	1.7	5.0	2.2	3.2	3.5	3.5	4.0	4.0	4.0	3.0	0.0	3.0	2.4
3.0	3.8	3.1	3.5	0.0	3.1	2.9	3.3	3.7	3.3	2.9	3.4	3.5	2.7	3.5	3.1	3.0	3.2	3.1	3.2	3.5	2.5	2.9	3.1	3.4	3.1	0.0	3.1	3.5
3.2	4.9	3.2	4.1	6.0	3.9	3.7	3.5	4.3	3.8	2.9	4.1	3.9	3.5	3.4	3.0	5.0	3.5	2.0	2.6	3.6	2.9	3.2	2.0	4.0	2.5	4.0	6.0	3.9
2.0	2.0	1.9	3.0	0.0	3.3	3.6	2.6	2.9	3.3	3.0	3.3	3.3	2.0	2.3	2.6	1.0	2.9	0.0	3.0	2.6	2.7	3.0	3.0	5.0	2.0	0.0	3.5	2.6
2.0	3.7	2.8	2.6	4.0	2.7	3.7	3.1	3.5	2.5	3.3	2.9	3.4	3.4	3.1	2.9	2.3	3.5	2.5	3.1	3.0	2.7	2.8	3.7	2.7	2.0	0.0	4.0	2.8

TABLE 12-Continued

3.8	4.1	3.8	4.6	2.0	4.3	4.0	3.3	4.0	2.0	2.4	2.5	4.6	4.1	4.3	3.3	2.6	3.8	5.0	2.3	3.3	3.1	4.5	4.5	3.4	2.8	0.0	2.0	3.2
3.0	2.7	3.3	3.0	0.0	3.1	3.4	3.4	2.8	3.5	3.2	3.1	4.0	2.1	4.0	3.3	3.3	3.4	1.0	2.8	3.2	3.2	4.8	3.2	2.5	3.7	0.0	4.0	2.8
3.2	5.5	3.3	3.4	2.0	3.3	3.3	3.4	2.9	3.4	2.5	2.6	4.0	3.5	3.7	3.3	3.2	3.3	0.0	2.3	4.0	3.1	5.0	3.2	1.0	3.2	5.0	3.0	3.7
2.5	3.0	2.7	4.1	0.0	2.9	3.3	3.0	3.5	3.0	3.0	2.9	3.5	2.6	4.0	2.9	2.9	2.9	6.5	2.6	4.0	3.1	4.0	3.7	3.0	4.5	0.0	2.0	3.8
3.3	2.0	2.7	2.0	4.0	4.0	3.1	2.6	3.1	2.0	3.0	2.6	3.6	2.0	3.3	2.7	2.5	3.0	0.0	4.5	4.3	4.5	3.8	4.5	4.0	0.0	0.0	2.3	3.7
3.3	0.0	2.8	2.3	0.0	2.6	2.6	3.1	2.5	3.2	3.9	2.5	2.9	2.8	3.6	2.8	2.1	2.4	3.5	3.1	3.2	2.5	3.0	4.3	2.3	2.0	0.0	3.0	2.8
3.3	3.3	2.8	2.3	0.0	2.8	3.0	2.8	3.3	3.0	2.3	3.2	3.5	3.0	3.6	2.8	2.4	3.1	0.0	3.7	2.9	2.7	3.0	2.0	2.5	2.4	0.0	2.0	3.2
2.9	3.2	2.8	3.2	3.0	3.1	3.0	3.2	2.3	3.0	2.1	3.1	3.5	3.6	3.4	3.0	3.9	3.4	3.0	2.8	3.3	3.1	2.9	4.0	4.0	2.6	0.0	2.5	3.5
2.9	4.0	3.1	3.0	0.0	2.9	3.9	2.8	4.3	3.2	3.8	3.3	4.2	2.8	3.9	3.2	4.2	2.3	5.0	3.1	2.6	2.7	4.0	2.6	3.5	3.3	5.0	4.0	3.4
2.9	4.7	2.8	3.1	0.0	2.8	4.4	2.9	3.5	2.7	4.2	2.7	3.0	3.2	3.5	2.9	4.0	3.6	3.0	2.8	4.0	2.8	3.7	2.0	3.4	4.5	0.0	0.0	3.0
2.9	3.9	3.1	2.8	2.0	3.4	2.9	3.9	3.4	3.2	3.6	3.3	3.2	2.2	3.5	3.2	3.9	3.6	3.0	3.2	3.1	2.9	3.9	3.0	4.0	4.3	0.0	3.3	3.5
3.0	3.5	3.0	3.3	0.0	2.7	3.3	3.3	3.3	3.6	3.5	2.8	3.3	2.0	3.4	2.8	3.0	2.0	0.0	2.3	2.9	2.7	3.6	3.0	0.0	3.3	2.0	2.0	3.9
5.0	3.0	2.9	2.9	2.0	2.9	3.0	4.7	3.5	3.0	4.3	4.0	3.0	0.0	3.8	3.2	2.0	4.5	0.0	3.6	3.3	4.4	4.0	4.0	0.0	5.0	0.0	0.0	2.8
2.9	3.8	3.2	3.4	2.3	3.3	3.0	3.1	3.0	3.6	3.1	3.1	3.4	2.8	3.4	3.2	3.6	2.0	3.0	3.4	2.7	3.7	2.8	3.3	4.1	3.5	0.0	5.0	3.2
3.2	4.0	3.1	3.3	2.0	3.7	3.3	3.6	3.7	3.1	3.3	3.2	3.3	3.2	3.6	3.2	4.1	3.6	3.4	3.7	3.5	2.7	4.0	4.1	3.8	4.0	0.0	2.7	3.5
3.0	3.2	2.9	3.7	0.0	2.8	2.0	2.9	2.5	3.3	2.8	2.5	3.7	3.5	3.2	2.9	4.0	0.0	0.0	4.8	2.5	3.5	6.0	3.0	3.0	3.0	0.0	0.0	3.3
2.8	4.1	3.1	3.5	2.0	3.2	3.0	3.0	3.3	2.8	3.2	3.4	3.5	3.1	3.7	2.9	3.9	3.5	3.7	3.2	3.4	3.3	3.7	3.0	3.9	4.0	0.0	3.7	3.2
3.5	4.0	2.8	3.6	2.0	3.2	3.0	2.8	2.8	3.6	3.6	3.2	3.0	3.8	3.3	2.7	3.8	2.0	3.3	3.3	3.1	2.4	3.9	3.8	3.7	2.5	0.0	3.0	3.5
2.5	3.4	2.8	3.1	0.0	3.0	3.3	3.5	3.5	3.5	3.0	6.0	3.0	4.0	2.6	2.6	3.0	0.0	2.0	1.5	3.7	2.0	3.8	2.0	3.1	3.5	0.0	0.0	3.8
3.5	3.8	2.7	3.1	2.0	3.1	2.9	2.6	2.7	3.2	3.6	2.4	2.8	3.1	3.2	2.8	3.7	2.3	5.0	3.0	3.5	3.0	3.9	2.0	3.4	2.0	2.7	4.0	3.4
3.3	3.3	3.2	2.5	0.0	3.4	2.5	3.1	2.3	2.9	3.0	3.6	3.5	3.2	4.1	2.9	3.2	4.0	5.0	4.2	3.2	3.6	3.8	3.8	2.0	3.0	0.0	3.0	4.4
3.4	3.0	3.0	3.3	4.0	4.1	3.8	3.7	3.6	3.0	3.3	2.6	2.6	3.1	3.3	2.8	3.2	3.5	3.6	3.2	3.7	3.4	2.5	2.7	2.0	2.7	2.0	4.0	3.7
3.4	3.3	3.2	3.3	4.0	3.9	2.9	3.7	3.1	3.1	2.8	3.3	4.2	3.6	3.4	3.1	3.2	3.1	3.5	3.1	3.6	3.6	3.7	4.5	3.0	3.5	0.0	3.4	4.2
3.0	1.0	3.4	4.0	0.0	3.6	3.4	4.0	6.0	4.0	4.2	4.5	2.0	3.5	4.0	3.7	5.0	0.0	0.0	3.2	4.5	4.0	0.0	0.0	7.0	3.9	0.0	0.0	5.0
3.7	0.0	3.0	0.0	0.0	3.5	3.5	0.0	0.0	3.3	2.7	4.5	0.0	0.0	6.0	3.5	0.0	0.0	3.8	3.1	4.0	0.0	0.0	4.0	5.0	2.0	0.0	4.3	4.0
3.1	2.4	3.5	4.7	0.0	2.8	4.0	2.9	3.9	3.4	3.4	3.7	4.4	3.5	4.1	3.5	2.8	4.8	3.0	3.0	3.0	2.9	2.5	3.0	5.0	4.0	7.0	2.0	3.3
3.4	0.0	3.5	2.8	0.0	3.5	3.5	3.6	3.7	3.9	3.8	2.6	3.8	5.5	2.3	3.2	2.1	3.8	4.0	3.9	4.7	5.0	2.3	4.3	4.8	2.0	0.0	0.0	2.7
2.4	0.0	3.4	3.3	0.0	2.6	3.3	2.0	2.3	3.7	4.2	5.0	0.0	3.2	2.0	3.2	4.0	3.0	0.0	3.2	4.7	4.3	0.0	1.7	3.0	4.2	0.0	2.7	0.0
3.3	0.0	3.0	3.1	0.0	3.1	2.3	2.3	2.5	3.8	3.4	3.5	4.0	3.0	3.2	3.2	3.5	1.0	3.5	3.2	3.4	2.4	3.3	4.0	3.0	2.8	0.0	2.0	2.5
3.1	0.0	3.0	3.0	3.3	2.8	3.6	2.4	3.3	3.3	3.1	3.3	3.0	3.2	4.4	3.0	3.8	2.7	2.0	2.9	3.5	2.5	3.0	3.3	5.0	3.3	0.0	3.2	3.6
3.6	2.4	3.1	3.3	5.5	3.2	3.1	3.2	4.0	3.4	3.6	3.4	3.5	3.4	4.0	3.1	3.7	3.2	3.0	3.4	3.4	3.0	3.6	3.0	4.0	2.8	0.0	3.3	3.6
3.3	3.0	3.2	2.8	2.0	3.0	3.4	4.1	4.0	3.6	3.9	3.5	2.8	3.4	4.1	3.2	3.3	3.2	4.3	3.3	2.9	3.3	4.0	3.6	3.8	4.4	0.0	3.5	3.3

TABLE 12-Continued

1.5	2.5	3.4	0.0	0.0	4.0	3.7	4.0	3.0	3.3	3.3	3.3	0.0	2.6	2.5	3.2	6.0	2.3	3.4	3.4	0.0	3.5	3.0	3.1	3.0	2.0	0.0	0.0	5.0
3.3	2.5	3.2	2.3	0.0	2.9	3.2	2.5	4.5	3.5	3.5	3.7	2.9	4.0	2.0	3.2	3.3	2.0	3.8	3.5	2.3	2.0	2.0	3.1	3.0	4.0	0.0	2.5	3.2
3.7	3.2	3.1	4.1	5.0	2.9	3.2	3.3	3.7	3.5	4.1	2.3	3.0	2.9	3.2	2.9	4.5	2.4	3.0	3.1	2.8	2.9	1.7	2.9	4.0	3.2	0.0	3.0	3.3
3.5	3.7	3.3	3.5	4.0	3.4	3.4	4.3	3.4	3.8	3.5	3.1	3.4	3.2	4.1	3.2	4.1	2.9	3.6	3.4	3.1	3.0	3.8	3.5	3.4	3.5	0.0	3.4	3.7
4.4	3.7	2.9	4.3	0.0	3.7	4.0	3.2	4.0	2.9	5.3	2.8	3.3	4.0	4.0	3.1	2.5	2.3	2.7	3.1	3.6	3.8	5.0	2.7	6.0	3.8	0.0	3.0	3.5
2.3	2.0	2.8	3.3	0.0	3.3	4.3	3.5	2.6	4.5	3.0	3.4	2.0	3.2	3.1	3.0	3.7	2.8	2.0	2.7	2.0	2.2	2.3	4.0	2.0	3.8	0.0	2.4	3.5
4.0	3.0	3.2	3.9	0.0	3.9	3.1	3.3	4.6	3.7	4.8	3.6	3.3	3.4	3.2	3.3	4.0	3.3	3.5	3.4	3.1	3.2	3.6	3.5	3.0	3.9	0.0	3.8	3.9
4.3	0.0	3.3	3.5	0.0	3.3	3.3	3.0	3.0	3.2	2.8	3.3	4.4	3.9	3.7	3.6	4.0	0.0	4.0	2.5	2.0	3.5	3.0	2.7	2.0	3.6	0.0	3.0	2.5
3.5	0.0	2.8	3.3	0.0	3.1	0.0	4.0	0.0	2.7	2.0	2.7	2.0	2.0	2.0	2.9	0.0	0.0	3.0	1.7	0.0	3.0	0.0	2.0	2.0	3.2	0.0	2.6	2.0
2.1	0.0	2.6	2.5	2.0	2.8	2.9	3.2	3.0	3.3	2.3	3.1	2.5	2.8	2.8	2.9	3.0	2.0	3.7	2.5	3.8	2.0	3.8	2.7	0.0	4.0	0.0	2.7	3.5
2.1	2.7	3.1	2.3	0.0	2.7	2.2	2.0	2.0	2.6	4.0	2.6	2.0	3.0	2.7	2.7	2.0	3.6	0.0	2.7	3.0	2.0	2.0	2.6	0.0	3.8	0.0	0.0	2.6
3.6	6.2	3.0	4.3	0.0	3.3	2.8	3.3	5.0	2.7	3.8	4.4	4.0	3.4	3.0	3.5	3.8	2.7	5.7	2.9	3.5	2.5	3.6	2.0	4.3	2.4	0.0	4.0	3.6
4.0	3.7	2.8	3.0	8.0	3.3	3.3	2.8	2.0	2.7	3.2	3.7	3.3	3.4	4.2	3.4	3.9	2.0	3.3	3.2	4.0	3.0	2.3	3.3	2.7	4.3	0.0	4.8	3.4
4.1	6.0	3.6	6.0	2.0	4.0	3.1	3.5	3.3	3.5	4.1	3.7	3.6	3.5	4.0	3.3	3.3	3.5	3.0	3.4	4.2	2.9	2.5	3.6	3.0	3.4	0.0	3.7	5.1
2.9	2.5	2.9	2.9	4.0	3.0	2.8	3.0	2.3	3.2	3.1	3.0	3.3	2.9	3.7	3.0	3.9	3.3	2.5	2.9	2.9	3.3	2.7	3.1	3.7	2.6	0.0	3.5	2.9
4.0	0.0	3.6	2.7	0.0	3.7	5.0	3.0	2.0	5.5	0.0	3.9	2.0	3.6	3.0	3.5	4.3	4.0	4.9	4.4	0.0	2.9	3.5	0.0	0.0	3.0	0.0	6.0	3.8
2.5	2.0	2.6	2.4	6.0	2.9	2.8	2.6	4.0	2.7	3.1	3.4	3.3	3.1	2.7	2.9	2.3	3.0	2.5	2.8	3.1	2.8	2.7	2.0	2.0	3.0	0.0	3.5	2.1
3.5	3.0	2.8	2.6	0.0	3.1	3.2	2.8	3.8	2.9	2.7	3.3	4.3	3.2	2.6	3.1	3.3	3.0	3.0	3.3	2.6	2.9	2.6	3.4	3.0	2.0	0.0	2.9	2.8
3.2	6.0	2.8	2.9	2.0	3.0	2.9	2.9	2.0	2.4	2.7	3.0	2.7	2.8	3.2	2.8	3.3	2.5	4.0	2.9	2.5	2.8	1.7	2.6	0.0	3.0	0.0	2.5	2.8
3.7	2.9	3.3	3.3	4.0	2.7	2.8	4.3	3.6	3.8	3.5	3.3	2.7	2.8	3.8	3.0	3.5	3.3	2.8	2.6	3.6	1.8	3.5	3.2	2.6	3.0	2.0	2.4	3.0
1.7	3.0	2.8	4.7	0.0	3.5	3.3	5.0	4.5	3.6	3.0	3.2	2.0	3.3	3.3	3.4	1.0	0.0	3.0	2.2	2.5	2.0	5.5	2.0	0.0	4.5	0.0	2.0	3.0
3.3	4.3	3.1	3.0	8.0	3.4	3.3	3.8	4.1	3.4	3.3	3.4	3.2	5.2	3.6	3.3	4.4	4.0	3.3	3.0	3.8	2.9	3.8	4.0	3.8	2.5	2.0	2.6	3.2

