COTTAGING AND THE COST OF TRAVEL

by

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ABSTRACT

Many North American urban dwellers find lakeshore cottaging to be an attractive activity. On a typical summer weekend in most North American cities large numbers of cottagers make automobile trips ranging in length from only a few miles to several hundred miles in order to reach their cottages.

Many cottagers from the Greater Vancouver area travel greater distances to reach their cottages than do cottagers from other large cities. A large portion of these distant cottage areas were developed in the nineteen sixties and early seventies when personal transportation was very inexpensive. The mid nineteen seventies have been the scene of substantial increases in energy costs with subsequent rises in the cost of transportation. When the possibility of further energy price increases is considered it appears that there is a distinct possibility of these distant cottages experiencing a drastic decline in use. This would have a number of implications for planners in British Columbia with one of the most important being the increase in demand for cottaging (or similar activities) close to Vancouver.

In order to determine the magnitude of the response of cottagers to transportation cost increases questionnaires were mailed to four different groups of cottagers who resided in Greater Vancouver. Three of these groups consisted of cottagers who owned cottages on the British Columbia mainland at varying distances from Vancouver (the cottages of the first group were located about seventy miles from Vancouver while

the third group's cottages were located about 330 miles from Vancouver). The fourth group consisted of Vancouver cottagers who owned cottages on Vancouver Island.

The data collected measured responses to recent gasoline price increases, responses to ferry fare increases, and cottagers' anticipated responses to future gasoline price increases. It was found that cottagers had responded to both the ferry fare increases and gasoline price increases with reductions in the use of their cottage. The data was also used to estimate the effect of future gasoline price increases on cottage use. The study reveals that the costs of reaching distant cottages is presently at a level such that further increases could severely curtail the use of these cottages.

These findings can be considered in conjunction with estimated future trends for energy prices to determine the magnitude of the effect of transportation costs on cottaging at a given time. This result could then be used to plan for alternative opportunities closer to Vancouver.

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CHAPTER ONE

INTRODUCTION AND ORGANIZATION OF THE STUDY

Background

Cottaging is a popular recreational activity in present day North American society. A general definition of cottaging is the use of a second home for recreational purposes. Most cottaging activity is water oriented with the only major exception being ski cabins. In British Columbia we have the further breakdown between sea-side cottages and cottages oriented toward bodies of fresh water (primarily lakes). This thesis will be directed towards those cottages located near freshwater lakes.

Cottaging in some form or another has been a part of man's life for centuries. In fact the use of summer villas for recreational purposes was a very popular pursuit of the wealthy people of ancient Rome. (Plotnikoff, 1969). This phenomena has carried on in various societies which have existed since the time of the Romans. Sizeable vacation home communities arose in the Adirondack area of New York State in the 1800's. (Payne, Gannon, and Irland, 1975) By the 1920's automobiles had come into general use, the work week had shortened, and incomes had risen. More people were able to escape the crowded cities on weekends with the more affluent travelling to second homes close to metropolitan areas. (Payne et. al., 1975).

It was not until the fifties and sixties that cottaging began to experience the tremendous growth rates which we know today. During this period a fairly large proportion of the North American population began

to emerge as a middle and upper middle class characterized by relatively high incomes and quite large amounts of leisure time. These years also witnessed the start of mass merchandizing of recreational land. (Ragatz, 1974, p. 17) Roads and automobiles also improved during this period which opened up more distant areas to cottaging. While the privelege of owning a second home for recreational purposes is still limited to middle and upper class North Americans the last twenty-five years have seen the proportion of our population to whom cottage ownership is a real possibility rise dramatically.

There are many reasons for the current great interest in cottaging. The pioneer heritage is strong in North America and with ever increasing numbers of people living in large urban centres a strong desire to get out into more natural surroundings has developed. Various outdoor sports such as boating and water skiing which are strongly linked to cottaging have become very popular in the last two decades (due of course to the development of the outboard motor). Once underway the trend towards cottaging became self reinforcing since the cottage emerged as a status symbol. (Ragatz, 1969, p. 50) This is particularly true among the middle class of our society who have only recently been able to join the ranks of cottage owners.

In Canada lakeshore cottaging first became popular in the East with the residents of Toronto and Montreal colonizing the lake areas north of these two cities. Many of these areas (such as the Muskokas) were developed for this purpose in the first half of the twentieth century. Cottaging has spread to many more lake areas in Eastern Canada since that time. Due to the large numbers of lakes in Eastern

Canada cottagers from even the largest cities do not have to travel exceptionally great distances to reach their cottages. In fact a study of cottagers from the Metropolitan Toronto area showed that the average distance travelled to their cottages was 135 miles with the range being from sixty to two hundred miles. (Hodge, 1970) (The population range would be much greater than this since the sample for this study was very small, N=18 cottagers.)

In British Columbia the situation is somewhat different than it is in Eastern Canada. A cursory examination of a map of British Columbia will show that there are not nearly as many lakes in this province as there are in Eastern Canada. This is particularly true with regard to the southwest corner of the province. Due to the availability of alternative recreational resources Vancouver cottagers are not as dependent upon lakes as are Eastern Canadians. However many Vancouverites have been brought up in Eastern Canada and to those people the term cottage is almost synonymous with lakeshore cottage. Thus we find that many Vancouverites drive long distances to reach lakeshore cottages. In fact almost twenty percent of Vancouver cottagers travel about three hundred miles (one way distance) to reach their cottages. (Taylor, 1972)

In general cottaging activity originating in the Vancouver urban field seems to be much more diverse, both in terms of its recreational resource orientation and in terms of distance from permanent residence to cottage than is the case in Eastern Canada. There are many reasons for this but the major ones are undoubtedly related to the

great variety of recreational resources which exist in British Columbia. Within three hundred miles of Vancouver the prospective cottager can choose between seaside, mountain, or lakeshore locations. Another important variable in this respect is climate. For example nearly all tourist advertisements for the Okanagan or South Cariboo areas stress the sunny climates of those areas. It does seem that many Vacouverites are willing to travel the extra distance to these areas in order to relax in a warm, bright climate.

Cottaging and the Automobile

At the present time the cottage and the automobile are almost inseperable since, for the majority of cottage owners, transportation to the cottage is dependant on the family car. Public transportation to cottage areas has never been very widespread in British Columbia but at one time was quite important in Eastern Canada. (Jaakson 1974, p. 220) Even in Eastern Canada public transportation to cottages is a thing of the past with one hundred percent of the cottagers in a Toronto cottager survey indicating that they travelled by automobile although alternative modes of transportation were usually available. (Hodge, 1970, p. 5)

The automobile is ideally suited for home to cottage travel. It provides a very flexible mode of transportation at a moderate price. The automobile also allows the cottager freedom of movement around the vicinity of his cottage while he is there. For those cottagers who wish to transport bulky and heavy recreational equipment such as boats or snowmobiles automobile transportation is essential.

When people leave their homes in urban areas to go to their

cottages they generally wish to go to an area which is much less densely populated than is the city from which they came. Therefore most cottage areas are very spread out which makes the automobile even more of a necessity. This is particularly true of areas developed in the fifties and sixties. Some of the older cottage areas such as Cultus Lake have evolved in a very compact nature. This is also true of some of the developments of the last few years such as Block Brothers 108 Mile Recreational Ranch. Aside from these and comparable exceptions most typical lakeshore cottage areas in British Columbia are not particularly well suited to access via public transportation.

It can be safely said that without the cheap, efficient automobile transportation which we presently enjoy in British Columbia cottaging would not have developed to nearly the degree which it has.

The Energy Situation

The energy crisis can be taken as meaning a situation in which demand for energy will exceed supply at reasonable prices. (Although the inclusion of the word "reasonable" does reduce the objectiveness of the definition of the energy crisis it is necessary since supply and demand will be equal in a situation of extreme scarcity if prices are set high enough.) When this occurs one of the immediate and visible manifestations will be a shortage of gasoline for personal transportation.

The introduction to the energy crisis occurred in the United States and in Western Europe in the fall of 1973 during the Arab oil embargo. Some gasoline rationing occurred in Europe at this time but

the United States weathered the storm with a policy of "controlled chaos" in which long lineups and irregular gas station hours discouraged many motorists. (Carter, 1974) There was a definite reduction in gasoline consumption during this period and it is certain that many unnecessary automobile trips were eliminated. The Arab oil embargo took place during the winter and therefore the effect on cottage use was probably slight. There was probably a substantial effect on the use of ski areas but there do not appear to be any reports on this aspect of the reduced oil imports.