TABLE 12-Continued

APPENDIX 3

SOCIOECONOMIC DATA

TABLE 13

## REGIONAL DISTRICT SOCIOECONOMIC DATA

Regional District	FY <sub>j</sub> <sup>a</sup>	AGE <sub>j</sub> <sup>b</sup>	URBAN <sub>j</sub> <sup>c</sup>	Rpop <sub>j</sub> <sup>d</sup>
1. Alberni-Clayoquot	43.5	30.6	63.2	32,130
2. Buckley-Nechako	36.8	33.3	0.0	31,655
3. Capital	41.2	24.3	80.0	218,328
4. Cariboo	33.1	32.2	26.4	43,969
5. Central Coast	38.0	34.0	0.0	3,365
6. Central Fraser Valley	33.7	29.9	60.3	67,620
7. Central Kootenay	31.0	28.2	21.0	44,748
8. Central Okanagan	32.2	28.2	38.6	62,607
9. Columbia-Shuswap	35.8	29.8	41.1	34,739
10. Comox-Strathcona	41.6	31.1	21.2	53,608
11. Cowichan Valley	37.7	29.8	42.5	41,655
12. Dewdney-Alouette	34.2	29.7	86.6	43,887
13. East Kootenay	41.5	30.0	60.5	44,580
14. Fraser Cheam	31.6	29.1	19.8	47,413
15. Fraser-Fort George	47.4	32.1	51.4	81,796
16. Greater Vancouver	47.1	24.4	93.7	1,123,445
17. Kitimat-Stikine	46.4	31.9	58.4	45,507

TABLE 13-Continued

Regional District	<sup>a</sup> FY <sub>j</sub>	<sup>b</sup> AGE <sub>j</sub>	<sup>c</sup> URBAN <sub>j</sub>	<sup>d</sup> Rpop <sub>j</sub>
18. Kootenay Boundary	38.3	27.8	0.0	30,010
19. Mount Waddington	55.5	29.9	0.0	10,855
20. Nanaimo	36.1	26.8	31.1	54,366
21. North Okanagan	31.1	28.8	39.2	36,985
22. Okanagan-Similkameen	29.5	25.0	55.4	45,419
23. Peace River-Liard	45.4	33.6	45.7	48,626
24. Powell River	42.9	29.9	74.0	20,066
25. Skeena-Queen Charlotte	51.9	29.0	70.5	23,929
26. Squamish-Lillooet	38.6	30.8	0.0	14,615
27. Stikine	50.9	24.7	0.0	1,630
28. Sunshine Coast	30.0	24.1	0.0	10,548
29. Thompson-Nicola	41.7	30.5	41.5	91,428
Total				2,409,529

<sup>a</sup> FY<sub>j</sub> - percentage of families in region j with income in excess of \$10,000. Source: Canada, Statistics Canada, "Families, Incomes of Families, Family Heads and Non-Family Persons", Census 1971 Vol. II, Part 2, Table 85.

TABLE 13-Continued

- <sup>b</sup>AGE<sub>j</sub> - percentage of regional population between five and nineteen years of age in 1975. Source: B.C. Research, British Columbia Projections, 1974-1996, Vancouver: November, 1974.
- <sup>c</sup>URBAN<sub>j</sub> - percentage of regional population which lives in towns or cities with a population of 4,000 or more. Source: B.C. Research, British Columbia Projections, 1974-1996, Vancouver: November 1974.
- <sup>d</sup>Rpop<sub>j</sub> - regional population as projected for 1975. Source: B.C. Research, British Columbia Projections, 1974-1996, Vancouver: November, 1974.

APPENDIX 4

MILEAGE DATA

TABLE 14

REGIONAL DISTRICTS AND CORRESPONDING REGIONAL  
CENTRES USED IN PARK-REGION DISTANCE  
CALCULATION

Regional District	Regional Centre Used To Calculate Park-Region Distance
1. Alberni-Clayoquot	Port Alberni
2. Buckley-Nechako	Houston
3. Capital	Victoria
4. Cariboo	Williams Lake
5. Central Coast	Bella Coola
6. Central Fraser Valley	Abbotsford
7. Central Kootenay	Nelson
8. Central Okanagan	Kelowna
9. Columbia-Shuswap	Revelstoke
10. Comox-Strathcona	Courtenay
11. Cowichan Valley	Duncan
12. Dewdney-Alouette	Maple Ridge
13. East Kootenay	Cranbrook
14. Fraser Cheam	Chilliwack
15. Fraser-Fort George	Prince George
16. Greater Vancouver	Vancouver
17. Kitimat-Stikine	Terrace

TABLE 14-Continued

Regional District	Regional Centre Used To Calculate Park-Region Distance
18. Kootenay Boundary	Trail
19. Mount Waddington	Port Alice
20. Nanaimo	Nanaimo
21. North Okanagan	Vernon
22. Okanagan-Similkameen	Penticton
23. Peace River-Liard	Fort St. John
24. Powell River	Powell River
25. Skeena-Queen Charlotte	Prince Rupert
26. Squamish-Lillooet	Squamish
27. Stikine <sup>a</sup>	
28. Sunshine Coast	Gibsons
29. Thompson-Nicola	Kamloops

<sup>a</sup> Since regional district number 27, Stikine has such a small and highly dispersed population there is no regional centre and hence Stikine was excluded from the demand and benefit estimation analysis.

TABLE 15  
 FERRY ROUTES USED IN  
 CALCULATING PARK-REGION  
 DISTANCES

- 
1. Tsawwassen -- Swartz Bay
  2. Horseshoe Bay -- Departure Bay
  3. Swartz Bay -- Galiano Island
  4. Swartz Bay -- Salt Spring Island
  5. Swartz Bay -- North Pender Island
  6. Tsawwassen -- Galiano Island
  7. Tsawwassen -- Salt Spring Island
  8. Tsawwassen -- North Pender Island
  9. Horseshoe Bay -- Langdale
  10. Earls Cove -- Saltery Bay
  11. Powell River -- Comox
  12. Nanaimo -- Newcastle Island
  13. Crofton -- Salt Spring Island
  14. Buckley Bay -- Denman Island
  15. Earls Cove -- Saltery Bay + Horseshoe Bay  
 -- Langdale
  16. Earls Cove -- Salter Bay + Horseshoe Bay  
 -- Langdale + Tsawwassen -- Galiano Island
  17. Horseshoe Bay -- Langdale + Horseshoe Bay  
 -- Departure Bay

TABLE 15-Continued

- 
- 
- 18. Horseshoe Bay -- Langdale + Tsawwassen  
    -- Swartz Bay
  - 19. Horseshoe Bay -- Langdale + Tsawwassen  
    -- Galiano Island
  - 20. Horseshoe Bay -- Departure Bay + Nanaimo  
    -- Newcastle Island
  - 21. Powell River -- Comox + Nanaimo  
    -- Newcastle Island
  - 22. Horseshoe Bay -- Langdale + Horseshoe Bay  
    -- Departure Bay + Nanaimo  
    -- Newcastle Island
  - 23. Powell River -- Comox + Crofton -- Salt Spring Island
  - 24. Horseshoe Bay -- Langdale + Horseshoe Bay  
    -- Departure Bay + Crofton  
    -- Salt Spring Island
  - 25. Earls Cove -- Saltery Bay + Powell River -- Comox
  - 26. Horseshoe Bay -- Departure Bay + Buckley Bay  
    -- Denman Island
  - 27. Powell River -- Comox + Buckley Bay -- Denman Island
  - 28. Earls Cove -- Saltery Bay + Powell River -- Comox  
    + Buckley Bay -- Denman Island
  - 29. Earls Cove -- Saltery Bay + Horseshoe Bay  
    -- Langdale + Tsawwassen -- North Pender  
    Island
  - 30. Horseshoe Bay -- Langdale + Tsawwassen  
    -- North Pender Island
  - 31. no ferry required.

TABLE 16  
PARK-REGION DISTANCES

Note: The park-region distances (or campground-region distances in some cases) are presented in matrix form (134 by 29). The 134 parks (or campgrounds: listed in appendix 1, table 9) are given in the columns running through the five pages of both sections of the table. The 29 regional districts (listed in appendix 3, table 13, and shown in maps 1 and 2) are given in row form: the regions 1 through 15 are presented in the first five pages of the table, and regions 16 through 29 are presented in the second five pages. Since region 27, Stikine, has no regional centre it was excluded from the analysis and hence, only zeros are given for the distances pertaining to it.

PARK-REGION DISTANCES - REGIONS 1 TO 15

568.	255.	452.	80.	378.	380.	568.	366.	391.	578.	552.	397.	637.	351.	69.
622.	320.	599.	134.	432.	434.	622.	420.	445.	638.	606.	457.	691.	411.	133.
622.	320.	599.	134.	432.	434.	622.	420.	445.	638.	606.	457.	691.	411.	133.
622.	320.	599.	134.	432.	434.	622.	420.	445.	638.	606.	457.	691.	411.	133.
632.	330.	609.	144.	442.	444.	632.	430.	455.	648.	616.	467.	701.	421.	143.
456.	414.	435.	79.	377.	268.	453.	251.	276.	472.	440.	291.	522.	245.	225.
458.	370.	435.	33.	331.	270.	455.	253.	278.	474.	442.	293.	524.	247.	181.
395.	663.	372.	325.	624.	207.	196.	78.	208.	411.	379.	230.	293.	184.	474.
409.	643.	386.	306.	604.	221.	217.	20.	144.	425.	393.	244.	345.	198.	455.
395.	623.	372.	286.	584.	273.	218.	54.	184.	421.	379.	180.	315.	134.	434.
393.	621.	370.	284.	582.	271.	220.	52.	182.	419.	377.	178.	317.	132.	432.
402.	630.	379.	293.	591.	280.	211.	61.	191.	428.	386.	187.	308.	141.	441.
457.	600.	434.	262.	561.	269.	264.	23.	101.	473.	441.	292.	318.	246.	412.
338.	606.	315.	267.	565.	150.	248.	123.	243.	354.	322.	173.	376.	127.	417.
345.	599.	322.	260.	558.	157.	255.	130.	236.	361.	329.	180.	383.	134.	410.
336.	604.	313.	265.	563.	148.	222.	97.	217.	352.	320.	171.	350.	125.	415.
348.	616.	325.	277.	575.	160.	210.	85.	205.	364.	332.	183.	338.	137.	427.
506.	612.	483.	274.	572.	318.	191.	87.	37.	522.	490.	341.	284.	295.	423.
465.	567.	442.	230.	528.	277.	249.	109.	99.	481.	449.	300.	351.	254.	378.
461.	433.	438.	96.	394.	273.	458.	256.	281.	477.	445.	296.	527.	250.	244.
529.	541.	506.	204.	502.	341.	468.	229.	254.	545.	513.	364.	501.	318.	352.
489.	449.	466.	112.	410.	355.	486.	284.	309.	505.	473.	324.	555.	278.	260.
494.	506.	471.	169.	467.	306.	443.	194.	219.	510.	478.	329.	566.	283.	317.
484.	496.	461.	159.	457.	296.	423.	184.	209.	500.	468.	319.	556.	273.	307.
391.	550.	368.	212.	510.	203.	310.	144.	169.	407.	375.	226.	416.	180.	361.
316.	513.	293.	176.	474.	128.	390.	204.	228.	332.	300.	151.	478.	105.	324.
328.	501.	305.	164.	462.	140.	402.	192.	216.	346.	312.	163.	466.	117.	312.
423.	529.	400.	191.	489.	235.	362.	123.	148.	439.	407.	258.	395.	212.	340.
554.	822.	531.	484.	782.	366.	48.	241.	213.	570.	538.	389.	131.	343.	633.
570.	838.	547.	500.	798.	382.	12.	253.	102.	586.	554.	405.	157.	359.	649.

TABLE 16-Continued  
(Regions 1 to 15)

570.	838.	547.	500.	798.	382.	12.	253.	102.	586.	554.	405.	157.	359.	649.
548.	812.	525.	475.	773.	360.	40.	258.	194.	564.	532.	383.	185.	337.	623.
426.	694.	403.	356.	654.	238.	227.	109.	239.	442.	410.	261.	324.	215.	505.
707.	713.	684.	536.	834.	519.	166.	390.	226.	723.	691.	542.	21.	496.	524.
688.	738.	665.	561.	859.	500.	147.	371.	254.	704.	672.	523.	4.	477.	549.
704.	682.	681.	472.	770.	516.	227.	285.	161.	720.	688.	539.	82.	493.	493.
642.	777.	619.	572.	870.	454.	101.	325.	339.	658.	626.	477.	43.	431.	588.
751.	799.	728.	611.	909.	563.	209.	433.	300.	767.	735.	586.	65.	540.	599.
675.	747.	652.	570.	868.	483.	134.	358.	260.	691.	659.	510.	13.	464.	558.
682.	234.	659.	194.	492.	494.	682.	478.	505.	698.	666.	517.	590.	474.	45.
716.	268.	693.	228.	526.	528.	716.	512.	539.	732.	700.	551.	624.	508.	79.
677.	229.	654.	189.	487.	489.	677.	475.	500.	693.	661.	512.	505.	466.	40.
947.	666.	924.	459.	757.	759.	938.	736.	761.	963.	931.	782.	846.	736.	310.
845.	437.	822.	357.	655.	657.	845.	643.	668.	861.	829.	680.	753.	634.	208.
657.	396.	634.	331.	629.	469.	465.	357.	363.	673.	631.	472.	339.	446.	206.
632.	370.	609.	306.	604.	444.	490.	332.	338.	648.	616.	467.	364.	421.	181.
631.	369.	608.	305.	603.	443.	491.	331.	337.	647.	615.	466.	365.	420.	180.
717.	109.	694.	229.	527.	529.	717.	515.	540.	733.	701.	552.	625.	506.	80.
1009.	183.	986.	522.	820.	821.	1010.	815.	833.	1025.	993.	844.	918.	798.	372.
1081.	255.	1058.	593.	891.	893.	1081.	878.	904.	1097.	1065.	916.	989.	870.	444.
856.	115.	833.	368.	666.	668.	856.	653.	679.	872.	840.	691.	764.	645.	219.
140.	782.	20.	445.	743.	145.	515.	390.	500.	156.	58.	130.	643.	168.	594.
63.	790.	57.	453.	751.	153.	523.	398.	508.	79.	19.	138.	651.	176.	602.
108.	724.	12.	477.	775.	177.	547.	422.	532.	124.	26.	162.	675.	200.	626.
222.	751.	102.	414.	712.	114.	484.	359.	469.	238.	140.	99.	612.	137.	563.
61.	788.	79.	451.	749.	151.	521.	396.	506.	77.	41.	136.	649.	174.	600.
100.	822.	20.	485.	783.	185.	555.	430.	540.	116.	18.	170.	683.	208.	634.
101.	828.	57.	491.	789.	191.	561.	436.	546.	117.	19.	176.	689.	214.	640.
105.	770.	54.	433.	731.	133.	503.	378.	488.	121.	23.	118.	631.	156.	582.
31.	804.	101.	467.	765.	167.	537.	412.	522.	53.	61.	152.	665.	190.	615.

TABLE 16-Continued  
(Regions 1 to 15)

23.	812.	109.	475.	473.	175.	545.	420.	530.	61.	69.	160.	673.	198.	623.
31.	994.	91.	457.	755.	157.	527.	402.	512.	47.	51.	142.	655.	180.	605.
8.	843.	140.	506.	504.	206.	576.	451.	561.	92.	100.	191.	704.	129.	654.
125.	905.	200.	568.	866.	268.	638.	513.	623.	64.	162.	253.	766.	291.	717.
140.	920.	215.	583.	881.	283.	653.	528.	638.	79.	177.	268.	781.	306.	732.
94.	874.	169.	537.	835.	237.	607.	482.	592.	33.	131.	222.	735.	260.	686.
75.	855.	150.	518.	816.	218.	588.	463.	573.	14.	112.	203.	716.	241.	667.
190.	747.	189.	410.	708.	110.	480.	355.	465.	155.	174.	95.	608.	133.	559.
141.	822.	216.	485.	783.	185.	555.	430.	540.	70.	178.	170.	683.	208.	634.
198.	755.	197.	418.	716.	118.	488.	363.	460.	163.	182.	103.	616.	141.	567.
196.	731.	173.	431.	729.	94.	501.	376.	486.	192.	160.	79.	629.	154.	580.
251.	578.	248.	241.	539.	169.	488.	284.	308.	267.	235.	154.	560.	192.	389.
215.	562.	212.	225.	523.	133.	472.	268.	292.	231.	199.	118.	544.	156.	373.
218.	621.	195.	284.	582.	30.	354.	229.	339.	234.	202.	53.	482.	7.	433.
218.	621.	195.	284.	582.	30.	354.	229.	339.	234.	202.	53.	482.	7.	433.
218.	621.	195.	284.	582.	30.	354.	229.	339.	234.	202.	53.	482.	7.	433.
218.	621.	195.	284.	582.	30.	354.	229.	339.	234.	202.	53.	482.	7.	433.
285.	627.	262.	289.	587.	97.	277.	151.	262.	301.	269.	120.	405.	74.	438.
285.	627.	262.	289.	587.	97.	277.	151.	262.	301.	269.	120.	405.	74.	438.
285.	627.	262.	289.	587.	97.	277.	151.	262.	301.	269.	120.	405.	74.	438.
285.	627.	262.	289.	587.	97.	277.	151.	262.	301.	269.	120.	405.	74.	438.
285.	627.	262.	289.	587.	97.	277.	151.	262.	301.	269.	120.	405.	74.	438.
255.	575.	232.	237.	535.	67.	329.	203.	314.	271.	239.	90.	457.	44.	386.
186.	655.	163.	318.	616.	17.	388.	263.	373.	202.	170.	13.	516.	41.	467.
180.	667.	157.	330.	628.	29.	400.	275.	357.	196.	164.	7.	528.	53.	479.
415.	456.	392.	121.	419.	227.	411.	207.	231.	431.	399.	250.	581.	204.	267.
557.	663.	534.	325.	623.	369.	140.	138.	138.	14.	573.	541.	233.	346.	474.
443.	711.	420.	373.	671.	255.	210.	126.	256.	459.	427.	288.	307.	232.	522.
544.	650.	521.	312.	610.	356.	243.	125.	89.	560.	528.	379.	336.	333.	461.
586.	249.	470.	98.	396.	398.	586.	384.	409.	596.	570.	415.	655.	369.	63.
797.	69.	774.	299.	597.	609.	797.	594.	620.	813.	781.	632.	705.	586.	160.

TABLE 16-Continued  
(Regions 1 to 15)

TABLE 16-Continued  
(Regions 1 to 15)

1031.	205.	1008.	543.	841.	843.	1031.	828.	854.	1047.	1015.	866.	939.	820.	394.
64.	844.	141.	507.	805.	207.	577.	452.	562.	29.	101.	210.	705.	230.	656.
421.	434.	398.	95.	393.	233.	417.	213.	237.	437.	405.	256.	487.	210.	243.
521.	388.	498.	51.	349.	333.	521.	319.	344.	537.	505.	356.	590.	310.	200.
414.	682.	391.	344.	642.	226.	175.	97.	227.	430.	398.	249.	272.	203.	493.
733.	781.	710.	604.	902.	545.	192.	416.	294.	749.	717.	568.	47.	522.	592.
544.	808.	521.	471.	769.	356.	53.	259.	207.	560.	528.	379.	153.	333.	619.
981.	155.	958.	494.	792.	793.	982.	779.	805.	997.	965.	816.	890.	770.	344.
432.	538.	409.	200.	498.	244.	361.	122.	147.	448.	416.	267.	394.	221.	359.
596.	864.	573.	526.	844.	408.	38.	279.	192.	612.	580.	431.	101.	385.	675.
389.	478.	366.	141.	439.	201.	385.	381.	205.	405.	373.	224.	455.	178.	289.
111.	891.	186.	554.	852.	254.	624.	499.	609.	50.	148.	239.	752.	277.	703.
434.	560.	411.	223.	521.	246.	304.	63.	121.	450.	418.	269.	368.	223.	372.
520.	784.	497.	447.	745.	332.	44.	230.	198.	536.	504.	355.	172.	309.	595.
248.	590.	225.	252.	550.	60.	314.	188.	299.	264.	232.	83.	442.	37.	401.
706.	738.	683.	561.	859.	518.	165.	389.	251.	722.	690.	541.	20.	495.	549.
802.	74.	779.	304.	602.	614.	802.	595.	625.	818.	786.	637.	709.	591.	165.
731.	709.	708.	532.	830.	543.	190.	414.	222.	747.	715.	566.	45.	520.	520.
187.	769.	67.	432.	730.	132.	502.	377.	487.	203.	105.	117.	630.	155.	581.
615.	737.	592.	400.	698.	427.	64.	181.	90.	631.	599.	450.	174.	404.	548.
228.	597.	205.	260.	558.	40.	330.	205.	315.	244.	212.	63.	458.	17.	409.
913.	87.	890.	426.	724.	725.	914.	711.	737.	929.	897.	748.	822.	702.	276.
273.	615.	250.	277.	575.	85.	343.	217.	332.	289.	257.	108.	421.	62.	426.
9.	834.	129.	497.	795.	197.	567.	442.	552.	70.	91.	182.	695.	220.	646.
735.	679.	712.	502.	800.	547.	200.	316.	192.	751.	719.	570.	55.	524.	490.
834.	45.	811.	346.	644.	646.	834.	631.	657.	850.	818.	669.	742.	623.	197.
743.	592.	720.	255.	43.	555.	743.	541.	566.	759.	727.	578.	812.	532.	404.
1068.	660.	1045.	580.	878.	880.	1059.	857.	882.	1084.	1052.	903.	967.	857.	431.
1499.	1091.	1476.	1011.	1309.	1311.	1490.	1288.	1313.	1515.	1483.	1334.	1398.	1288.	862.
908.	466.	885.	426.	724.	720.	914.	712.	737.	924.	892.	743.	822.	697.	277.

1228.	820.	1205.	740.	1038.	1040.	1219.	1017.	1042.	1244.	1212.	1063.	1127.	1017.	591.
1386.	978.	1363.	898.	1196.	1198.	1377.	1175.	1200.	1402.	1370.	1221.	1285.	1175.	749.
1116.	708.	1093.	628.	926.	928.	1107.	905.	930.	1132.	1100.	951.	1015.	905.	479.
909.	467.	886.	427.	725.	721.	915.	713.	738.	925.	893.	744.	823.	698.	278.
907.	465.	884.	425.	723.	719.	913.	711.	736.	923.	891.	742.	821.	696.	276.
1296.	888.	1273.	808.	1106.	1108.	1287.	1085.	1110.	1312.	1280.	1131.	1195.	1085.	659.
685.	423.	662.	383.	681.	497.	437.	385.	283.	701.	669.	520.	311.	474.	234.
718.	599.	695.	486.	784.	530.	318.	299.	175.	734.	702.	553.	173.	507.	410.
670.	579.	647.	438.	736.	482.	281.	251.	127.	686.	654.	505.	187.	459.	390.
732.	614.	709.	500.	798.	544.	269.	313.	189.	748.	716.	567.	124.	521.	425.
577.	672.	554.	345.	643.	389.	188.	158.	34.	593.	561.	412.	213.	366.	483.
851.	899.	828.	711.	1009.	663.	309.	533.	400.	867.	835.	686.	165.	640.	699.
77.	902.	197.	565.	863.	265.	635.	510.	620.	138.	159.	250.	763.	288.	714.

TABLE 16-Continued  
(Regions 1 to 15)

PARK-REGION DISTANCES - REGIONS 16 TO 29

417.	425.	550.	812.	521.	332.	405.	371.	586.	523.	460.	0.	481.	257.
477.	491.	604.	866.	575.	386.	459.	435.	640.	587.	514.	0.	535.	311.
477.	491.	604.	866.	575.	386.	459.	435.	640.	587.	514.	0.	535.	311.
477.	491.	604.	866.	575.	386.	459.	435.	640.	587.	514.	0.	535.	311.
487.	501.	614.	876.	585.	396.	469.	445.	650.	597.	524.	0.	545.	321.
311.	583.	440.	700.	409.	218.	289.	528.	474.	680.	348.	0.	369.	213.
213.	539.	442.	702.	411.	220.	291.	484.	476.	636.	350.	0.	371.	215.
250.	830.	151.	639.	348.	111.	39.	767.	413.	928.	287.	0.	308.	187.
264.	811.	203.	653.	362.	53.	15.	748.	427.	903.	301.	0.	322.	129.
250.	791.	173.	639.	348.	87.	15.	727.	413.	886.	287.	0.	308.	163.
248.	789.	175.	637.	346.	85.	13.	725.	411.	884.	285.	0.	306.	161.
257.	798.	166.	646.	355.	94.	22.	734.	420.	893.	294.	0.	315.	170.
312.	868.	251.	701.	410.	10.	62.	705.	475.	865.	349.	0.	370.	83.
193.	773.	230.	582.	291.	152.	84.	710.	356.	871.	230.	0.	251.	128.
200.	766.	237.	589.	298.	169.	91.	703.	363.	864.	237.	0.	258.	121.
191.	771.	204.	580.	289.	126.	65.	708.	354.	862.	235.	0.	256.	119.
203.	783.	192.	592.	301.	114.	52.	344.	195.	874.	247.	0.	268.	231.
361.	780.	236.	750.	459.	54.	126.	716.	524.	877.	398.	0.	419.	97.
320.	635.	336.	709.	418.	76.	148.	671.	483.	730.	357.	0.	378.	52.
216.	602.	445.	705.	414.	223.	294.	547.	479.	699.	353.	0.	374.	218.
384.	710.	459.	773.	482.	193.	268.	655.	547.	807.	421.	0.	442.	148.
344.	618.	473.	733.	442.	251.	322.	563.	507.	715.	381.	0.	402.	246.
349.	675.	424.	738.	447.	158.	233.	621.	512.	772.	386.	0.	407.	113.
339.	665.	414.	728.	437.	148.	223.	610.	502.	762.	376.	0.	397.	103.
246.	717.	292.	635.	344.	108.	146.	654.	409.	815.	283.	0.	304.	35.
171.	681.	372.	560.	269.	171.	226.	627.	334.	779.	208.	0.	229.	97.
183.	669.	384.	572.	281.	159.	238.	615.	346.	767.	220.	0.	241.	85.
278.	696.	353.	667.	376.	87.	162.	633.	441.	794.	315.	0.	336.	14.
409.	990.	14.	798.	507.	275.	202.	926.	572.	1087.	446.	0.	467.	353.
425.	1006.	57.	814.	523.	266.	214.	942.	588.	1103.	462.	0.	483.	360.

TABLE 16-Continued  
(Regions 16 to 29)

425.	1006.	57.	814.	523.	286.	214.	942.	588.	1103.	462.	0.	483.	360.
403.	980.	31.	792.	501.	292.	219.	916.	566.	1075.	44.	0.	461.	336.
281.	861.	177.	670.	379.	142.	70.	798.	444.	959.	318.	0.	339.	218.
562.	881.	166.	951.	660.	317.	351.	859.	725.	978.	599.	0.	620.	360.
543.	906.	147.	932.	641.	342.	332.	842.	706.	1003.	560.	0.	601.	385.
559.	850.	227.	948.	657.	252.	324.	788.	722.	947.	596.	0.	617.	295.
497.	945.	98.	886.	595.	358.	286.	881.	660.	1042.	534.	0.	555.	448.
606.	966.	210.	995.	704.	397.	394.	892.	769.	1064.	643.	0.	664.	434.
530.	915.	134.	919.	628.	351.	319.	851.	693.	1012.	567.	0.	588.	394.
537.	401.	664.	926.	635.	447.	518.	257.	700.	499.	574.	0.	595.	371.
571.	435.	698.	960.	669.	481.	552.	223.	734.	533.	608.	0.	629.	405.
532.	396.	659.	921.	630.	442.	513.	342.	695.	494.	569.	0.	590.	366.
802.	666.	920.	1191.	900.	703.	766.	8.	965.	805.	839.	0.	860.	627.
700.	604.	827.	1089.	798.	610.	681.	85.	863.	812.	846.	0.	758.	634.
512.	572.	510.	901.	610.	321.	396.	508.	675.	660.	549.	0.	570.	248.
487.	537.	535.	876.	585.	296.	371.	483.	650.	635.	524.	0.	545.	223.
486.	536.	530.	875.	584.	295.	370.	482.	649.	634.	523.	0.	544.	222.
572.	276.	699.	961.	670.	482.	553.	382.	735.	374.	609.	0.	630.	406.
864.	16.	992.	1253.	962.	874.	846.	674.	1027.	111.	901.	0.	922.	698.
936.	85.	1063.	1325.	1034.	845.	917.	787.	1099.	10.	973.	0.	994.	770.
711.	137.	838.	1100.	809.	620.	692.	521.	874.	235.	748.	0.	769.	545.
102.	950.	497.	384.	89.	424.	351.	896.	215.	1048.	139.	0.	160.	366.
110.	958.	505.	307.	12.	432.	359.	904.	138.	1056.	147.	0.	168.	374.
134.	982.	529.	354.	57.	456.	383.	928.	185.	1080.	171.	0.	192.	398.
71.	919.	466.	466.	171.	393.	320.	865.	234.	1017.	108.	0.	129.	335.
108.	956.	503.	305.	10.	430.	357.	902.	136.	1054.	145.	0.	166.	372.
142.	990.	537.	346.	49.	464.	391.	936.	177.	1088.	179.	0.	200.	406.
148.	996.	543.	345.	50.	470.	397.	942.	176.	833.	185.	0.	206.	412.
90.	938.	485.	349.	54.	412.	339.	884.	180.	1036.	127.	0.	148.	354.
114.	972.	519.	338.	30.	446.	373.	918.	112.	1070.	161.	0.	182.	388.