While the Arab oil embargo was an "artificial" energy crisis, it could prove to be an accurate forewarning of the future as demand escalates and supplies dwindle. While it is difficult to predict the exact energy situation with which we will be faced in five, ten, or twenty years some general comments can be made about the future. Our demand for energy in general and gasoline in particular has continued to grow since 1973 and will continue to do so barring radical price increases. At this present rate of increase in demand it is probable that real supply shortages will occur in the next decade or two. If and when this does happen either rationing or drastic price increases or both will take place. Before a major crisis comes about it is likely that there will be more oil price increases by producing countries in response to rising demand and shrinking supplies.

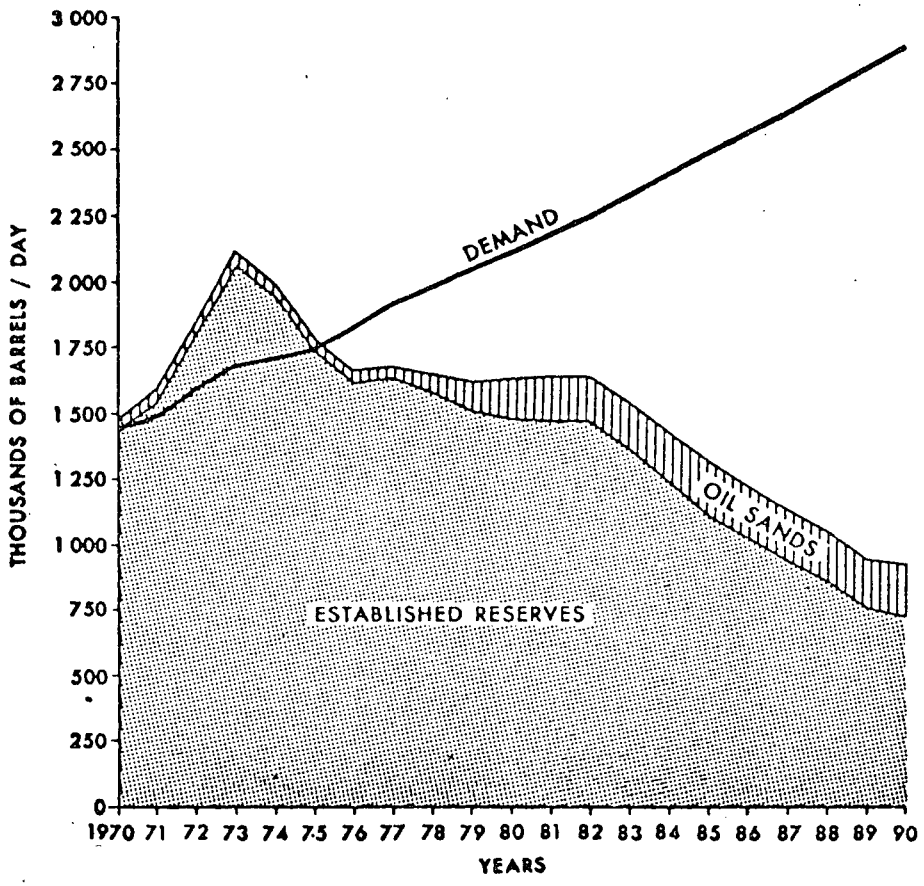
In Vancouver from 1974 to 1976 gasoline prices have risen from about fifty-five cents per gallon to about eighty-five cents per gallon. (These figures are averages of low and high prices for regular gasoline in the Greater Vancouver area.) (B.C. Energy Commission, 1975, p. 15)

This is an average price rise of about ten percent per year when prices are deflated with the consumer price index of Canada. (Statistics Canada, 1976) (Between January, 1974 and June, 1976 the Consumer Price Index rose about 28 percent whereas gasoline prices rose about 54 percent. This equals an approximate real increase in gasoline prices of 25 percent which translates to a real rate of increase of about 10 percent per year.) If this rate continues average per gallon prices would be about $1.25 in 1981 and $1.70 in 1986 (in 1976 dollars). The period under consideration has also seen increased government taxes on gasoline which do contribute substantially to the rather high rates of price increase mentioned. However this does not seriously reduce the validity of these figures since if the Canadian government had allowed gasoline prices to increase freely at the rate dictated by world oil prices the gasoline price increase in Canada would have been at least as much if not more than what it was with the imposition of the extra taxes.

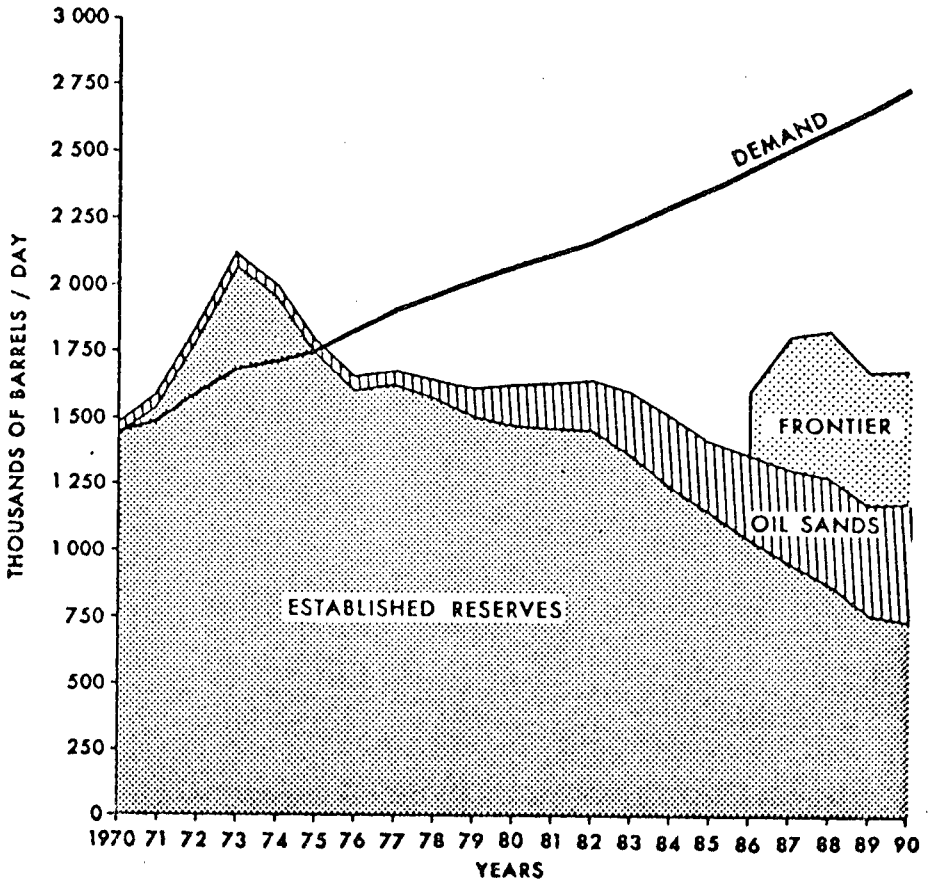
The central point in the Canadian oil situation is that in 1975 Canada became a net importer of oil instead of a net exporter as has been the case in the past. (Energy, Mines, and Resources, 1976, p. 24) As Figure #1 shows this trend will continue into the future. (Energy, Mines, and Resources, 1976, p. 75) Thus in the long run Canada has little choice but to pay the international price for oil.

There are some gasoline price increases which are presently planned for Canada and thus are nearly certain to occur. The Department of Energy, Mines, and Resources in their "National Energy

Domestic demand and availability: oil (1970-1990; low-price scenario)



Domestic demand and availability: oil (1970-1990; high-price scenario)



Strategy" state an objective of moving domestic oil prices toward international levels within the next few years. Canadian domestic oil prices are currently $8.00/barrel with international prices being about $13/barrel (delivered to Eastern Canada). (Energy, Mines, and Resources, 1976). This impending domestic crude price increase obviously implies increased gasoline prices for Canadians. In fact the entire amount of this increase will be felt in real terms since O.P.E.C. will probably continue to raise the world price of oil at a rate sufficient to keep up with inflation in Western countries. This 60 percent increase in the price of crude oil will result in a smaller percentage increase in gasoline costs (due to constant costs such as refining, distribution, taxes, etc.,) but one that is substantial. In fact this increase in the price of crude oil will add about 14¢ per gallon to the cost of gasoline since about 35 Imperial gallons of gasoline can be produced from one barrel of petroleum.