TABLE 16-Continued  
(Regions 16 to 29)

TABLE 16-Continued  
(Regions 16 to 29)

122.	980.	527.	346.	38.	454.	381.	926.	120.	1078.	169.	0.	190.	396.
104.	962.	509.	332.	20.	444.	371.	916.	110.	1060.	151.	0.	172.	378.
153.	1011.	558.	377.	69.	485.	411.	957.	151.	1109.	200.	0.	221.	427.
225.	1073.	620.	164.	131.	547.	474.	1019.	123.	1171.	262.	0.	228.	489.
240.	1088.	635.	179.	146.	562.	489.	1034.	138.	1186.	277.	0.	243.	504.
194.	1042.	589.	195.	100.	516.	443.	988.	92.	1140.	231.	0.	197.	458.
175.	1023.	570.	210.	81.	497.	424.	969.	73.	1121.	212.	0.	178.	439.
67.	915.	462.	383.	143.	389.	316.	861.	96.	1013.	104.	0.	9.	331.
142.	990.	537.	308.	147.	464.	391.	936.	21.	1088.	179.	0.	84.	406.
75.	923.	470.	378.	151.	397.	324.	869.	93.	1021.	112.	0.	17.	339.
51.	936.	483.	420.	129.	410.	337.	882.	194.	1034.	14.	0.	89.	352.
126.	747.	521.	495.	204.	251.	375.	692.	269.	844.	89.	0.	164.	177.
90.	731.	485.	459.	168.	235.	339.	676.	233.	828.	53.	0.	128.	161.
73.	789.	336.	462.	171.	263.	190.	735.	236.	887.	110.	0.	131.	271.
73.	789.	336.	462.	171.	263.	190.	735.	236.	887.	110.	0.	131.	271.
73.	789.	336.	462.	171.	263.	190.	735.	236.	887.	110.	0.	131.	271.
73.	789.	336.	462.	171.	263.	190.	735.	236.	887.	110.	0.	131.	271.
140.	794.	256.	529.	238.	184.	143.	740.	303.	893.	177.	0.	198.	156.
140.	794.	256.	529.	238.	184.	143.	740.	303.	893.	177.	0.	198.	156.
140.	794.	256.	529.	238.	184.	143.	740.	303.	893.	177.	0.	198.	156.
140.	794.	256.	529.	238.	184.	143.	740.	303.	893.	177.	0.	198.	156.
140.	794.	256.	529.	238.	184.	143.	740.	303.	893.	177.	0.	198.	156.
110.	742.	311.	499.	208.	236.	165.	688.	273.	841.	147.	0.	168.	158.
41.	823.	370.	430.	139.	287.	224.	769.	204.	921.	78.	0.	99.	239.
35.	835.	382.	424.	133.	309.	236.	781.	198.	933.	72.	0.	93.	251.
270.	624.	397.	659.	368.	174.	247.	570.	433.	722.	307.	0.	328.	100.
412.	831.	185.	801.	510.	105.	177.	767.	575.	928.	449.	0.	470.	148.
298.	878.	160.	687.	396.	159.	87.	815.	461.	976.	335.	0.	356.	235.
399.	818.	288.	788.	497.	92.	164.	754.	562.	915.	436.	0.	457.	135.
435.	419.	568.	830.	539.	350.	423.	365.	604.	518.	478.	0.	499.	275.
652.	236.	779.	1041.	750.	561.	633.	502.	815.	334.	689.	0.	710.	486.

TABLE 16-Continued  
(Regions 16 to 29)

886.	36.	1013.	1275.	984.	795.	867.	737.	1049.	60.	923.	0.	944.	720.
164.	1012.	559.	257.	70.	486.	413.	958.	88.	1110.	201.	0.	193.	428.
276.	690.	403.	665.	374.	180.	253.	546.	439.	698.	313.	0.	334.	106.
376.	557.	503.	765.	474.	286.	357.	502.	539.	393.	413.	0.	434.	381.
269.	849.	130.	658.	367.	130.	58.	786.	432.	947.	306.	0.	327.	206.
588.	949.	192.	977.	686.	385.	377.	885.	751.	1046.	625.	0.	646.	428.
399.	976.	8.	788.	497.	259.	186.	912.	562.	1071.	436.	0.	457.	337.
836.	12.	964.	1225.	934.	846.	818.	646.	999.	107.	873.	0.	894.	670.
287.	705.	352.	676.	385.	96.	181.	642.	450.	803.	324.	0.	345.	23.
451.	1032.	88.	840.	549.	312.	240.	968.	614.	1129.	488.	0.	509.	386.
244.	620.	371.	633.	342.	148.	221.	592.	407.	592.	281.	0.	302.	74.
211.	1059.	606.	210.	117.	533.	460.	1005.	109.	1157.	248.	0.	214.	475.
289.	828.	291.	678.	387.	30.	102.	665.	452.	825.	326.	0.	347.	25.
375.	952.	27.	764.	473.	264.	191.	888.	538.	1047.	412.	0.	433.	308.
103.	757.	296.	492.	201.	221.	150.	703.	266.	856.	140.	0.	161.	165.
561.	906.	165.	950.	659.	342.	350.	842.	724.	1003.	582.	0.	619.	385.
657.	241.	784.	1046.	755.	566.	638.	507.	820.	339.	694.	0.	715.	491.
586.	877.	190.	975.	684.	313.	375.	813.	749.	974.	623.	0.	644.	356.
84.	937.	484.	431.	136.	411.	338.	883.	252.	1035.	126.	0.	147.	353.
470.	905.	109.	859.	568.	140.	220.	841.	633.	1000.	507.	0.	528.	221.
83.	765.	312.	472.	181.	239.	166.	711.	246.	863.	120.	0.	141.	181.
768.	80.	896.	1157.	866.	778.	750.	578.	931.	175.	805.	0.	826.	602.
128.	782.	275.	517.	226.	197.	129.	728.	291.	881.	165.	0.	186.	198.
154.	1002.	549.	298.	60.	476.	403.	948.	129.	1100.	191.	0.	212.	418.
590.	847.	200.	979.	688.	283.	355.	783.	753.	944.	627.	0.	648.	326.
689.	212.	816.	1078.	787.	598.	670.	539.	852.	310.	726.	0.	747.	523.
598.	761.	725.	987.	696.	508.	579.	706.	761.	858.	635.	0.	656.	503.
923.	787.	1041.	1312.	1021.	824.	887.	129.	1086.	926.	960.	0.	981.	748.
1354.	1218.	1472.	1743.	1452.	1255.	1318.	560.	1517.	1357.	1391.	0.	1412.	1179.
763.	633.	836.	1152.	861.	678.	750.	25.	926.	731.	800.	0.	821.	603.

1083.	947.	1201.	1472.	1181.	984.	1047.	289.	1246.	1086.	1120.	0.	1141.	908.
1241.	1105.	1359.	1630.	1339.	1142.	1205.	447.	1404.	1244.	1278.	0.	1299.	1066.
971.	835.	1089.	1360.	1069.	872.	935.	177.	1134.	974.	1008.	0.	1029.	796.
764.	634.	897.	1153.	862.	679.	751.	68.	927.	732.	801.	0.	822.	604.
762.	632.	895.	1151.	860.	677.	749.	66.	925.	730.	799.	0.	820.	602.
1151.	1015.	1269.	1540.	1249.	1052.	1115.	357.	1314.	1154.	1188.	0.	1209.	976.
540.	590.	456.	929.	638.	349.	424.	536.	703.	688.	577.	0.	598.	276.
573.	766.	318.	962.	671.	266.	338.	712.	736.	864.	610.	0.	631.	309.
525.	746.	326.	914.	623.	217.	290.	692.	688.	844.	562.	0.	583.	261.
587.	781.	269.	976.	685.	280.	352.	727.	750.	879.	624.	0.	645.	323.
432.	839.	233.	821.	530.	125.	197.	785.	595.	937.	469.	0.	490.	168.
706.	1066.	310.	1095.	804.	497.	494.	992.	869.	1164.	743.	0.	764.	534.
222.	1070.	617.	366.	128.	544.	471.	1016.	197.	1168.	259.	0.	280.	486.

TABLE 16-Continued  
(Regions 16 to 29)

APPENDIX 5

PRIMARY CAMPING BENEFIT,  
PER THOUSAND REGIONAL  
POPULATION, PER REGION,  
PER PARK

TABLE 17

PERCENTAGE NUMBER OF NIGHTS  
CAMPGROUNDS FULL, AND ESTIMATED DEMAND  
CURVE USED IN PRIMARY CAMPING BENEFIT  
ESTIMATION

Park and/or Campground	Percentage Number of Nights (M, J, J, A) Campsgrounds Full	Econometrically Estimated Overnight Camping Park Demand Curve Used to Calculate Primary Camping Benefits <sup>a</sup>
1. Ten Mile Lake Barkerville Historic	55	Kokanee Creek (30, 31) <sup>b</sup>
2. Forest Rose	0	Syringa Creek (32)
3. Government Hill	15	Syringa Creek (32)
4. Lowlee	0	Syringa Creek (32)
5. Bowron Lake	3	Golden Ears (85)
6. Canim Beach	12	n.d.p.
7. Lac La Hache	24	n.d.p.
8. Haynes Point	95	
9. Okanagan Lake	65	
10. Vaseaux Lake	56	Okanagan Falls (11)
11. Okanagan Falls	84	
12. Inkaneep	30	Okanagan Falls (11)
13. Ellison	72	
14. Otter Lake	65	Syringa Creek (32)

TABLE 17-Continued

Park and/or Campground	Percentage Number of Nights (M, J, J, A) Campgrounds Full	Econometrically Estimated Overnight Camping Park Demand Curve Used to Calculate Primary Camping Benefits <sup>a</sup>
15. Allison Lake	12	Birkenhead Lake (72)
16. Bromley Rock	21	n.d.p.
17. Stemwinder	18	n.d.p.
18. Yard Creek	0	n.d.p.
19. Shuswap Lake	46	
20. Bridge Lake	57	Birkenhead Lake (72)
Wells Gray		
21. Clearwater Lake	45	
22. Mahood Lake	49	
23. Spahats Creek	24	Syringa Creek (32)
24. North Thompson River	12	Syringa Creek (32)
25. Monck	26	
26. Skihist	29	n.d.p.
27. Goldpan	20	Alice Lake (71)
28. Paul Lake	4	Wasa Lake (34)
29. Champion Lakes	1	Kokanee Creek (30,31)
Kokanee Creek		
30. Redfish	12	

TABLE 17-Continued

Park and/or Campground	Percentage Number of Nights (M, J, J, A) Campgrounds Full	Econometrically Estimated Overnight Camping Park Demand Curve Used to Calculate Primary Camping Benefits <sup>a</sup>
31. Sandspit	2	
32. Syringa Creek	4	
33. Kettle River	n.a.	Okanagan Falls (11)
34. Wasa Lake	21	
35. Jim Smith Lake	25	Syringa Creek (32)
36. Dry Gulch	15	Birkenhead Lake (72)
37. Yahk	58	Birkenhead Lake (72)
38. Mount Fernie	30	n.d.p.
39. Moyie Lake	33	Alice Lake (71)
40. Crooked River	33	Syringa Creek (32)
41. Whiskers Point	9	Syringa Creek (32)
42. Purden Lake	2	Alice Lake (71)
43. Charlie Lake	2	Syringa Creek (32)
44. Moberly Lake	6	Wasa Lake (34)
Mount Robson		
45. Lucerne Lake	37	Golden Ears (85)
46. Robson Meadow	2	Golden Ears (85)
47. Robson River	12	Golden Ears (85)

TABLE 17-Continued

Park and/or Campground	Percentage Number of Nights (M, J, J, A) Campgrounds Full	Econometrically Estimated Overnight Camping Park Demand Curve Used to Calculate Primary Camping Benefits <sup>a</sup>
48. Beaumont	48	Syringa Creek (32)
49. Lakelse Lake	2	
50. Prudhomme Lake	33	Birkenhead Lake (72)
51. Maclure Lake	7	Alice Lake (71)
52. McDonald	15	Strathcona (64, 65)
53. Ivy Green	38	Miracle Beach (67)
54. Goldstream	49	
55. Montague Harbour Marine	15	
56. Newcastle Island Marine	29	Montague Harbour Marine (55)
57. Bamberton	24	Strathcona
58. Gordon Bay	37	
59. Mouat	17	Sproat Lake (63)
60. Englishman River Falls	0	Sproat Lake (63)
61. Little Qualicum Falls	5	Strathcona (64, 65)
62. Rath Trevor Beach	57	
63. Sproat Lake	2	
Strathcona		

TABLE 17-Continued

Park and/or Campground	Percentage Number of Nights (M,J,J,A) Campgrounds Full	Econometrically Estimated Overnight Camping Park Demand Curve Used to Calculate Primary Camping Benefits <sup>a</sup>
64. Buttle Lake	10	
65. Ralph River	11	
66. Elk Falls	35	Strathcona (64,65)
67. Miracle Beach	29	
68. Roberts Creek	4	Birkenhead Lake (72)
69. Saltery Bay	14	Syringa Creek (32)
70. Porpoise Bay	6	
71. Alice Lake	5	
72. Birkenhead Lake	3	
73. Nairn Falls	3	Cultus Lake (74,75,76,77)
Cultus Lake		
74. Clear Creek	23	
75. Delta Grove	40	
76. Entrance Bay	29	
77. Maple Bay	19	
E.C. Manning		
78. Coldspring	36	Golden Ears (85)
79. Gibson Pass	0	Golden Ears (85)

TABLE 17-Continued

Park and/or Campground	Percentage Number of Nights (M,J,J,A) Campgrounds Full	Econometrically Estimated Overnight Camping Park Demand Curve Used to Calculate Primary Camping Benefits <sup>a</sup>
80. Hampton	12	Golden Ears (85)
81. Lightning Lakes	38	Golden Ears (85)
82. Muledeer	31	Golden Ears (85)
83. Emory Creek	41	n.d.p.
84. Rolley Lake	11	Birkenhead Lake (72)
85. Golden Ears	9	

n.a. - not available

n.d.p. - no destination benefit since there was no region having an average length of stay equal to, or greater than 1.5 nights

a - no estimated park demand function is given if demand was directly estimated

b - campground number in parantheses.

TABLE 18

PRIMARY OVERNIGHT DESTINATION CAMPING  
BENEFIT (IN DOLLARS), PER THOUSAND  
REGIONAL POPULATION, PER PARK, ACCRUING  
FROM THE 71 MAJOR BRITISH COLUMBIAN  
PROVINCIAL PARKS, SUMMER 1975 --  
DEMAND CURVE TRUNCATED AT \$7729.63.

Note: The primary camping benefits are presented in matrix form (86 by 30). All 85 campgrounds (listed in appendix 1, table 9) are given in the columns running through the three pages of each of the three sections of the table. The 29 regional districts (listed in appendix 3, table 13, and shown in maps 1 and 2) are given in row form: regions 1 through 10 are presented in the first three pages of the table; regions 11 through 20 are presented in the next three pages; regions 21 through 29 are presented in the last three pages. Zeroes denote zero primary overnight destination camping benefit, given the particular demand curve truncation level.

In the 86th row are presented the regional totals of primary camping benefit, per thousand regional population, and in the 30th column are presented the campground totals of primary camping benefit, per thousand regional population.

PRIMARY OVERNIGHT DESTINATION CAMPING BENEFIT PER THOUSAND REGIONAL POPULATION

REGIONS 1 TO 10, AND REGIONAL TOTALS

0.00	0.00	0.00	765.10	0.00	0.00	0.00	425.46	0.00	375.87
0.00	706.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	1053.22	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	295.79	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1056.05	583.19	1112.54	948.30	638.15	1243.30	1015.54	1213.62	848.57	1212.69
3478.43	3421.27	3505.69	3430.21	3357.77	3537.30	2960.72	3564.68	3481.37	3464.10
420.64	0.00	0.00	0.00	0.00	476.43	0.00	0.00	0.00	0.00
0.00	383.64	470.02	434.15	0.00	493.61	0.00	488.47	0.00	450.36
0.00	364.27	446.72	0.00	0.00	486.62	0.00	0.00	281.11	0.00
614.87	1408.15	747.39	952.11	0.00	715.49	607.16	907.66	0.00	624.55
0.00	0.00	0.00	0.00	0.00	462.83	0.00	404.64	0.00	329.90
0.00	90.54	0.00	0.00	0.00	0.00	0.00	0.00	38.74	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
575.66	972.31	666.68	992.05	738.14	758.48	634.99	1029.83	1255.88	528.02
0.00	0.00	0.00	95.52	0.00	0.00	0.00	0.00	0.00	0.00
212.25	0.00	211.33	0.00	0.00	260.58	227.75	375.92	0.00	0.00
0.00	156.91	143.38	0.00	0.00	182.44	0.00	159.21	169.82	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	576.40	0.00
0.00	851.99	2088.89	1357.25	0.00	2473.24	2009.94	0.00	1566.86	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	83.29	0.00	0.00	0.00	0.00	0.00	0.00	99.65	0.00
0.00	0.00	0.00	388.55	0.00	0.00	0.00	0.00	368.02	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	353.89	0.00

269  
TABLE 18-(Continued)  
(Regions 1 to 10)



0.00	0.00	740.88	0.00	0.00	556.99	0.00	0.00	0.00	707.23
872.88	0.00	661.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1334.37	945.56	1225.55	956.31	0.00	877.18	809.19	855.93	997.70	1098.08
805.40	506.55	709.33	0.00	0.00	534.53	0.00	0.00	0.00	725.46
394.56	116.05	389.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00
585.19	0.00	451.72	77.97	0.00	84.03	358.43	63.31	92.64	912.30
0.00	0.00	0.00	0.00	0.00	148.93	0.00	190.57	0.00	0.00
1941.99	0.00	1877.81	1447.09	0.00	1411.68	1622.28	1512.33	1440.33	2185.57
0.00	62.12	0.00	0.00	0.00	0.00	0.00	40.55	29.54	58.88
339.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	554.08
0.00	309.70	230.16	266.64	0.00	295.02	204.89	0.00	284.83	257.34
0.00	0.00	114.96	0.00	0.00	0.00	108.89	78.72	100.21	106.58
47.26	0.00	0.00	29.29	0.00	51.32	0.00	0.00	0.00	34.50
0.00	0.00	0.00	0.00	357.38	0.00	0.00	0.00	0.00	0.00
90.54	223.19	112.65	117.07	0.00	179.49	0.00	0.00	0.00	87.82
0.00	0.00	0.00	0.00	0.00	177.51	86.17	0.00	93.64	99.58
175.01	204.01	0.00	0.00	0.00	185.04	0.00	0.00	0.00	99.87
0.00	371.03	134.02	174.32	0.00	232.67	96.54	77.47	0.00	134.22
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	430.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	523.30	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	24.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
333.98	508.74	342.34	297.54	896.07	422.52	320.99	0.00	360.58	369.98
19280.57	20511.99	22098.77	17729.51	9705.06	19258.57	15115.90	15322.16	14933.95	17141.20

TABLE 18-Continued  
(Regions 1 to 10)

PRIMARY OVERNIGHT DESTINATION CAMPING BENEFIT PER THOUSAND REGIONAL POPULATION  
 REGIONS 11 TO 20, AND REGIONAL TOTALS

0.00	0.00	0.00	0.00	895.04	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	431.55	0.00	0.00
0.00	0.00	0.00	345.33	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	510.79	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1144.57	1349.33	970.44	1610.73	707.18	1099.70	437.82	1282.38	0.00	1407.32
3498.58	3519.26	3193.65	3463.53	3536.07	3526.22	3432.80	3398.53	3575.92	3510.53
0.00	501.83	0.00	514.64	304.42	450.53	0.00	0.00	366.23	379.38
0.00	529.40	0.00	538.84	383.66	474.87	338.65	0.00	0.00	468.08
0.00	506.09	0.00	0.00	0.00	437.77	0.00	0.00	0.00	340.85
806.49	630.17	536.07	385.91	1198.74	790.52	1280.29	664.00	0.00	578.22
355.73	451.21	0.00	286.35	0.00	510.03	562.23	0.00	0.00	0.00
0.00	0.00	0.00	49.35	0.00	61.94	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
595.27	735.91	601.47	536.11	1142.98	775.58	934.36	656.30	1429.01	550.11
0.00	0.00	0.00	36.11	0.00	0.00	43.89	0.00	87.52	0.00
123.46	0.00	234.14	174.97	0.00	268.85	0.00	0.00	644.73	234.49
0.00	205.12	0.00	185.67	171.85	185.81	143.89	161.27	0.00	153.64
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	2815.05	0.00	3996.92	1376.30	2078.15	1018.16	0.00	734.90	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	452.11	332.50	379.47	0.00	0.00	269.03	0.00
0.00	0.00	0.00	0.00	446.96	0.00	499.18	589.36	0.00	0.00

TABLE 18-Continued  
 (Regions 11 to 20)

0.00	0.00	316.07	127.72	0.00	0.00	0.00	0.00	0.00	0.00
319.45	0.00	437.24	218.06	480.49	360.82	421.80	0.00	0.00	0.00
0.00	282.63	0.00	262.18	532.00	400.34	0.00	804.33	732.00	0.00
0.00	0.00	0.00	562.71	0.00	0.00	0.00	0.00	0.00	0.00
0.00	372.52	742.23	328.35	0.00	251.48	0.00	480.79	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	30.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	1176.95	0.00	0.00	0.00	0.00	0.00
498.58	0.00	0.00	0.00	1052.94	0.00	0.00	376.30	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	132.09	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	142.66	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	1017.21	0.00	0.00	0.00	0.00	0.00
0.00	0.00	285.56	729.27	2063.20	903.71	4414.48	0.00	0.00	1101.72
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	229.90	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	1493.35	0.00	0.00	0.00
0.00	1999.25	2002.74	1934.24	0.00	1979.45	2011.04	1936.56	1978.83	0.00
0.00	99.65	36.33	48.30	65.82	132.65	0.00	0.00	0.00	57.37
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
600.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	347.91	0.00
650.41	65.06	73.83	57.56	70.21	118.24	0.00	102.42	554.45	282.76
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

TABLE 18-Continued  
(Regions 11 to 20)

0.00	0.00	0.00	0.00	605.66	0.00	0.00	0.00	0.00	0.00
0.00	175.07	0.00	60.76	0.00	0.00	194.13	118.74	0.00	0.00
1266.65	857.09	778.89	661.91	1144.40	931.43	1102.83	795.81	1564.15	1191.62
774.11	0.00	0.00	0.00	0.00	578.10	0.00	531.72	1171.05	0.00
373.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
609.73	55.39	0.00	36.28	0.00	0.00	128.70	44.66	0.00	602.53
495.52	0.00	137.35	0.00	233.53	195.53	0.00	0.00	0.00	0.00
1887.04	1261.41	1171.95	942.62	1882.51	1519.16	2129.06	1284.21	3751.12	1663.98
49.46	55.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	254.83	516.87	457.00	0.00	0.00	0.00	339.76
221.98	276.40	174.40	0.00	294.12	316.20	0.00	0.00	0.00	227.58
0.00	153.49	106.34	116.52	0.00	218.44	0.00	0.00	147.23	101.30
9.09	0.00	0.00	9.28	21.66	111.56	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	134.50	48.15	0.00	0.00
91.34	112.83	36.38	123.08	0.00	191.34	0.00	0.00	0.00	0.00
0.00	151.88	67.84	118.00	131.97	186.01	188.49	77.71	610.99	93.28
137.31	144.19	0.00	123.97	208.75	189.94	0.00	43.39	0.00	0.00
125.94	152.48	0.00	115.03	204.49	211.08	193.07	80.55	332.56	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	174.62	0.00	0.00	0.00	0.00
331.52	446.17	256.56	300.54	459.68	500.61	435.10	0.00	617.48	0.00
14966.39	17935.07	12759.48	19982.53	22888.03	20969.13	21537.82	13908.71	19425.90	13284.50

TABLE 18-Continued  
(Regions 11 to 20)

PRIMARY OVERNIGHT DESTINATION CAMPING BENEFIT PER THOUSAND REGIONAL POPULATION  
 REGIONS 21 TO 29, AND REGIONAL TOTALS, AND PARK TOTALS

0.00	0.00	805.97	620.97	1024.14	536.81	0.00	0.00	0.00	5449.35
0.00	0.00	0.00	0.00	638.45	0.00	0.00	0.00	0.00	1345.31
0.00	0.00	0.00	0.00	0.00	467.53	0.00	367.59	0.00	1266.67
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1398.56
0.00	0.00	0.00	230.50	0.00	337.06	0.00	0.00	0.00	1374.14
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1134.40	1322.76	708.66	0.00	500.91	0.00	0.00	1022.46	1066.26	25636.88
3463.30	3545.41	3527.90	3535.34	3396.70	3532.06	0.00	3474.00	3438.16	96769.50
375.60	512.34	0.00	413.23	0.00	437.85	0.00	453.47	353.55	5960.12
0.00	524.86	393.69	327.13	0.00	396.91	0.00	0.00	458.29	7554.64
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2863.43
926.87	683.74	1181.78	1163.05	1826.45	0.00	0.00	813.65	800.96	20844.30
0.00	499.84	0.00	0.00	0.00	0.00	0.00	487.85	0.00	4350.64
0.00	0.00	0.00	0.00	0.00	54.15	0.00	76.46	0.00	371.18
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1062.36	745.52	905.22	850.57	883.84	820.60	0.00	499.55	1505.14	23381.92
0.00	0.00	0.00	0.00	90.60	0.00	0.00	0.00	0.00	353.63
372.82	248.04	242.46	0.00	0.00	0.00	0.00	0.00	616.30	4448.08
167.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	204.59	2391.27
0.00	0.00	0.00	0.00	0.00	507.47	0.00	0.00	0.00	507.47
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	576.40
2034.23	2787.85	0.00	0.00	0.00	1660.86	0.00	0.00	2203.38	31053.98
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
88.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	271.06
0.00	0.00	294.91	0.00	264.11	0.00	0.00	0.00	0.00	2748.71
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1889.39

TABLE 18-Continued  
 (Regions 21 to 29)

0.00	0.00	0.00	415.18	0.00	313.31	0.00	0.00	0.00	1395.54
0.00	0.00	0.00	0.00	0.00	283.85	0.00	355.51	0.00	5251.76
0.00	356.48	730.49	522.75	1044.08	429.70	0.00	0.00	407.52	8209.37
493.66	0.00	380.80	0.00	389.07	464.52	0.00	0.00	0.00	2679.64
0.00	0.00	162.99	0.00	146.28	299.54	0.00	0.00	0.00	3980.99
408.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	907.80
0.00	0.00	59.33	77.11	0.00	0.00	0.00	0.00	0.00	261.79
0.00	0.00	0.00	78.63	0.00	0.00	0.00	0.00	0.00	78.63
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	141.51	0.00	0.00	0.00	0.00	0.00	0.00	141.51
0.00	0.00	0.00	633.77	0.00	0.00	0.00	0.00	408.37	2219.09
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1927.82
0.00	99.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.64
0.00	0.00	1088.73	0.00	0.00	0.00	0.00	0.00	0.00	2564.64
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	270.76
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	142.66
0.00	0.00	0.00	618.08	0.00	0.00	0.00	0.00	0.00	2977.90
1097.96	0.00	1975.78	1553.60	4514.27	0.00	0.00	0.00	1117.83	31467.14
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	21.66
0.00	0.00	219.80	134.49	0.00	106.95	0.00	0.00	0.00	797.66
0.00	0.00	321.96	0.00	0.00	0.00	0.00	159.03	0.00	952.30
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2901.11
0.00	1998.45	1629.22	2183.15	1871.33	0.00	0.00	2127.43	1977.27	41747.82
57.63	0.00	0.00	0.00	0.00	131.41	0.00	0.00	43.03	1049.15
44.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	161.48
0.00	0.00	64.53	264.69	0.00	0.00	0.00	0.00	85.19	2765.50
0.00	45.52	0.00	345.40	0.00	55.32	0.00	0.00	0.00	3457.77
448.02	0.00	0.00	0.00	693.80	690.92	0.00	0.00	0.00	1832.74

TABLE 18-Continued  
(Regions 21 to 29)

0.00	409.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3019.96
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2043.28
0.00	763.24	849.80	1235.60	1094.82	911.77	0.00	932.97	876.14	26058.98
0.00	0.00	0.00	812.17	739.25	0.00	0.00	694.77	507.75	9090.18
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1273.65
0.00	18.88	0.00	0.00	176.41	0.00	0.00	166.04	53.28	4517.50
0.00	108.02	0.00	0.00	137.43	0.00	0.00	0.00	0.00	1646.88
1250.05	1062.65	1377.83	2465.14	2142.26	1520.53	0.00	1618.48	1432.87	43801.95
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	296.19
300.52	0.00	0.00	1251.75	0.00	579.78	0.00	544.33	0.00	5137.97
220.61	0.00	0.00	506.24	180.21	387.75	0.00	687.60	239.69	5581.36
0.00	0.00	65.54	167.25	0.00	340.88	0.00	181.78	0.00	2108.13
0.00	8.49	0.00	22.65	27.17	455.22	0.00	112.92	0.00	940.39
105.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	645.90
71.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	82.78	1520.31
0.00	0.00	188.77	0.00	277.88	119.27	0.00	0.00	92.75	2761.73
0.00	0.00	110.07	0.00	201.00	176.23	0.00	0.00	101.55	2100.34
117.71	71.50	155.90	251.43	0.00	0.00	0.00	0.00	143.48	3375.54
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
301.99	0.00	356.36	0.00	0.00	0.00	0.00	0.00	0.00	1089.22
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	523.30
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16.89	6.38	0.00	0.00	0.00	80.35	0.00	38.84	15.75	357.52
335.48	245.20	0.00	0.00	455.79	0.00	0.00	373.26	0.00	8610.13
14897.16	16063.99	17939.99	20679.84	22716.25	16098.61	0.00	15187.96	18231.89	0.00

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TABLE 18-Continued  
(Regions 21 to 29)

TABLE 19

PRIMARY OVERNIGHT DESTINATION CAMPING  
BENEFIT (IN DOLLARS), PER THOUSAND  
REGIONAL POPULATION, PER PARK, ACCRUING  
FROM THE 71 MAJOR BRITISH COLUMBIAN  
PROVINCIAL PARKS, SUMMER 1975 --  
DEMAND CURVE TRUNCATED AT \$1117.81.

Note: The primary camping benefits are presented in matrix form (86 by 30). All 85 campgrounds (listed in appendix 1, table 9) are given in the columns running through the three pages of each of the three sections of the table. The 29 regional districts (listed in appendix 3, table 13, and shown in maps 1 and 2) are given in row form: regions 1 through 10 are presented in the first three pages of the table; regions 11 through 20 are presented in the next three pages; regions 21 through 29 are presented in the last three pages. Zeroes denote zero primary overnight destination camping benefit, given the particular demand curve truncation level.