Aside from this upward adjustment in Canadian domestic prices and possible increased gasoline taxes (to reduce demand and therefore alleviate balance of payments problems caused by massive imports of expensive oil) some observers believe that oil prices will be relatively stable for the next few years. For example:

> We subscribe to the view that world oil prices will continue to increase, but at moderated rates, probably no greater than the general rate of inflation being experienced by western industrialized nations. Significantly higher rates are not likely because the world oil price is already at the limit where further increases would only serve to promote the drive for energy independence, hasten the search for new energy sources, and render economic those sources previously deemed uneconomic. Since these effects would only serve to erode the earnings potential of O.P.E.C. oil reserves, attempts by the cartel to increase oil prices too rapidly would not be in it's own self interest." (B.C. Energy Commission, April, 1976)

Thus in terms of maximizing short term revenue for oil producing countries petroleum prices are probably already near optimal levels. However in the future as demand increases, and supplies dwindle it may be in the interest of oil producing countries to set much higher real prices for their petroleum.

It does seem that the trend of rapidly increasing gasoline prices of the last three years (1974-1977) will slow down to some extent between now and 1980 but the 1980's may well see an intensification of price increases or rationing.

To put these comments in perspective it should be noted that gasoline presently costs over $2.00 per gallon in many European countries.

Keeping in mind the strong link between cottaging and the automobile it does seem likely that the phenomena of rapid growth of cottaging in the fifties and sixties may be altered considerably by energy restrictions. In their report "Subdividing Rural America" the American Society of Planning Officials cites the energy crisis of 1973 as the major reason for the sharp reduction in recreational land sales which had previously been booming. (American Society of Planning Officials, 1976) Reiner Jackson views the situation this way:

> It is quite likely, however, that at least for some families, where the expense of maintaining a cottage already strains the budget, the prospect of increasingly more expensive private automobile travel may result in changing recreation activity styles. These changes may be from cottage use to more intensive use of public parks and other recreation facilities close to urban centres. Public transportation to cottage areas, once quite important, may have to be re-examined within the novel context of the emergent view of what we consider to be appropriate uses of energy resources. (Jaakson, 1974, p. 220)

In light of these comments it is probable that some presently popular

trends in outdoor recreation in general and cottaging in particular will be subject to change in the near future.

The Purpose of this Study

In North America our patterns of recreational travel and cottaging (and of course our entire lifestyle) are built on an abundant supply of cheap energy. Prior to 1973 and probably even now our decisions which commit us to a certain course of action in the future are based on the assumption that energy will continue to be freely available at relatively low prices (i.e. similar to the prices of today). As I have explained briefly it is extremely improbable that in the future energy will continue to be as freely and cheaply available as it is presently.

Acquiring a cottage is a decision which falls into the category of those which commit one to a certain course of action in the future. The degree to which this statement is true varies from one cottage owner to another but overall there is a substantial degree of intention to use the cottage regularly. Other cottage studies have shown frequency of use to vary primarily between every weekend in season and once a month in season depending on the distance from permanent residence to the cottage. (Collins & Hardwick, 1972; Hodge, 1970) Any level of use within this range does indicate that the aquisition of a cottage is a substantial commitment to using it reasonably often. Thus there is little doubt that cottagers are counting on a continuation of the present situation of cheap energy. The only exception to this is those people who have acquired a cottage primarily for the purpose of using it as a retirement home.

In light of this situation in which the cottaging phenomena has

grown on the basis of cheap energy supplies the central purpose of this thesis is to investigate the implications which energy shortages and/or price increases will have for lakeshore cottaging. There are certainly many possible effects. One of the most obvious is that those people whose cottages are located at great distances from their homes will probably use their cottage with diminishing frequency as gasoline prices rise. However, much more knowledge than this is necessary if there is to be effective planning for future cottage and other recreational developments.

In order to do this we should have a good idea what response (in terms of decreased cottage use and decrease in demand for additional cottages) to expect to a given price rise for gasoline. We should also have some ideas about what sort of substitute activities are going to be pursued by displaced cottagers. These people have in most cases been spending a substantial portion of their free time at their cottage and will now have extra time on their hands. Are they liable to buy another cottage closer to home? Closer to public transportation routes? Will they take resort vacations? Use public recreation facilities nearer their home? Or stay at home? The answers to these questions are all relevant and important to recreational and land use planning for the future.

By informed planning today the effects of possible future energy shortages and price increases on cottaging can be reduced considerably. This can happen by a number of different processes. New cottage developments could be located closer to the permanent residences

of the people who will be using them. New developments could be located and designed in such a way as to make public transport to and from them a real possibility. The expansion of public transit to serve established cottage areas could be considered. Alternative recreational facilities closer to cities could be developed. There are many alternatives to the current situation of extensive cottaging based on cheap energy. Which ones should be considered and when they should be considered is dependant upon the precise nature of the relationship between cottaging and the availability of cheap energy. It is intended and hoped that this thesis will provide planners with some of information necessary to make these decisions.

The emphasis of the thesis will be primarily on the relationships between cottaging and energy as the cottager sees it. Some writers on the subject have suggested that automobile transportation to distant cottages may not be an appropriate use of our energy resources. (Jaakson, 1974) Investigation into this question is largely a question of personal values and therefore is not a central part of this thesis.

The Need for a Study of this Nature

One of the major reasons why work of this type is needed is that although this type of research would be useful to regional planning (in the ways explained previously) little has previously been done in the field. In fact a preoccupation with other more pressing problems such as natural resource development has resulted in cottaging studies being given very low priorities. In the past a major reason for the lack of research into cottaging is as follows:

> The reasons for this observed paucity of research stem mainly from two factors. The first of these is that cottaging is unrelated to any facet of governmental administration and consequently research in this sphere is selfom demanded for planning purposes. Secondly it is both expensive and difficult to obtain data on this area of recreational activity. (Campbell, 1967, p1)

In British Columbia (and in many other Provinces) we now have regional governments which can plan for and regulate cottage development. Although cottaging has traditionally been unplanned and free from restriction, that time is rapidly coming to an end. Since the trend is toward planning for cottaging and we now have a means of accomplishing that goal (the Regional Districts) this is the time to undertake studies of cottaging.

In particular it is presently important that work be done on the relationship between cottaging and energy. While some previous research has been done on cottaging in general and there is a substantial amount of literature relating to outdoor recreation in general there seems to be very little which relates either outdoor recreation or cottaging to its energy base. This is a serious gap in the literature since without it any planning for future cottaging will necessarily be based upon speculations about this relationship. Those studies which were most closely related to my subject area specifically mentioned the need for research in this field:

> Finally research is needed to predict the amount, quality, and location of future second home development. Demand and marketing studies can help provide this information. Specific attention must be paid to the effects of continued shortages of energy and potential limitations imposed by higher costs of automobile transportation. (Payne, Gannon, and Irland, 1975)

Thus it is my opinion that this research will help to fill an important gap which presently exists in the literature.

Scope of the Study

The scope of this study will be restricted in a number of dimensions. Up to this point the terms cottaging and lakeshore cottaging have been used rather loosely. This investigation will concentrate solely on lakeshore cottaging. The definition of lakeshore cottaging for the purposes of this study will include all cottages fronting directly on lakes and those cottages whose primary reason for existence is a nearby lake and are located within one quarter mile of the particular lake. A cottage is a home located either on or within one quarter mile of a lake and is used primarily in the summer for recreational purposes. Cottagers are those people who own and use these buildings.

In conceptual terms the geographic scope of the study is the cottage field of the Greater Vancouver area. Since this cottage field extends outwards from Vancouver in many different directions it was necessary to choose only one slice of this cottage field. According to this principle it was decided to focus on lakeshore cottaging along highways #1 and 97 (i.e. from Vancouver through the Fraser Valley and Canyon into the Cariboo). Within this universe of cottagers a sample was selected. When other types of cottaging are brought into the study it is only for the purpose of comparison. Thus while the relationship between cottage use on Vancouver Island and ferry rates will be considered this will be done only to shed more light on the lakeshore cottage use-energy cost question.

The study will focus on the relationship between cottaging and energy as that relationship is brought out in gasoline consumption for

travel to and from the cottage. Other aspects of energy use at the cottage such as power boats for waterskiing will not be considered. This is done in order to prevent the results from becoming too confusing.

A major thrust of this investigation will be devoted to developing a relationship between energy (i.e. gasoline) costs and the demand for cottaging. The scope of the thesis will be considerably wider than this however in order to make the results more suitable for planning purposes. Therefore an effort will be made to examine alternatives to automobile trips to distant cottages. Alternatives such as other forms of transportation, closer cottages, and other activities instead of cottaging will be considered.

Literature Review

There are two major categories of literature which are pertinent to this thesis. One of these is the body of literature which concerns itself with the measuring of the demand for and the value of outdoor recreation. While it could be debated as to whether or not cottaging itself is a form of outdoor recreation it is at least very closely related to it. Therefore this body of literature is very important to the study.

The second major category of literature which is relevant to the study is that relating to this price elasticity of demand for gasoline. (Price elasticity of demand is the percentage change in the quantity of a good demanded in response to a one percent change in its price.) As is apparent from this definition this literature is primarily concerned with determining the relationship between gasoline price changes and

changes in quantity demanded. This relationship is obviously very important to my study. Unfortunately there seems to have been relatively little research in this field. The research which has been done has concentrated on the aggregate price elasticity of demand for gasoline as opposed to considering the price elasticity of demand with respect to specific uses. (Houthakker, Verleger, and Sheehan, 1974; Houthakker and Verleger, 1974) This is a significant drawback to using these studies as a comparison to this study since it is likely that the price elasitcity of demand for gasoline varies substantially with respect to different uses. (i.e. for recreational travel versus driving to work)

Nevertheless it is still worthwhile to consider the results obtained by these studies. These two investigations (Houtakker, Verleger, and Sheehan; Houthakker and Verleger) differ in data base, methodology and conslusions. The Houthakker-Verleger study indicates that for the United States as a whole the short run price elasticity of demand for gasoline is -.43 and the long run price elasticity of demand is -.75. This analysis is based on real, per capita consumption for each of the forty-eight states and uses annual data for the periods from 1949 through 1971. The Houthakker, Verleger, and Sheehan study is based on quarterly data from 1963 through 1972. Sharply differing conclusions were reached. The short run price elasticity of demand was found to be -.075 with the long run estimate being -.24. One critic suggests that the higher absolute price elasticities found in the Houthakker, Verleger study may more accurately reflect the true demand elasticities. (W.J. Mead, 1974) Another source makes the following comments about the price elasticity of demand for gasoline:

> The price elasticity of demand for gasoline is known to be low, such as -.2: it is expected to be higher as the price rises. In other words, the higher the price of gasoline the more sensitive people become to a small change in its price. (Earl Rolph, 1975)

Thus even if the highest estimate of the Houtakker-Verleger study is correct the price elasticity of demand is relatively low. (less than one in absolute value)

It must be noted however that relatively low price elasticities of demand for gasoline by no means imply that gasoline price increases will have a negligible effect on cottaging. As was mentioned earlier gasoline price increase of 100 percent (in real terms) are by no means out of the question in the next decade or two. A price increase of this magnitude when coupled with a price elasticity of demand of -0.50 would result in a 50 percent decrease in gasoline demand. (which would lead to a significant reduction in cottaging) Also it must be remembered that these estimates are with respect to total demand for gasoline and not just for recreational gasoline demand.

The literature concerned with the economics of outdoor recreation suggests several different ways of measuring demand for and value of outdoor recreation. The idea behind most of this literature is that since most outdoor recreation involves the use of recreational resources (such as lakes, mountains, beaches, trails, etc.) which are generally provided free of charge (either by nature or by the Government) the outdoor recreationist is appropriating a "consumer's surplus" for himself. Therefore the outdoor recreationist should be willing to pay up to the limit of that "consumer's surplus" for the opportunity to partake in the particular type of outdoor recreation. The literature attempts to devise

various methods by which this consumer surplus can be measured in order to determine the value of these resources.

There are two major approaches to the estimation of willingness to pay by consumers of outdoor recreation. One of these is a direct method which relies on interviews and the other is an indirect method based on travel costs. A standard example of the direct method of consumer surplus estimation is a study called "The Value of Big Game Hunting in a Private Forest". (Robert K. Davis, 1963)

> The willingness to pay of a sample of users was determined in interviews on the site. The interviews included among other things, a bidding game in which respondents could react to increased costs of visiting the area. Bids were systematically raised (or lowered) until the user switched his reaction from inclusion to exclusion (or vice versa) . . . Demand curves showing how quantity demanded increases as price is lowered are derived from this data simply by arraying the responses of willingness to pay per household unit and cumulating downward. That is, the number of buyers who would pay as much or more than a given price is calculated for each price. The resulting distribution function shows the number of households who will be in the market at any price. (Davis, 1963, p. 395)

Thus a simulated demand curve for hunting is derived by this method.

The other major approach to the estimation of the magnitude of the consumer's surplus is outlined in Marion Clawson's work "Methods of Measuring the Demand for and Value of Outdoor Recreation." (Clawson, 1959) This method is based on the fact that since user charges for most forms of outdoor recreation are either very low or non existent the major cost involved in participation is the travel cost in going from home to recreation site. In the Clawson approach one reaction area is selected (i.e. Yosemite park) and the location of permanent residence of a sample of the user population is determined. User origin zones are

constructed at varying distances from the recreation area and the population in each zone is determined. A user rate is then calculated for each zone by combining the survey information with the zone population data. An approximate travel cost is calculated for the journey from each zone to the park. It is assumed that only monetary travel costs are important and that time costs are not. It is also assumed that at the margin there is no consumer surplus in each zone. (i.e. that the "last person" who uses the park from each zone would not do so if it cost him slightly more than it presently does to do so) A demand curve for the use of the park (by prospective users at different distances from it) is thus constructed. The effect of the imposition of a user fee (or indirectly the consumer surplus) on use from a given zone is estimated by moving along the curve to the point where travel cost plus user fee for the zone in question equals the original travel cost from a more distant zone. The user rate is taken to be that of the appropriate more distant zone.

These two methods offer quite different approaches to measuring the consumer surplus in outdoor recreation and to constructing simulated demand curves for the outdoor recreation resource in question. There have been other methods tried but it is generally thought that these two are the most reliable. (Knetsch and Davis, 1966).

Hypotheses

The hypotheses which will be investigated in this thesis are: 1) As gasoline prices rise some areas in the Vancouver cottaging field which are presently popular for cottaging will be rejected by the present

cottagers as being too expensive to reach.

2) At the present time the primary limiting factor in regard to the distance people will travel to their cottages is travel time. In the near future the primary limiting factor will become travel cost due to increased gasoline prices.

3) Lower income people have cottages farther from Vancouver than do higher income cottagers. (because the land is cheaper there)

Methodology

This investigation will be conducted in a direct manner by means of a questionnaire. This choice was made for two reasons:

1) Indirect methods of research such as the "Clawson approach" are best suited to a situation in which there is one cottaging area and several cities of origin. In British Columbia the general case is one in which there is one major point of origin (Greater Vancouver) and many different destinations. Use of the "Clawson type" model would be very difficult in this situation since it would involve some rather unrealistic assumptions about user rates. The primary problem is of course that "cities of origin" are of a fixed and known size whereas the capacity of cottage areas is a rather nebulous concept.

2) A direct method (questionnaire) makes it possible to obtain other relevant information about the cottagers whereas indirect methods do not. Thus an indirect approach would necessarily limit the scope of the study to the direct effects of gasoline price increases on the demand for cottaging. The indirect effects such as substitution of other activities for cottaging could not be studied.

In order to attempt to isolate the effect of travel costs on

cottaging sample areas were selected at three different distances from Vancouver. Since the closest group is only 70 miles from Vancouver it can act as a control sample for some parts of the analysis. For other parts it will be compared directly with the two more distant sub-groups.

A personal interview of cottagers while at their cottage would have been the ideal way to carry out this study. Due to the time of year at which the investigation was undertaken this was not possible and therefore a mailed questionnaire was used.

The questionnaire was mailed to a sample of cottagers at selected lakeshore areas at varying distances from Vancouver. The sample was selected in the following manner. First of all the general areas were selected in accordance with the previously defined geographic scope of the study. The cottage areas selected are:

1) Cultus Lake - approximately 70 miles from Vancouver via Highway 401.

2) Loon Lake - approximately 240 miles from Vancouver via Highways 401, 1, and 97.

3) Canim Lake, Deka Lake, and Sulphurous Lake - approximately 330 miles from Vancouver via Highways 401, 1, and 97. (See Map).

Ideally it would have been preferable to have the second sampling point closer to Vancouver in order to have a more uniform distance breakdown. However this was not possible due to there being very little cottaging in the Fraser Canyon and Lower Thompson (Cache Creek to Lytton) regions.

Once these cottage areas were selected the appropriate topographical maps were examined and district lot numbers for the lakeshore areas were noted. These district lot numbers were taken to the B.C.

Assessment Authority records where the names and addresses of the owners of each sub lot within the appropriate district lots were obtained. The exact geographic location of each sub lot could not be determined (i.e. exact location within the specific district lot) and thus not all of the sample were waterfront cottages. One advantage of using the assessment role is that it distinguished between empty lots and lots with improvements and therefore the problem of sampling owners of empty lots was eliminated.