In the 86th row are presented the regional totals of primary camping benefit, per thousand regional population, and in the 30th column are presented the campground totals of primary camping benefit, per thousand regional population.

PRIMARY OVERNIGHT DESTINATION CAMPING BENEFIT PER THOUSAND REGIONAL POPULATION  
 REGIONS 1 TO 10, AND REGIONAL TOTALS

0.00	0.00	0.00	536.78	0.00	0.00	0.00	259.81	0.00	211.49
0.00	365.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	641.64	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	86.04	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
299.42	134.70	338.99	282.46	206.39	423.63	337.29	377.99	161.27	343.41
845.42	726.78	866.76	767.94	673.56	912.63	464.59	931.28	838.40	825.58
125.71	0.00	0.00	0.00	0.00	174.33	0.00	0.00	0.00	0.00
0.00	131.42	166.82	151.43	0.00	190.15	0.00	181.90	0.00	154.84
0.00	93.16	148.58	0.00	0.00	178.84	0.00	0.00	43.09	0.00
270.68	521.53	330.54	372.25	0.00	346.35	238.07	488.95	0.00	261.60
0.00	0.00	0.00	0.00	0.00	308.97	0.00	233.85	0.00	142.35
0.00	87.51	0.00	0.00	0.00	0.00	0.00	0.00	38.25	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
345.24	562.47	447.17	722.50	364.83	570.96	432.99	821.43	1008.32	301.34
0.00	0.00	0.00	94.85	0.00	0.00	0.00	0.00	0.00	0.00
165.21	0.00	150.62	0.00	0.00	221.71	172.38	325.72	0.00	0.00
0.00	80.11	65.37	0.00	0.00	104.12	0.00	81.20	92.22	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	363.41	0.00
0.00	156.78	525.75	198.36	0.00	669.55	309.68	0.00	249.31	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	43.90	0.00	0.00	0.00	0.00	0.00	0.00	67.77	0.00
0.00	0.00	0.00	298.53	0.00	0.00	0.00	0.00	277.13	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	124.19	0.00

TABLE 19-Continued  
 (Regions 1 to 10)

0.00	0.00	0.00	0.00	0.00	78.73	0.00	0.00	0.00	0.00
0.00	196.06	192.49	0.00	0.00	198.03	0.00	256.19	275.48	125.53
169.95	0.00	0.00	0.00	0.00	0.00	670.17	276.34	0.00	0.00
0.00	0.00	0.00	104.79	0.00	0.00	0.00	0.00	0.00	0.00
144.82	66.34	0.00	135.85	0.00	169.92	0.00	0.00	217.31	0.00
0.00	158.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	13.77	0.00	0.00	63.66	0.00	0.00	16.71
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	227.30	325.56	0.00	0.00	0.00	197.36	0.00	0.00
0.00	0.00	0.00	0.00	194.04	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	922.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
815.00	2018.15	515.36	788.08	697.91	0.00	303.68	235.15	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	21.23
104.75	0.00	0.00	162.02	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	231.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	516.35	0.00
913.79	382.94	946.47	533.66	0.00	701.83	742.82	612.35	0.00	876.14
39.47	0.00	139.71	0.00	0.00	79.04	62.26	0.00	0.00	0.00
101.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
253.50	181.13	751.13	132.63	0.00	0.00	0.00	0.00	0.00	0.00
149.49	0.00	403.56	0.00	0.00	81.30	87.17	0.00	0.00	208.49
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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TABLE 19-Continued  
(Regions 1 to 10)

0.00	0.00	457.62	0.00	0.00	302.63	0.00	0.00	0.00	392.68
824.62	0.00	652.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00
883.29	371.55	784.89	460.09	0.00	481.22	387.65	435.15	481.49	636.61
521.86	118.11	418.83	0.00	0.00	283.35	0.00	0.00	0.00	417.60
384.26	81.26	377.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00
575.94	0.00	441.40	68.80	0.00	78.98	350.01	58.08	67.73	899.60
0.00	0.00	0.00	0.00	0.00	143.88	0.00	182.23	0.00	0.00
1163.19	0.00	1086.48	526.65	0.00	723.20	864.78	674.04	574.19	1323.00
0.00	59.72	0.00	0.00	0.00	0.00	0.00	40.28	28.86	58.57
193.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	305.66
0.00	186.51	151.46	167.61	0.00	220.59	131.95	0.00	181.59	171.13
0.00	0.00	80.99	0.00	0.00	0.00	76.20	47.36	65.62	72.69
46.91	0.00	0.00	28.72	0.00	51.13	0.00	0.00	0.00	34.23
0.00	0.00	0.00	0.00	274.86	0.00	0.00	0.00	0.00	0.00
73.47	154.90	83.94	89.43	0.00	161.77	0.00	0.00	0.00	63.49
0.00	0.00	0.00	0.00	0.00	155.55	63.38	0.00	35.78	74.24
140.38	108.16	0.00	0.00	0.00	163.07	0.00	0.00	0.00	74.52
0.00	203.41	100.13	95.16	0.00	205.47	71.20	49.71	0.00	100.42
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	200.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	283.27	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	23.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
196.96	225.85	202.97	140.38	351.59	299.07	185.78	0.00	182.66	220.95
9747.77	8562.70	11286.50	7198.29	3688.08	8679.99	6015.60	6766.38	5976.47	8334.30

TABLE 19-Continued  
(Regions 1 to 10)

PRIMARY OVERNIGHT DESTINATION CAMPING BENEFIT PER THOUSAND REGIONAL POPULATION  
 REGIONS 11 TO 20, AND REGIONAL TOTALS

0.00	0.00	0.00	0.00	613.04	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	231.86	0.00	0.00
0.00	0.00	0.00	244.35	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	142.42	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
339.05	448.64	161.58	508.45	216.14	371.07	63.31	412.98	0.00	451.42
864.71	902.95	583.55	870.78	866.10	888.36	743.40	763.55	870.02	883.53
0.00	185.35	0.00	148.58	55.79	154.37	0.00	0.00	116.74	84.51
0.00	205.97	0.00	185.78	117.33	177.12	96.27	0.00	0.00	152.99
0.00	184.48	0.00	0.00	0.00	140.02	0.00	0.00	0.00	54.48
330.01	289.00	238.88	188.04	528.77	361.27	489.93	312.91	0.00	259.08
131.52	305.75	0.00	195.21	0.00	320.11	204.30	0.00	0.00	0.00
0.00	0.00	0.00	49.30	0.00	61.66	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
392.65	554.40	387.35	403.76	807.31	546.82	543.00	450.89	825.25	373.86
0.00	0.00	0.00	36.05	0.00	0.00	43.10	0.00	79.72	0.00
71.62	0.00	190.18	151.02	0.00	211.96	0.00	0.00	444.97	190.56
0.00	126.78	0.00	106.49	94.97	107.93	66.97	82.94	0.00	75.45
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	750.29	0.00	1033.14	344.18	557.48	243.62	0.00	182.93	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	316.93	250.01	280.56	0.00	0.00	202.30	0.00
0.00	0.00	0.00	0.00	189.31	0.00	125.19	420.08	0.00	0.00

TABLE 19-Continued<sup>283</sup>  
 (Regions 11 to 20)



0.00	0.00	0.00	0.00	242.46	0.00	0.00	0.00	0.00	0.00
0.00	169.92	0.00	59.10	0.00	0.00	134.86	112.44	0.00	0.00
812.96	469.59	370.95	356.10	535.94	489.04	455.03	369.44	789.04	787.95
468.90	0.00	0.00	0.00	0.00	286.40	0.00	254.22	582.08	0.00
364.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
599.14	49.07	0.00	33.82	0.00	0.00	82.79	40.75	0.00	595.63
481.38	0.00	132.11	0.00	205.27	186.71	0.00	0.00	0.00	0.00
1102.21	641.00	487.87	478.22	704.06	735.88	798.44	583.46	2002.71	979.21
48.67	55.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	157.75	241.54	271.19	0.00	0.00	0.00	200.69
127.77	209.26	106.70	0.00	188.25	235.76	0.00	0.00	0.00	158.75
0.00	123.91	72.67	90.93	0.00	183.34	0.00	0.00	88.20	73.36
8.96	0.00	0.00	9.25	21.23	111.26	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	67.03	31.85	0.00	0.00
56.21	97.81	23.45	114.11	0.00	166.37	0.00	0.00	0.00	0.00
0.00	125.20	41.02	107.75	80.30	152.76	100.75	55.80	310.75	74.50
109.96	122.26	0.00	113.73	133.28	157.76	0.00	27.09	0.00	0.00
89.81	130.54	0.00	104.45	133.15	179.95	118.17	51.73	191.37	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	174.22	0.00	0.00	0.00	0.00
193.21	330.54	138.10	195.68	250.34	355.34	164.94	0.00	282.93	0.00
8240.35	7776.82	5195.85	8209.51	10936.76	9623.54	8973.68	6093.16	8497.30	6257.66

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 TABLE 19-Continued  
 (Regions 11 to 20)

PRIMARY OVERNIGHT DESTINATION CAMPING BENEFIT PER THOUSAND REGIONAL POPULATION  
 REGIONS 21 TO 29, AND REGIONAL TOTALS, AND PARK TOTALS

0.00	0.00	526.58	327.27	628.90	321.51	0.00	0.00	0.00	3425.39
0.00	0.00	0.00	0.00	260.62	0.00	0.00	0.00	0.00	626.23
0.00	0.00	0.00	0.00	0.00	228.71	0.00	169.03	0.00	629.60
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	886.00
0.00	0.00	0.00	74.47	0.00	192.74	0.00	0.00	0.00	495.66
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
322.28	449.64	206.30	0.00	119.62	0.00	0.00	343.40	285.11	7604.54
833.43	927.41	851.92	866.94	705.61	887.24	0.00	826.99	804.98	22794.42
81.99	194.63	0.00	128.61	0.00	147.06	0.00	173.96	64.86	1836.49
0.00	211.60	126.80	72.55	0.00	106.12	0.00	0.00	151.57	2580.67
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	842.65
519.90	349.80	422.62	479.54	728.00	0.00	0.00	252.11	400.10	8979.94
0.00	348.96	0.00	0.00	0.00	0.00	0.00	225.33	0.00	2416.35
0.00	0.00	0.00	0.00	0.00	53.71	0.00	75.81	0.00	366.24
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
848.54	567.51	572.30	519.25	464.22	576.65	0.00	274.29	1300.77	15986.04
0.00	0.00	0.00	0.00	87.74	0.00	0.00	0.00	0.00	341.45
324.36	204.66	159.63	0.00	0.00	0.00	0.00	0.00	566.27	3550.88
89.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	126.31	1300.24
0.00	0.00	0.00	0.00	0.00	276.97	0.00	0.00	0.00	276.97
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	363.41
340.62	721.70	0.00	0.00	0.00	438.98	0.00	0.00	598.48	7320.85
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
55.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	166.98
0.00	0.00	208.63	0.00	191.47	0.00	0.00	0.00	0.00	2025.55
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	858.77

TABLE 19--Continued  
 (Regions 21 to 29)

0.00	0.00	0.00	168.27	0.00	175.71	0.00	0.00	0.00	655.31
0.00	0.00	0.00	0.00	0.00	146.25	0.00	141.34	0.00	2721.27
0.00	219.48	372.64	155.18	633.90	241.79	0.00	0.00	237.23	4420.42
194.07	0.00	130.35	0.00	132.38	183.08	0.00	0.00	0.00	948.17
0.00	0.00	88.50	0.00	51.00	203.64	0.00	0.00	0.00	2713.42
208.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	366.92
0.00	0.00	57.96	75.03	0.00	0.00	0.00	0.00	0.00	257.55
0.00	0.00	0.00	76.72	0.00	0.00	0.00	0.00	0.00	76.72
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	102.04	0.00	0.00	0.00	0.00	0.00	0.00	102.04
0.00	0.00	0.00	378.95	0.00	0.00	0.00	0.00	231.11	1465.11
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1215.84
0.00	71.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	71.79
0.00	0.00	781.26	0.00	0.00	0.00	0.00	0.00	0.00	1590.74
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	194.04
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	59.34
0.00	0.00	0.00	337.83	0.00	0.00	0.00	0.00	0.00	1966.98
515.06	0.00	906.06	474.07	3110.41	0.00	0.00	0.00	498.34	16757.31
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	21.23
0.00	0.00	176.36	98.95	0.00	77.00	0.00	0.00	0.00	619.09
0.00	0.00	282.50	0.00	0.00	0.00	0.00	147.85	0.00	846.91
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	875.59
0.00	711.20	335.59	853.13	540.54	0.00	0.00	823.33	675.74	14371.83
40.76	0.00	0.00	0.00	0.00	113.20	0.00	0.00	25.09	854.36
29.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	130.42
0.00	0.00	45.29	236.69	0.00	0.00	0.00	0.00	77.35	2487.94
0.00	25.55	0.00	281.72	0.00	41.69	0.00	0.00	0.00	2940.39
130.95	0.00	0.00	0.00	261.41	354.47	0.00	0.00	0.00	746.83

TABLE 19-Continued  
(Regions 21 to 29)

0.00	192.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1588.16
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1953.42
0.00	402.14	263.64	680.22	354.99	472.13	0.00	461.63	441.63	13434.36
0.00	0.00	0.00	421.98	264.89	0.00	0.00	380.35	234.43	4653.20
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1207.53
0.00	16.81	0.00	0.00	114.38	0.00	0.00	157.89	45.85	4276.68
0.00	104.29	0.00	0.00	52.67	0.00	0.00	0.00	0.00	1488.54
543.30	469.67	304.59	1345.69	764.01	665.51	0.00	769.13	669.23	20979.71
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	291.61
171.24	0.00	0.00	909.85	0.00	349.28	0.00	372.53	0.00	3173.09
149.49	0.00	0.00	391.57	52.65	295.89	0.00	596.21	160.42	3883.55
0.00	0.00	25.64	128.20	0.00	304.82	0.00	147.66	0.00	1581.59
0.00	8.36	0.00	22.17	26.06	454.80	0.00	112.63	0.00	935.69
75.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	449.60
48.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	63.31	1196.86
0.00	0.00	124.52	0.00	143.47	95.01	0.00	0.00	65.15	1805.93
0.00	0.00	69.86	0.00	120.26	130.20	0.00	0.00	75.64	1546.17
84.12	55.68	112.20	183.68	0.00	0.00	0.00	0.00	102.39	2362.74
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
186.37	0.00	179.74	0.00	0.00	0.00	0.00	0.00	0.00	566.46
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	283.27
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16.72	6.31	0.00	0.00	0.00	79.56	0.00	38.65	15.53	354.04
192.91	142.70	0.00	0.00	168.65	0.00	0.00	238.83	0.00	4660.37
6002.59	6402.67	7433.53	9688.56	9977.86	7613.72	0.00	6728.92	7916.88	0.00

TABLE 19-Continued  
 (Regions 21 to 29)

TABLE 20

PRIMARY OVERNIGHT DESTINATION CAMPING  
 BENEFIT (IN DOLLARS), PER THOUSAND  
 REGIONAL POPULATION, PER PARK, ACCRUING  
 FROM THE 24 BRITISH COLUMBIAN PROVINCIAL  
 PARKS FOR WHICH DEMAND FUNCTIONS WERE  
 DIRECTLY ESTIMATED, SUMMER 1975 -- DEMAND  
 CURVE TRUNCATED AT \$7729.63.