The choosing of sample size usually involves making a compromise between time and funds available for the survey and the size desirable for statistical reliability. This case was no exception. It was decided to sample about seventy-five cottagers at each location. At the Cultus Lake site this sample size was easily attained since there are hundreds of Cultus Lake cottages owned by residents of Greater Vancouver. The Loon Lake site proved to be more of a problem since a search of the Assessment Role indicated that there were only 63 cottages owned by residents of Greater Vancouver. Unfortuantely there are no other adjacent lakes which could be added into this sample and therefore it was left at 63. The Canim Lake area was also deficient in numbers of Vancouver owned cottages but this was easily compensated for by including two neighbouring lakes.

It must be noted that this is a survey of selected Vancouver cottagers only and is by no means a random sample. The zones were selected purposely. Within two of the zones all cottagers fitting within the scope of the study were sampled while in the third the first seventy-five cottagers on the assessment role were sampled.

All selected cottagers received a copy of the questionnaire and

a covering letter. This was followed about ten days later by a follow up letter and another copy of the questionnaire.

In order to relate this data to the population of Greater Vancouver cottagers the total population must be sampled for basic data such as income, etc. Fortunately this work has already been performed. (Taylor, 1973). The sample of cottagers can thus be compared to the total population by comparing certain relevant profile variables (Davis, 1963).

In conceptual terms the questionnaire can be divided into the following parts:

1) Inquiries aobut present and past (before gasoline price increases of the last two-three years) use to determine if there has been any change due to recent gasoline price increases.

2) Inquiries about probable future responses to further gasoline price increases. These are in both quantitative (estimates of reduction in use) and qualitative (strategies to cope with gasoline rationing) terms.

3) Questions relating to reasons for going to the cottage and to alternative activities.

4) General background information about the cottager, his cottage, and his trip to the cottage.

Since the data collected are of a widely varied nature several different methods of analysis are required. First of all distributions and mean values for use before and after price increases are tabulated for each subgroup in order to define the magnitude of the effect of past price increases on cottage use. Secondly the responses to questions regarding future use at given gasoline prices are averaged within each

group (for each price) in order to provide a group estimate of future response to a specified price increase. Next profile data (socio-economic variables, length of ownership of cottage etc.) are related to past response to gasoline price increases to determine what sort of relationships (if any) exist. This is done by means of simple bi-variate analysis with chi-square values being calculated to check on the significance of the results. The socio-economic data for each subgroup is compared to other subgroups in order to determine if significant variations exist (such as lower income cottagers going farther to their cottages, etc.). A distribution of responses to the questions related to the reasons for cottaging (and alternative activities) is given in order to investigate the secondary effects of gasoline price increases or rationing. It should be noted that attention is directed towards the effects of gasoline price changes on cottaging in general and not specifically towards the demand for cottages (i.e. the activity is stressed as opposed to the object).

This method of deriving the relationship between gasoline prices and cottaging is obviously dependant on the accuracy of responses to hypothetical questions. Therefore it is desirable to back up these relationships with other data. For this reason a second questionnaire was mailed to owners of cottages on Vancouver Island. This was not restricted entirely to lakeshore cottagers (i.e. some ocean front cottagers were included) since the intention is simply to utilize the sharp ferry fare increases of last summer as a proxy for gasoline price increases.

Cottaging areas were selected from personal experience, appropriate topographical maps were consulted to find district lot numbers, and then the assessment roles were examined to obtain a sample of Vancouver Island cottagers who resided in Vancouver. Since there do not appear to be any particular areas on Vancouver Island where large numbers of Vancouverites have cottages it was necessary to sample several different locations. The areas sampled were Qualicum Beach, Shawnigan Lake, and Lake Cowichan. These locations were all lumped into one sample since there is not a great deal of variation among them in terms of distance from ferry terminals (at least not enough variation to be significant in terms of travel cost). The pooling of all Vancouver owned cottages at these areas provided a sample of forty cottagers.

As was the case with my other questionnaire two mailings were conducted in order to increase the rate of response.

The questionnaire was very brief. It asked about frequency of past use of the cottage (prior to ferry fare increases) and frequency of present use of the cottage in order to determine the effects of the fare increases on cottage use. Questions regarding family income, value of the cottage, and length of ownership of the cottage were also asked in order to compare this subgroup to the other three subgroups in the survey.

The analysis of this data is very simple. Responses to the ferry fare increases are tabulated in distribution form and mean use values before and after fare increases are calculated. Bivariate analysis is also employed to relate family income to recorded response.

These derived relationships are combined with the results from the other three subgroups in order to draw conclusions.

CHAPTER TWO

DESCRIPTION OF INFORMATION COLLECTED AND ANALYSIS OF DATA

Questionnaire Returns

Of a total of 253 questionnaires which were mailed for this study 102 were returned. The returns were distributed as shown in Table #1. The overall rate of return of 40 percent is quite high for a mailed questionnaire which is not officially sanctioned but is by no means exceptional. The rate of return of 58 percent for the Vancouver Island subsample is extremely high. This is a result of two factors. The most important reason is that the ferry rate increase occurred relatively recently and was very controversial. It is the sort of issue about which those affected take every chance presented to them to comment on it (including a research questionnaire). The second reason for the high response rate among this subsample is that the questionnaire sent to this group was very short.

The number of questionnaires which could not be delivered by the post office was quite low in all cases except for the 330 mile subsample (Canim, Culphurous, Deka lakes). The assessment role for this area must not have been updated as recently as the others.

Nearly all of the questionnaires returned indicated that the primary purpose for obtaining the cottage had been as a vacation home and therefore were relevant to my study (90 percent were bought for use as vacation homes). Only 2 percent of the returned questionnaires

TABLE #1

QUESTIONNAIRE RETURNS

Sample Area (distance from Vancouver)	Number of Cottagers Surveyed	Number of Questionnaires which could not be delivered	Return from First Mailing	Return from Second Mailing	Total Percent Return
70 miles -Cultus Lake	75	3	25	7	43%
240 miles -Loon Lake	63	5	17	4	33%
330 Miles -Canim, Deka, Sulphurous Lakes	75	12	21	5	35%
Vancouver Island	40	1	22	1	58%
Total	253	21	85	17	40%

indicated that the owner now lived full time at the cottage (or full time for half of the year). These few questionnaires were not used in the analysis since they were not relevant to the study.

The questionnaires used in the first mailing were identifiable from those used in the second. It was therefore possible to compare the responses to certain key questions between these two subsamples. An examination of the returns revealed no significant difference in the distribution of responses between those who replied to the first mailing and those who replied to the second. It was not possible to prove this statistically due to the very low response to the second mailing. Therefore the two groups were analysed together.

Responses of the Cottagers to Gasoline Price Increases of the Last Few Years

Although the gasoline price increases of the last few years (specifically the approximate real price rise of 20 percent between 1974 and 1976) have added only a few dollars (about $6.00 to the real round trip cost to the most distant area) to the cost of travelling to these lakeshore cottage areas my results show that there has been some effect on amount of use. For normal weekends the decrease in number of trips per year ranged from only 2 percent for the Cultus Lake area to 13 percent for the Canim Lake area. (See Tables #2, #3, and #4) These appear to be reasonable results with there being almost no change in the number of trips at the closest area and the maximum response occurring at the farthest area. The corresponding data for holiday weekends also indicates a lower response at Cultus Lake than at the two

TABLE #2

TOTAL ANNUAL NUMBER OF WEEKEND TRIPS TO COTTAGES - BEFORE AND AFTER GASOLINE PRICE INCREASES - 70 MILE SUBGROUP
(distribution of respondents)

Number of Trips Per Year	Last 12 Months	Before Price Increases
0 - 1	1	1
2 - 3	2	2
4 - 5	2	2
6 - 7	6	3
8 - 9	1	2
10 - 15	5	6
16 +	11	11
Total	28	28
Average	10.7	10.9
% Reduction in use	2%	

TABLE #3

TOTAL ANNUAL NUMBER OF WEEKEND TRIPS TO COTTAGES - BEFORE AND AFTER GASOLINE PRICE INCREASES - 240 MILE SUBGROUP
(distribution of respondents)

Number of Trips Per Year	Last 12 Months	Before Price Increases
0 - 1	6	5
2 - 3	3	4
4 - 5	1	1
6 - 7	2	1
8 - 9	2	2
10 +	3	4
Total	16	16
Average	4.4	4.8
% Reduction in use	8%	

TABLE #4

TOTAL ANNUAL NUMBER OF WEEKEND TRIPS TO COTTAGES - BEFORE AND AFTER GASOLINE PRICE INCREASES - 330 MILE SUBGROUP
(distribution of respondents)

Number of Trips Per Year	Last 12 Months	Before Price Increases
0 - 1	14	12
2 - 3	4	4
4 - 5	2	4
6 - 7	1	1
8 - 9	0	0
10 +	2	2
Total	23	23
Average	2.28	2.63
% Reduction in Use	13.3%	

(Average values for number of trips for Tables #2, #3, and #4 were calculated in the following manner:

For values (number of trips) from 0-9 a standard group mean procedure was used whereby the midpoint of each group was multiplied by the number of respondents in that group. In the 10+ group the number of respondents was multiplied by 10. These numbers were then summed and divided by the total number of respondents.)

more distant areas. (See Tables #5, #6, and #7) The questions regarding the number of visits on extended vacation each year before and after the gasoline price increases seemed to generate some confusion between number of visits on extended vacation and total number of weeks of extended vacation. For this reason it was difficult to analyse this data in the manner which was done for weekends and holiday weekends. The basic trend did seem to be one of no apparent change in response to gasoline price changes.

It is of course possible that some of the individual changes in amount of use over this period were due to extraneous factors which by coincidence occurred in the same time period as the gasoline price increases. (such as change in family preferences etc.)

Responses of Vancouver Island Cottages to Ferry Fare Increases

The other subsample of cottagers in the study also showed a significant reaction to increased costs of visiting their cottage. The cost increase in this case was more substantial (form about $26 return to $48 return. It should be noted that average total gasoline costs for the most distant group of lakeshore cottagers have risen from about $20 in 1974 to about $31 in 1976. These costs are in the same absolute range as the Vancouver Island cottagers' costs which is important to the validity of comparison between groups. (See Appendix for the assumptions and calculations behind these figures.) Tables #8 and #9 do show a negative response to the increased ferry rates which in absolute terms is greater than the responses of the mainland cottagers to gasoline

TABLE #5

TOTAL ANNUAL NUMBER OF HOLIDAY WEEKEND TRIPS TO COTTAGES - BEFORE AND AFTER GASOLINE PRICE INCREASES - 70 MILE SUBGROUP (distribution of respondents)

Number of Trips Per Year	Last 12 Months	Before Price Increases
0	0	0
1	2	1
2	8	8
3	7	4
4	6	8
5	3	3
6+	3	5
Total	19	19
Average	3.3	3.6
% Reduction in use	8%	

TABLE #6

TOTAL ANNUAL NUMBER OF HOLIDAY WEEKEND TRIPS TO COTTAGES - BEFORE AND AFTER GASOLINE PRICE INCREASES - 240 MILE SUBGROUP (distribution of respondents)

Number of Trips Per Year	Last 12 Months	Before Price Increases
0	3	3
1	0	0
2	4	1
3	6	5
4	1	3
5+	5	7
Total	19	19
Average	2.9	3.4
% Reduction in use	15%	

TABLE #7

TOTAL ANNUAL NUMBER OF HOLIDAY WEEKEND TRIPS TO COTTAGES - BEFORE AND AFTER GASOLINE PRICE INCREASES - 330 MILE SUBGROUP
(distribution of respondents)

Number of Trips Per Year	Last 12 Months	Before Price Increases
0	4	4
1	6	1
2	6	9
3	3	5
4	3	2
5+	2	3
Total	24	24
Average	2.0	2.4
% Reduction in use	17%	

(These averages (Tables #5, #6, #7) were determined by the same method as was used for Tables #2, #3, #4.)

TABLE #8

TOTAL ANNUAL NUMBER OF WEEKEND TRIPS TO THE COTTAGE - BEFORE AND AFTER FERRY FARE INCREASES - VANCOUVER ISLAND SUBGROUP (distribution of responses)

Number of Trips Per Year	Last 12 Months	Before Price Increases
0 - 1	8	1
2 - 3	6	4
4 - 5	3	11
6 - 7	1	1
8 - 9	3	1
10+	2	5
Total	23	23
Mean	3.7	5.4
% Reduction in use	31%	

TABLE #9

TOTAL ANNUAL NUMBER OF HOLIDAY WEEKEND TRIPS TO THE COTTAGE- BEFORE AND AFTER FERRY FARE INCREASES - VANCOUVER ISLAND SUBGROUP (distribution of responses)

Number of Trips Per Year	Last 12 Months	Before Price Increases
0	10	5
1	1	0
2	5	6
3	2	5
4	4	3
5+	1	4
Total	23	23
Mean	1.7	2.6
% Reduction in use	35%	

price increases. In relative terms the response of the Vancouver Island cottagers to the increased ferry rates was smaller than that of the interior cottagers to increased gasoline prices. It was expected that the reverse would be true since the ferry fares represent a much higher proportion of the total travel costs to the Vancouver Island cottagers than do gasoline costs to the interior cottagers. (Automobile depreciation and maintenance costs are usually equal to or greater than gasoline costs.) The relative responses of the various subgroups of cottagers to the increases in travel costs is shown in Table #10 in the form of price elasticity of demand for trips to the cottage. One possible explanation for this can be found in people's reactions to inflation. The ferry fare increase occurred instantaneously and thus the full dollar amount of the increase was probably seen as a real price increase. (At most it could be argued that from the cottagers' point of view the fare increase took place over the eight month period from September 1975 when the previous summer's heavy use season ended to April, 1976 when the increases took effect. However, deflating the fare increases to account for this eight months of inflation changes the results very little.) On the other hand the gasoline price increases took place over a two year period in which the rate of inflation was high. The previously mentioned price elasticities were calculated with respect to the deflated gasoline price increases. These price increases were less than half of the actual price rise in dollar terms. The price elasticities as calculated with undeflated gasoline price increases are as follows:

TABLE #10

PRICE ELASTICITY OF DEMAND FOR TRIPS TO COTTAGES (with respect to the price of gasoline and ferry fares only)

Subgroup	Weekends	Long Weekends
Vancouver Island	-0.36	-0.41
70 mile	-0.10	-0.38
240 mile	-0.39	-0.71
330 mile	-0.64	-0.83

Sample calculation:
(Vancouver Island-Weekends)

$$E = \frac{\% \text{ Change in Quantity}}{\% \text{ Change in Price}}$$

Price - \$26 → \$48 = 85% increase

Quantity - 5.4 → 4.7 = 31% decrease

$$E = \frac{31\%}{85\%} = -0.36$$

330 Mile Sample - Weekends - E = -.22 Holiday weekends E = -.36

240 Mile Sample - Weekends - E = -.15 Holiday weekends E = -.39

70 Mile Sample - Weekends - E = -.06 Holiday weekends E = -.18

These values compare much more closely to those calculated for the Vancouver Island cottages (except of course for the 70 Mile sample which is not directly comparable to the Vancouver Island sample due to the much smaller magnitude of total travel costs in the 70 mile group. In reality it is probably true that the cottager's perception of the magnitude of the gasoline price increases is somewhere between their real amount and their undeflated amount. This data suggests that the cottagers tend to ignore the moderating effects of inflation on the price increases to a large extent. While the respondents may have experienced some income changes in this period these probably would have been upward which reinforces the preceding statement about inflation.

One aspect of this data which was rather unexpected is that the percentage decrease in number of trips on holiday weekends was greater than the percentage decrease in number of trips on regular weekends. This was true for all four subgroups. It was anticipated that the cottagers would value holiday weekends more highly since they allowed them to spend an extra day at the cottage. It may be that cottagers find holiday weekends frustrating due to crowded highways and ferry lineups and therefore value regular weekends more highly.

As was shown previously (in Tables #2-#9) the reduction in use corresponding to travel cost increases was significantly greater (in both percentages and absolute terms) in the three subgroups for which

travel cost was already substantial than for the 70 Mile group where travel cost is very low. This is important since it suggests that nearly all of the reported reduction in use was a result of gasoline price or ferry fare increases and was not due to the rather poor weather of the 1976 summer season. Table #11 summarizes some aspects of the poor weather situation which prevailed during this period. The general picture is one of bad weather throughout the province with coastal and interior regions both faring poorly.

The question regarding extended vacation was worded differently on the Vancouver Island questionnaire than it was on the mainland cottagers' questionnaire and therefore the results could be tabulated. (See Table #12) It is apparent from reading additional comments written on some of the questionnaires that this decrease in number of weeks' vacation after the ferry fares increases was largely due to a few families who were in the habit of moving to the cottage for the entire summer school break with the head of the household livint at the cottage on weekends and in Vancouver during the week. Therefore it is rather doubtful if the fare increases had much effect on extended vacation use.