Note: The primary camping benefits are presented in matrix form (86 by 30). All 85 campgrounds (listed in appendix 1, table 9) are given in the columns running through the three pages of each of the three sections of the table. The 29 regional districts (listed in appendix 3, table 13, and shown in maps 1 and 2) are given in row form: regions 1 through 10 are presented in the first three pages of the table; regions 11 through 20 are presented in the next three pages; regions 21 through 29 are presented in the last three pages. Zeroes denote zero primary overnight destination camping benefit, given the particular demand curve truncation level.

In the 86th row are presented the regional totals of primary camping benefit, per thousand regional population, and in the 30th column are presented the campground totals of primary camping benefit, per thousand regional population.





0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1334.37	945.56	1225.55	956.31	0.00	877.18	809.19	855.93	997.70	1098.08
805.40	506.55	709.33	0.00	0.00	534.53	0.00	0.00	0.00	725.46
394.56	116.05	389.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00
585.19	0.00	451.72	77.97	0.00	84.03	358.43	63.31	92.64	912.30
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1941.99	0.00	1877.81	1447.09	0.00	1411.68	1622.28	1512.33	1440.33	2185.57
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	309.70	230.16	266.64	0.00	295.02	204.89	0.00	284.83	257.34
0.00	0.00	114.96	0.00	0.00	0.00	108.89	78.72	100.21	106.58
47.26	0.00	0.00	29.29	0.00	51.32	0.00	0.00	0.00	34.50
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90.54	223.19	112.65	117.07	0.00	179.49	0.00	0.00	0.00	87.82
0.00	0.00	0.00	0.00	0.00	177.51	86.17	0.00	93.64	99.58
175.01	204.01	0.00	0.00	0.00	185.04	0.00	0.00	0.00	99.87
0.00	371.03	134.02	174.39	0.00	232.67	96.54	77.47	0.00	134.22
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
333.98	508.74	342.34	297.54	896.07	422.52	320.09	0.00	360.58	369.98
16171.27	16693.95	18832.92	15158.34	7500.39	17126.76	15051.97	13885.73	11483.04	15076.71

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TABLE 20-Continued  
(Regions 1 to 10)

PRIMARY OVERNIGHT DESTINATION CAMPING BENEFIT PER THOUSAND REGIONAL POPULATION

REGIONS 11 TO 20, AND REGIONAL TOTALS

0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1144.57	1349.33	970.44	1610.73	707.18	1099.70	437.82	1282.38	0.00	1407.32
3498.58	3519.26	3193.65	3463.53	3536.07	3526.22	3432.80	3398.53	3575.92	3510.53
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	529.40	0.00	538.84	383.66	474.87	338.65	0.00	0.00	468.08
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
806.49	630.17	536.07	385.91	1198.74	790.52	1280.29	664.00	0.00	578.22
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
595.27	735.91	601.47	536.11	1142.98	775.58	934.36	656.30	1429.01	550.11
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
123.46	0.00	234.14	174.97	0.00	268.85	0.00	0.00	644.73	234.49
0.00	205.12	0.00	185.67	171.85	185.81	143.82	161.27	0.00	153.64
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	2815.05	0.00	3996.92	1376.30	2078.15	1018.16	0.00	734.90	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

TABLE 20-Continued<sup>294</sup>  
(Regions 11 to 20)



0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1266.65	857.09	778.89	661.91	1144.40	931.43	1102.83	795.81	1564.15	1191.62
774.11	0.00	0.00	0.00	0.00	578.10	0.00	531.72	1171.05	0.00
373.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
609.73	55.39	0.00	36.28	0.00	0.00	128.70	44.66	0.00	602.53
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1887.04	1261.41	1171.95	942.62	1882.51	1519.16	2129.06	1284.21	3751.12	1663.98
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
221.98	276.40	174.40	0.00	294.12	316.20	0.00	0.00	0.00	227.58
0.00	153.49	106.34	116.52	0.00	218.44	0.00	0.00	147.23	101.30
9.09	0.00	0.00	9.28	21.66	111.56	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
91.34	112.83	36.38	123.08	0.00	191.34	0.00	0.00	0.00	0.00
0.00	151.88	67.84	118.00	131.97	186.01	188.49	77.71	610.99	93.28
137.31	144.19	0.00	123.97	208.75	189.94	0.00	43.39	0.00	0.00
125.94	152.48	0.00	115.03	204.49	211.08	193.07	80.55	332.56	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
331.52	446.17	256.56	300.54	459.68	500.61	435.10	0.00	617.48	0.00
12966.90	16214.70	12622.13	17145.58	16076.05	18302.25	18610.54	12344.62	17844.43	12224.52

TABLE 20-Continued  
(Regions 11 to 20)

PRIMARY OVERNIGHT DESTINATION CAMPING BENEFIT PER THOUSAND REGIONAL POPULATION  
 REGIONS 21 TO 29, AND REGIONAL TOTALS, AND PARK TOTALS

0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1134.40	1322.76	708.66	0.00	500.91	0.00	0.00	1022.46	1066.26	25636.88	0.00
3463.30	3545.41	3527.90	3535.34	3396.70	3532.06	0.00	3474.00	3438.16	96769.50	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	524.86	393.69	327.13	0.00	396.91	0.00	0.00	458.29	7554.64	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
926.87	683.74	1181.78	1163.05	1826.45	0.00	0.00	813.65	800.96	20844.30	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1062.36	745.52	905.22	850.57	883.84	820.60	0.00	499.55	1505.14	23381.92	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
372.82	248.04	242.46	0.00	0.00	0.00	0.00	0.00	616.30	4448.08	0.00
167.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	204.59	2391.27	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2034.23	2787.85	0.00	0.00	0.00	1660.86	0.00	0.00	2203.38	31053.98	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

TABLE 20-Continued  
 (Regions 21 to 29)





TABLE 21

PRIMARY OVERNIGHT DESTINATION CAMPING  
BENEFIT (IN DOLLARS), PER THOUSAND  
REGIONAL POPULATION, PER PARK, ACCRUING  
FROM THE 24 BRITISH COLUMBIAN PROVINCIAL  
PARKS FOR WHICH DEMAND FUNCTIONS WERE  
DIRECTLY ESTIMATED, SUMMER 1975 --  
DEMAND CURVE TRUNCATED AT \$1117.81.

Note: The primary camping benefits are presented in matrix form (86 by 30). All 85 campgrounds (listed in appendix 1, table 9) are given in the columns running through the three pages of each of the three sections of the table. The 29 regional districts (listed in appendix 3, table 13, and shown in maps 1 and 2) are given in row form: regions 1 through 10 are presented in the first three pages of the table; regions 11 through 20 are presented in the next three pages; regions 21 through 29 are presented in the last three pages. Zeroes denote zero primary overnight destination camping benefit, given the particular demand curve truncation level.

In the 86th row are presented the regional totals of primary camping benefit, per thousand regional population, and in the 30th column are presented the campground totals of primary camping benefit, per thousand regional population.

PRIMARY OVERNIGHT DESTINATION CAMPING BENEFIT PER THOUSAND REGIONAL POPULATION  
 REGIONS 1 TO 10, AND REGIONAL TOTALS

0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
299.42	134.70	338.99	282.46	206.39	423.63	337.29	377.99	161.27	343.41
845.42	726.78	866.76	767.94	673.56	912.63	464.59	931.28	838.40	825.58
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	131.42	166.82	151.43	0.00	190.15	0.00	181.90	0.00	154.84
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
270.68	521.53	330.54	372.25	0.00	346.35	238.07	488.95	0.00	261.60
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
345.24	562.47	447.17	722.50	364.83	570.96	432.99	821.43	1008.32	301.34
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
165.21	0.00	150.62	0.00	0.00	221.71	172.38	325.72	0.00	0.00
0.00	80.11	65.37	0.00	0.00	104.12	0.00	81.20	92.22	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	156.78	525.75	198.36	0.00	669.55	309.68	0.00	249.31	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

302  
 TABLE 21-Continued  
 (Regions 1 to 10)



0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
883.29	371.55	784.89	460.09	0.00	481.22	387.65	435.15	481.49	636.61
521.86	118.11	418.83	0.00	0.00	283.35	0.00	0.00	0.00	417.80
384.26	81.26	377.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00
575.94	0.00	441.40	68.80	0.00	78.98	350.01	58.08	67.73	899.60
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1163.19	0.00	1086.48	526.65	0.00	723.20	864.78	674.04	574.19	1323.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	186.51	151.46	167.61	0.00	220.59	131.95	0.00	181.59	171.13
0.00	0.00	80.99	0.00	0.00	0.00	76.20	47.36	65.62	72.69
46.91	0.00	0.00	28.72	0.00	51.13	0.00	0.00	0.00	34.23
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
73.47	154.90	83.94	89.43	0.00	161.77	0.00	0.00	0.00	63.49
0.00	0.00	0.00	0.00	0.00	155.55	63.38	0.00	35.78	74.24
140.38	108.16	0.00	0.00	0.00	163.07	0.00	0.00	0.00	74.52
0.00	203.41	100.13	95.16	0.00	205.47	71.20	49.71	0.00	100.42
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
196.96	225.85	202.97	140.38	351.59	299.07	185.78	0.00	182.66	220.95
8144.76	6427.05	8818.31	5529.35	2294.27	7571.35	5951.94	5852.84	4431.38	7185.61

TABLE 21-Continued  
(Regions 1 to 10)

PRIMARY OVERNIGHT DESTINATION CAMPING BENEFIT PER THOUSAND REGIONAL POPULATION  
 REGIONS 11 TO 20, AND REGIONAL TOTALS

0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
339.05	448.64	161.58	508.45	216.14	371.07	63.31	412.98	0.00	451.42
864.71	902.95	583.55	870.78	866.10	888.36	743.40	763.55	870.02	883.53
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	205.97	0.00	185.78	117.33	177.12	96.27	0.00	0.00	152.99
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
330.01	289.00	238.88	188.04	528.77	361.27	489.93	312.91	0.00	259.08
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
392.65	554.40	387.35	403.76	807.31	546.82	543.00	450.89	825.25	373.86
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
71.62	0.00	190.18	151.02	0.00	211.96	0.00	0.00	444.97	190.56
0.00	126.78	0.00	106.49	94.97	107.93	66.97	82.94	0.00	75.45
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	750.29	0.00	1033.14	344.18	557.48	243.62	0.00	182.93	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

TABLE 21-Continued  
 (Regions 11 to 20)





PRIMARY OVERNIGHT DESTINATION CAMPING BENEFIT PER THOUSAND REGIONAL POPULATION  
 REGIONS 21 TO 29, AND REGIONAL TOTALS, AND PARK TOTALS

0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
322.28	449.64	206.30	0.00	119.62	0.00	0.00	343.40	285.11	7604.54	
833.43	927.41	851.92	866.94	705.61	887.24	0.00	826.99	804.98	22794.42	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00	211.60	126.80	72.55	0.00	106.12	0.00	0.00	151.57	2580.67	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
519.90	349.80	422.62	479.54	728.00	0.00	0.00	252.11	400.10	8979.94	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
848.54	567.51	572.30	519.25	464.22	576.65	0.00	274.29	1300.77	15986.04	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
324.36	204.66	159.63	0.00	0.00	0.00	0.00	0.00	566.27	3550.88	
89.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	126.31	1300.24	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
340.62	721.70	0.00	0.00	0.00	438.98	0.00	0.00	598.48	7320.85	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	

TABLE 21-Continued  
 (Regions 21 to 29)



0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	402.14	263.64	680.22	354.99	472.13	0.00	0.00	0.00	0.00
0.00	0.00	0.00	421.98	264.89	0.00	0.00	461.63	441.63	13434.36
0.00	0.00	0.00	0.00	0.00	0.00	0.00	380.35	234.43	4653.20
0.00	16.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1207.53
0.00	0.00	0.00	0.00	114.38	0.00	0.00	157.89	45.85	4276.68
543.30	469.67	304.59	1345.69	764.01	665.51	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	769.13	669.23	20979.71
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
149.49	0.00	0.00	391.57	52.65	295.89	0.00	0.00	0.00	0.00
0.00	0.00	25.64	128.20	0.00	304.82	0.00	596.21	160.42	3883.55
0.00	8.36	0.00	22.17	26.06	454.80	0.00	147.66	0.00	1581.59
0.00	0.00	0.00	0.00	0.00	0.00	0.00	112.63	0.00	935.69
48.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	124.52	0.00	143.47	95.01	0.00	0.00	63.31	1196.86
0.00	0.00	69.86	0.00	120.26	130.20	0.00	0.00	65.15	1805.93
84.12	55.68	112.20	183.68	0.00	0.00	0.00	0.00	75.64	1546.17
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	102.39	2362.74
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
192.91	142.70	0.00	0.00	168.65	0.00	0.00	0.00	0.00	0.00
4852.70	5483.91	4942.81	7044.17	8362.67	5349.63	0.00	238.83	0.00	4660.37
						0.00	5525.77	7528.02	0.00

310  
TABLE 21-Continued  
(Regions 21 to 29)

APPENDIX 6

PARK LOCATION MAPS

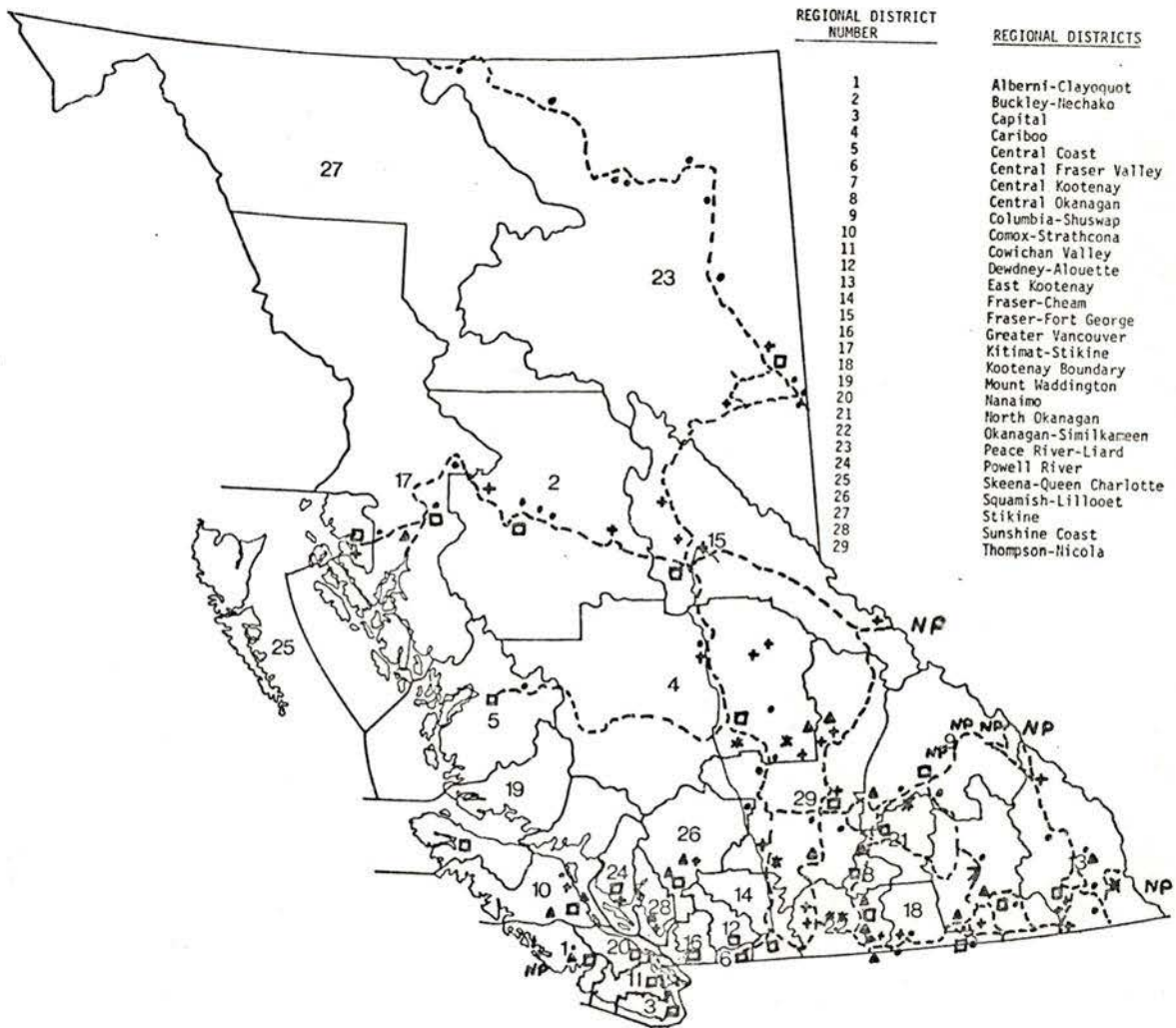
The location of all 134 parks deemed as substitutes are shown on the following four maps. These parks include the 85 major British Columbia provincial parks for which visitation data is available, the 52 major British Columbia provincial parks for which visitation data is unavailable, and the seven national parks in, or adjacent to British Columbia. Map 3 is a map of the whole province showing the location of most of the parks and all of the regional centres listed in table 14 (p. 245). The next three maps (4, 5 and 6) show the location of the regional centres and parks in, respectively, the north half of the province, the south half of the province, and the Vancouver Island and lower mainland area.