Cottagers Anticipated Responses to Future Gasoline Price Increases

Question #6 on the lakeshore cottager's questionnaire attempted to get a direct measure of the cottagers' anticipated responses to future gasoline price increases. The responses to the 330 mile and 240 mile subgroups indicated that most respondents (81 percent and 76 percent respectively) at least took the time to consider the intent of the

TABLE #11

CLIMATIC DATA FOR THE SUMMER OF 1976

Month	Location	Temperature		Precipitation	
		Mean Daily (°F)	Difference from Normal	Total Amount "	Difference from Normal
May	Vancouver (Airport)	52.9	- 1.4	2.90	1.03
	Shawnigan Lake	51.3	- 1.9	2.06	0.63
	Kamloops	58.4	0.2	1.04	.14
	Loon Lake	50.1			
	100 Mile House	49.4			
June	Vancouver (Airport)	56.6	- 2.9	2.17	.39
	Shawnigan Lake	55.4	- 3.1	1.40	.03
	Kamloops	62.6	- 2.6	1.34	.03
	Loon Lake	52.4		1.98	
	100 Mile House	53.1		2.59	
July	Vancouver (Airport)	62.4	- 1.0	0.91	- .26
	Shawnigan Lake	61.0	- 2.0	0.59	- .29
	Kamloops	68.6	- 1.4	2.28[1]	1.31
	100 Mile House	58.1		2.25	
August	Vancouver (Airport)	60.6	- 2.1	2.91	1.45
	Shawnigan Lake	60.0	- 2.6	2.37	1.39
	Kamloops	63.5	- 4.0	4.47	3.38
	Loon Lake	58.2		3.32	
	100 Mile House	56.3		1.96	

[1] 1.80" fell in one day-thus the rest of the month was very dry. (Similar distributions were noted for Loon Lake and 100 Mile House)

TABLE # 12

TOTAL ANNUAL NUMBER OF WEEKS OF VACATION SPENT AT THE COTTAGE - BEFORE AND AFTER FERRY FARE INCREASES - VANCOUVER ISLAND SUBGROUP.

Number of Weeks of Vacation	Last 12 Months	Before Increases
0 - 1	2	1
- 3	6	6
4 - 5	9	8
6 - 7	3	3
8+	3	5
Total	23	23
Mean	4.34	4.8

question and make some estimate of their future behaviour under the conditions listed. The responses of these two subgroups are shown in Tables #13 and #14. Again there appeared to be some confusion between number of trips on extended vacation and number of weeks of vacation but the overall trend seems to be one of little change with gas prices. The cottagers in the 70 mile subgroup showed very little interest in this question (understandably, since they would not be affected greatly) with only 32 percent of the respondents filling out the table. Two other respondents made comments adjacent to the question that if prices continued to rise they would be forced to sell their cottages. There is a strong likelihood that the low response rate to the question will be a source of bias. It was felt that many of those who thought gasoline price increases would not affect their use of their cottage did not answer this question whereas most of those who did think it would affect their use of their cottage did answer. Therefore it was decided not to analyze the responses to this question by the 70 mile subgroup.

For the most part the data presented in these tables (#13 and #14) appear reasonable with the only inconsistency being that the average estimated number of weekend trips per year for the cottagers in the 240 mile subgroup at a gasoline price of $1.00 per gallon is greater than the number currently being made (See Tables #13 and #3). Figures #2, #3, and #4 show that at price levels relatively near to those of the present (i.e. under $1.50 per gallon) response to increases will be fairly similar to that experienced in the past. It is only in the extreme price ranges ($2-$3) per gallon that the cottagers indicate they

TABLE #13

ANTICIPATED RESPONSES TO FUTURE GASOLINE PRICES
(240 Mile subsample)

GASOLINE COSTS		ESTIMATED NUMBER OF VISITS PER YEAR	
Per Gallon	Round trip gasoline cost for 240 mile one way trip @ 20 miles per gal.	Weekends (mean)	Holiday Weekends (Mean)
$1.00	$33.00	4.9	2.7
$1.50	50.00	3.5	2.3
$2.00	66.00	2.5	1.6
$3.00	100.00	2.0	1.2

TABLE #14

ANTICIPATED RESPONSES TO FUTURE GASOLINE PRICES
(330 mile subsample)

GASOLINE COSTS		ESTIMATED NUMBER OF VISITS PER YEAR	
Per Gallon	Round trip gasoline cost for 330 mile one way trip @ 20 miles per gal.	Weekends (Mean)	Holiday (Mean)
$1.00	$33.00	1.1	2.0
$1.50	50.00	1.1	1.9
$2.00	66.00	0.9	1.3
$3.00	100.00	0.6	0.8

FIGURE #2 PAST RESPONSE AND ANTICIPATED FUTURE RESPONSES TO GASOLINE PRICE INCREASES (240 Mile subgroup)

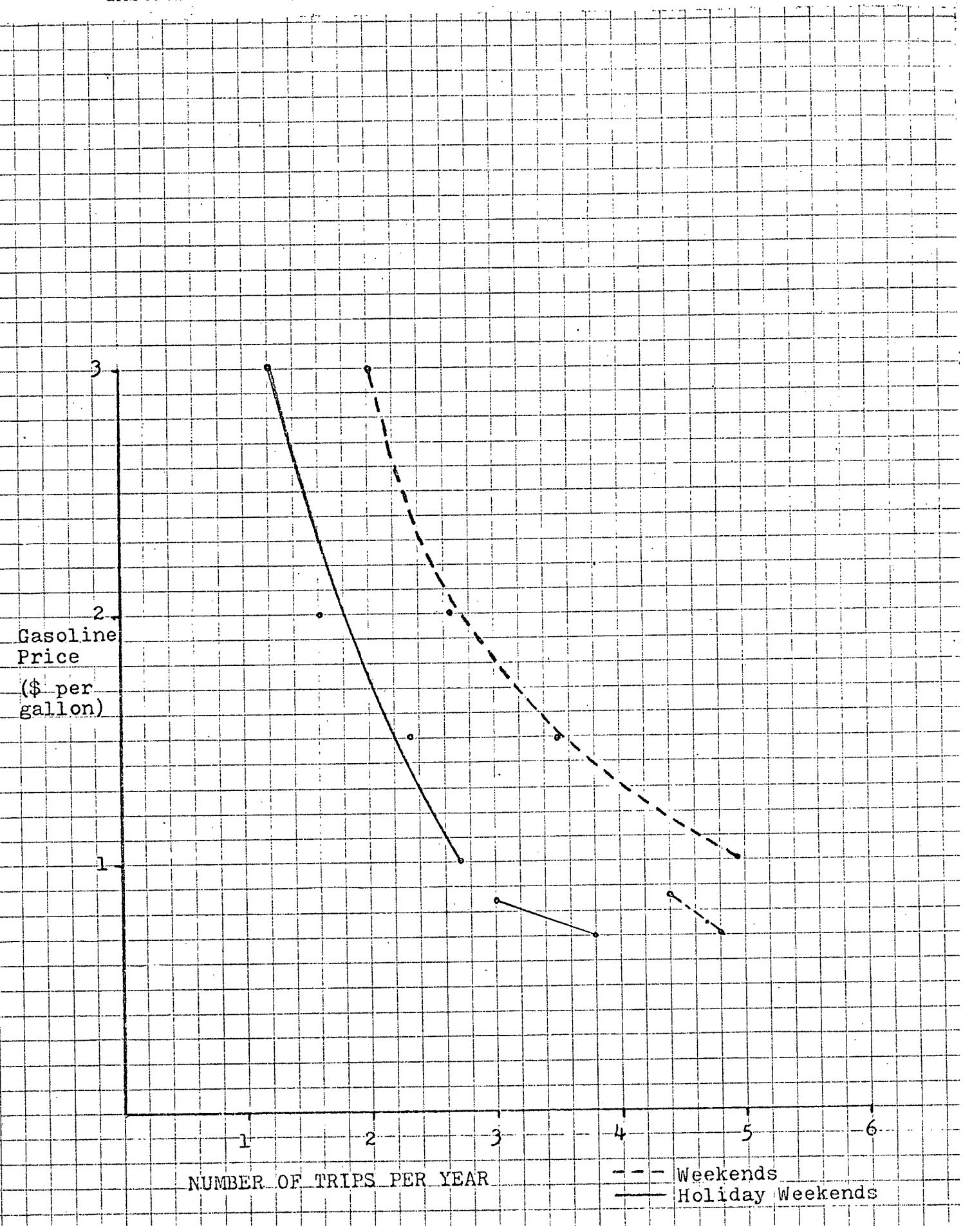


FIGURE #3 - PAST RESPONSES AND ANTICIPATED FUTURE RESPONSES TO GASOLINE PRICE INCREASES (330 Mile subgroup)