The location of each park is denoted by a symbol (explained below) and is accompanied by a number which corresponds to the official provincial road map (Beautiful British Columbia--Road Map--The Four Season Vacation Land--1976-1977, issued by the Department of Recreation and Travel Industry, Victoria, 1975). All of the parks are listed in table 9 (p. 214) which gives the park number with reference to the primary data and benefit results, the park number given by the official provincial road map (the number shown on maps 4, 5 and 6), and a grid reference which applies to

maps 4, 5 and 6, and to the official road map.

- Map Legend:
- - regional centre
  - - major highway
  - ▲ - park for which demand was directly estimated
  - ⊕ - park for which demand could not be directly estimated; demand equation allocated to it for benefit estimation
  - \* - purely transient park: camping group average length of stay less than 1.5 nights
  - - major substitute provincial park for which visitation is unavailable
  - NP - national park

PARKS OF BRITISH COLUMBIA

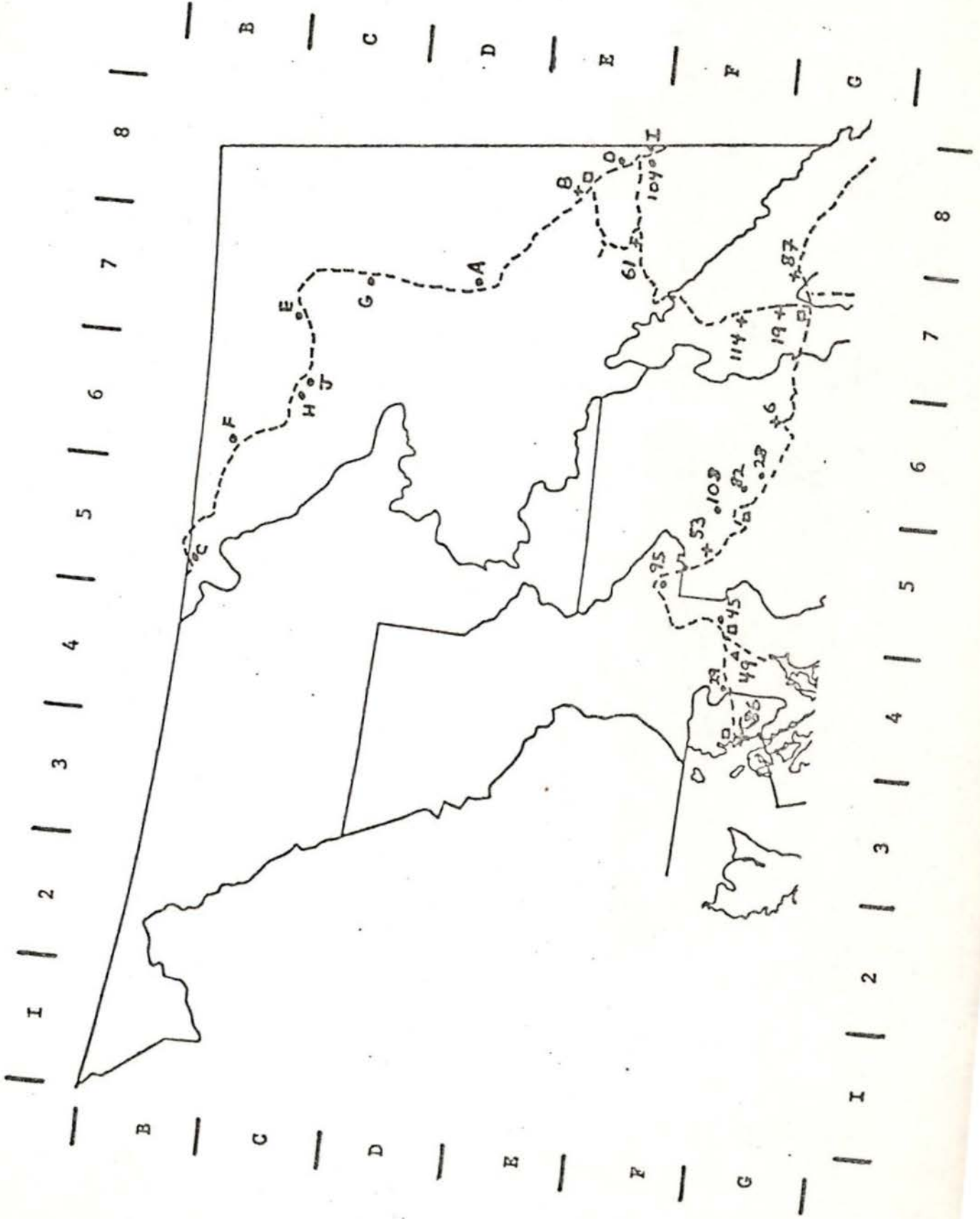


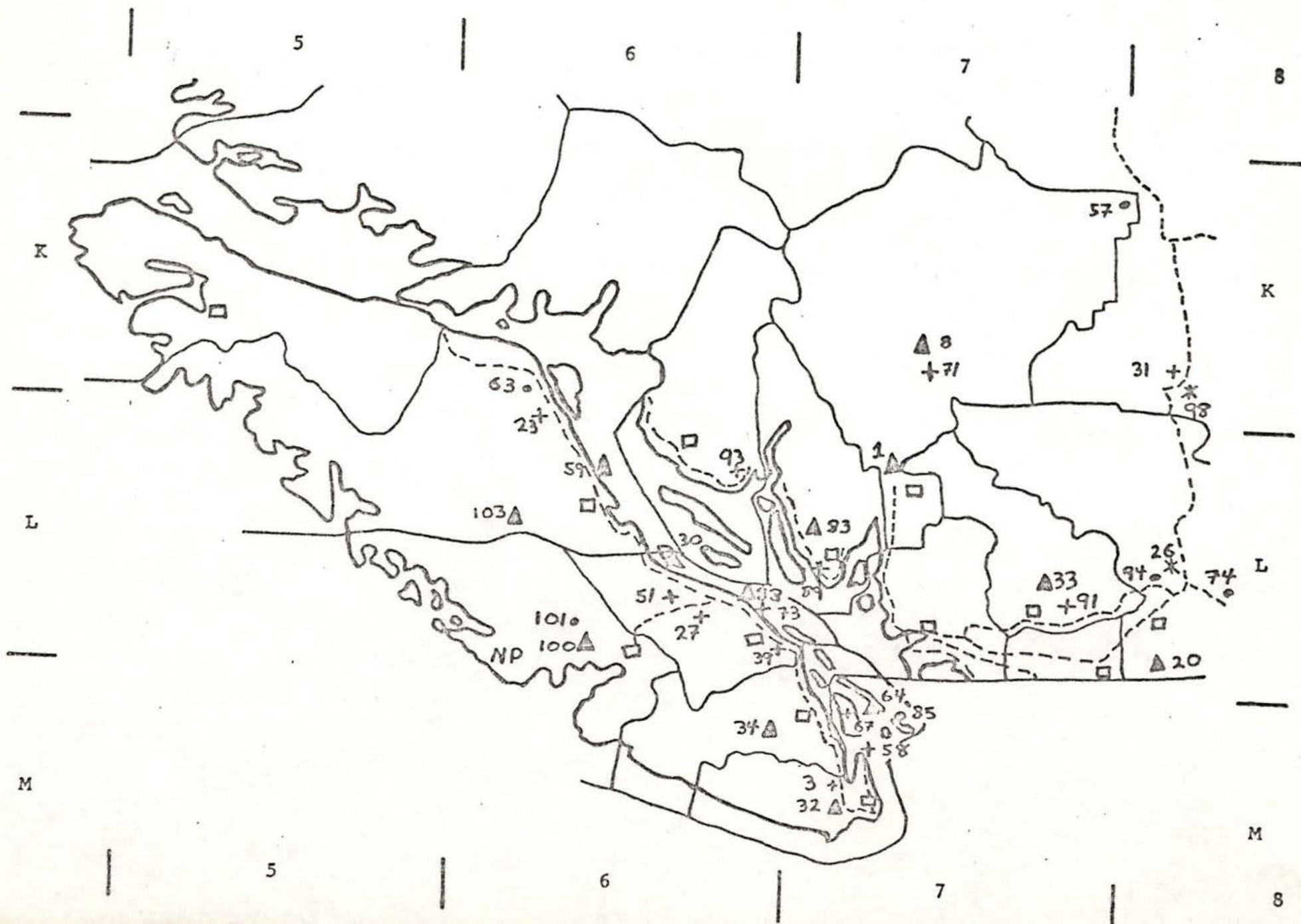
REGIONAL DISTRICT  
NUMBER

REGIONAL DISTRICTS

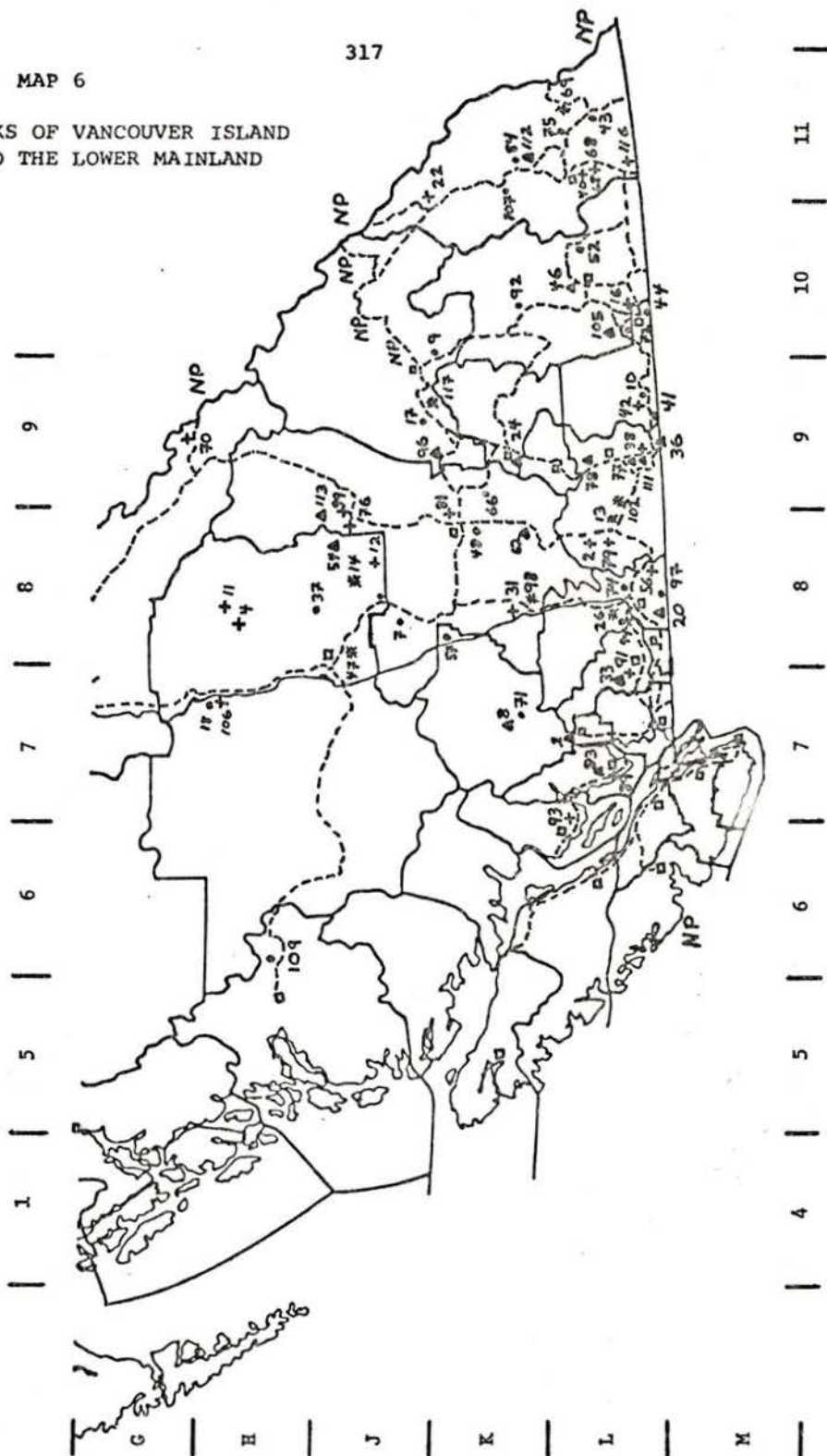
- |    |                        |
|----|------------------------|
| 1  | Alberni-Clayoquot      |
| 2  | Buckley-Nechako        |
| 3  | Capital                |
| 4  | Cariboo                |
| 5  | Central Coast          |
| 6  | Central Fraser Valley  |
| 7  | Central Kootenay       |
| 8  | Central Okanagan       |
| 9  | Columbia-Shuswap       |
| 10 | Comox-Strathcona       |
| 11 | Cowichan Valley        |
| 12 | Dewdney-Alouette       |
| 13 | East Kootenay          |
| 14 | Fraser-Cheam           |
| 15 | Fraser-Fort George     |
| 16 | Greater Vancouver      |
| 17 | Kitimat-Stikine        |
| 18 | Kootenay Boundary      |
| 19 | Mount Haddington       |
| 20 | Nanaimo                |
| 21 | North Okanagan         |
| 22 | Okanagan-Similkameen   |
| 23 | Peace River-Liard      |
| 24 | Powell River           |
| 25 | Skeena-Queen Charlotte |
| 26 | Squamish-Lillooet      |
| 27 | Stikine                |
| 28 | Sunshine Coast         |
| 29 | Thompson-Nicola        |

PARKS OF NORTHERN BRITISH COLUMBIA





MAP 6  
 PARKS OF VANCOUVER ISLAND  
 AND THE LOWER MAINLAND



VITA

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British Columbia

Author



Signature

Robert J. Richards

Name

June 1977

Date