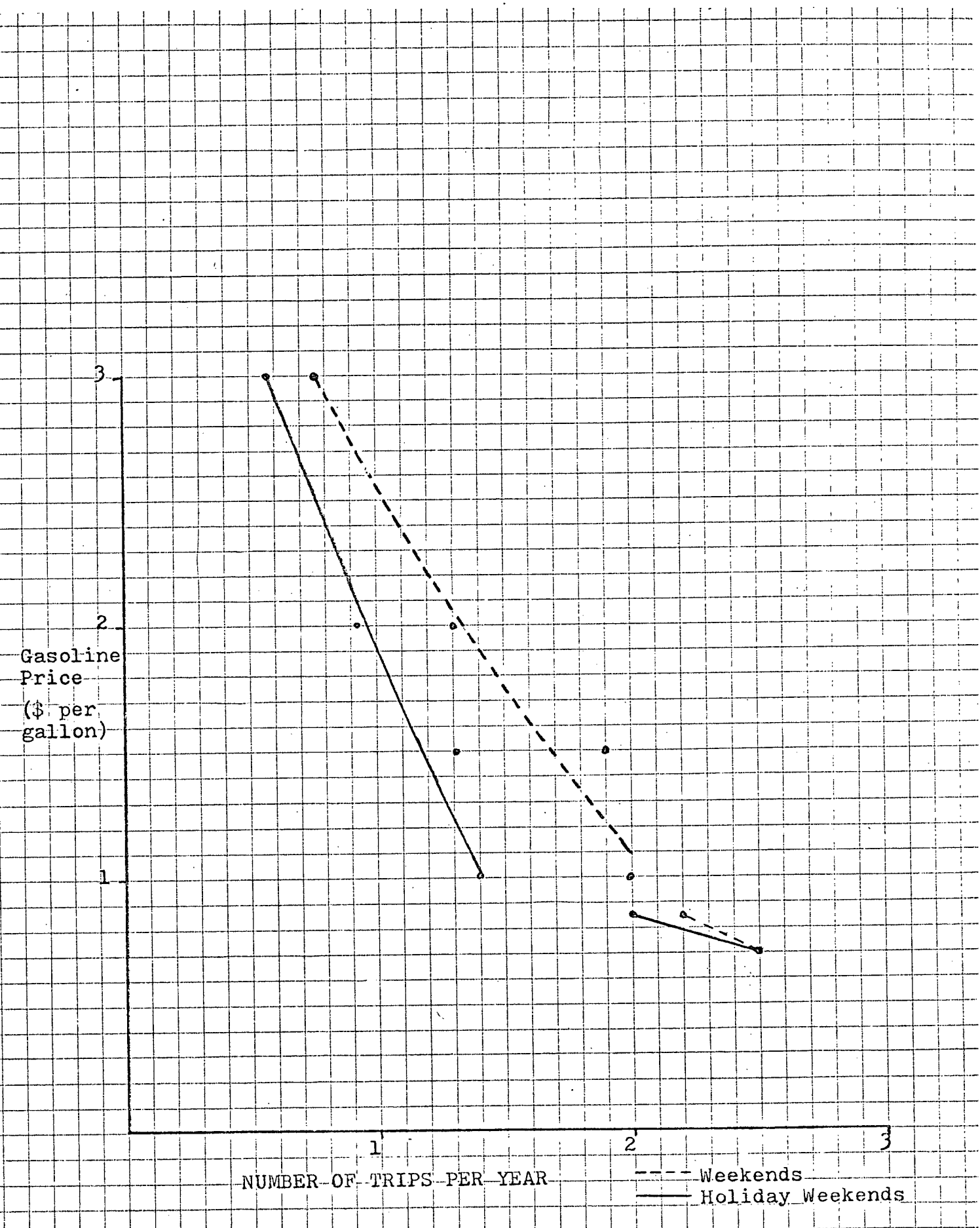
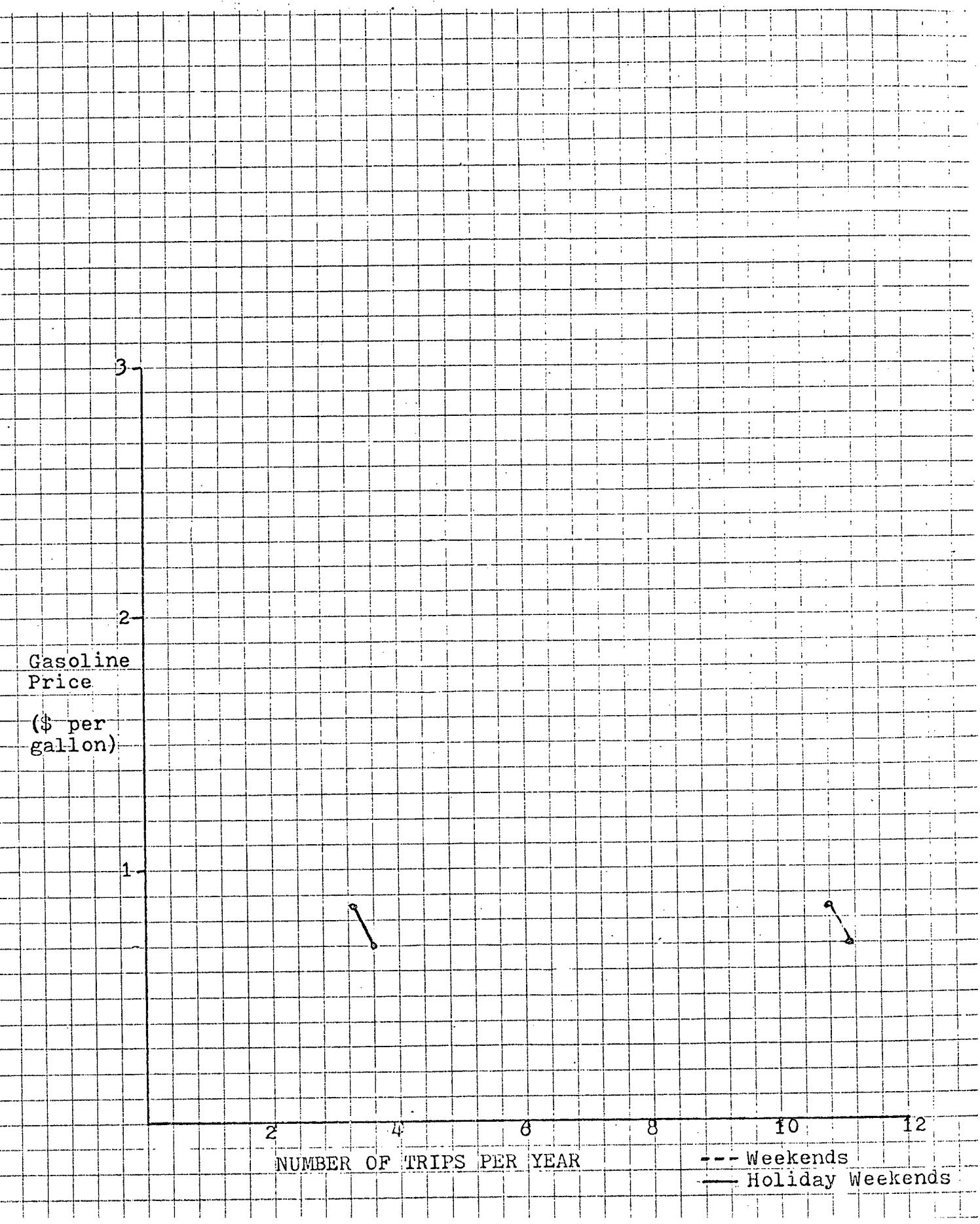


FIGURE #4 - PAST RESPONSES TO GASOLINE PRICE INCREASES
(70 Mile subgroup)



will behave differently from how they have in the past. This moderation in response to gasoline price increases at higher price levels is to be expected since as cottage use approaches zero the cottager will probably become more aware of his capital investment in the cottage and will want to get some use out of it even if it is expensive to do so (also at this point it will obviously be very difficult to sell the cottage). As prices become sufficiently high the cottager will be motivated to take steps other than merely making fewer trips in order to economize (use smaller cars, car pools, etc.). Thus some moderation in response as higher price levels are reached is to be expected. For purposes of comparison Figures #5 and #6 relate to the Vancouver Island response to increased travel costs to the recorded response among the mainland cottagers.

The primary value of this part of the analysis (anticipated responses to future gasoline price increases) has been to show that our past price response data cannot be extrapolated indefinitely on a straight line basis. It provided an estimate of how far past data can be extrapolated with reliability as well as an indication of what to expect beyond this point. Fortunately the response to questions regarding past gasoline price increases and to the Vancouver Island questionnaires was quite good and therefore it is possible to use all three sources of data to project the effects of the gasoline price increases on cottaging. This is very fortunate since it will be possible to come to conclusions without relying too heavily on data generated by answers to hypothetical questions.

FIGURE #5 - RESPONSES OF VANCOUVER ISLAND AND MAINLAND COTTAGERS TO INCREASED TRAVEL COSTS (weekends)

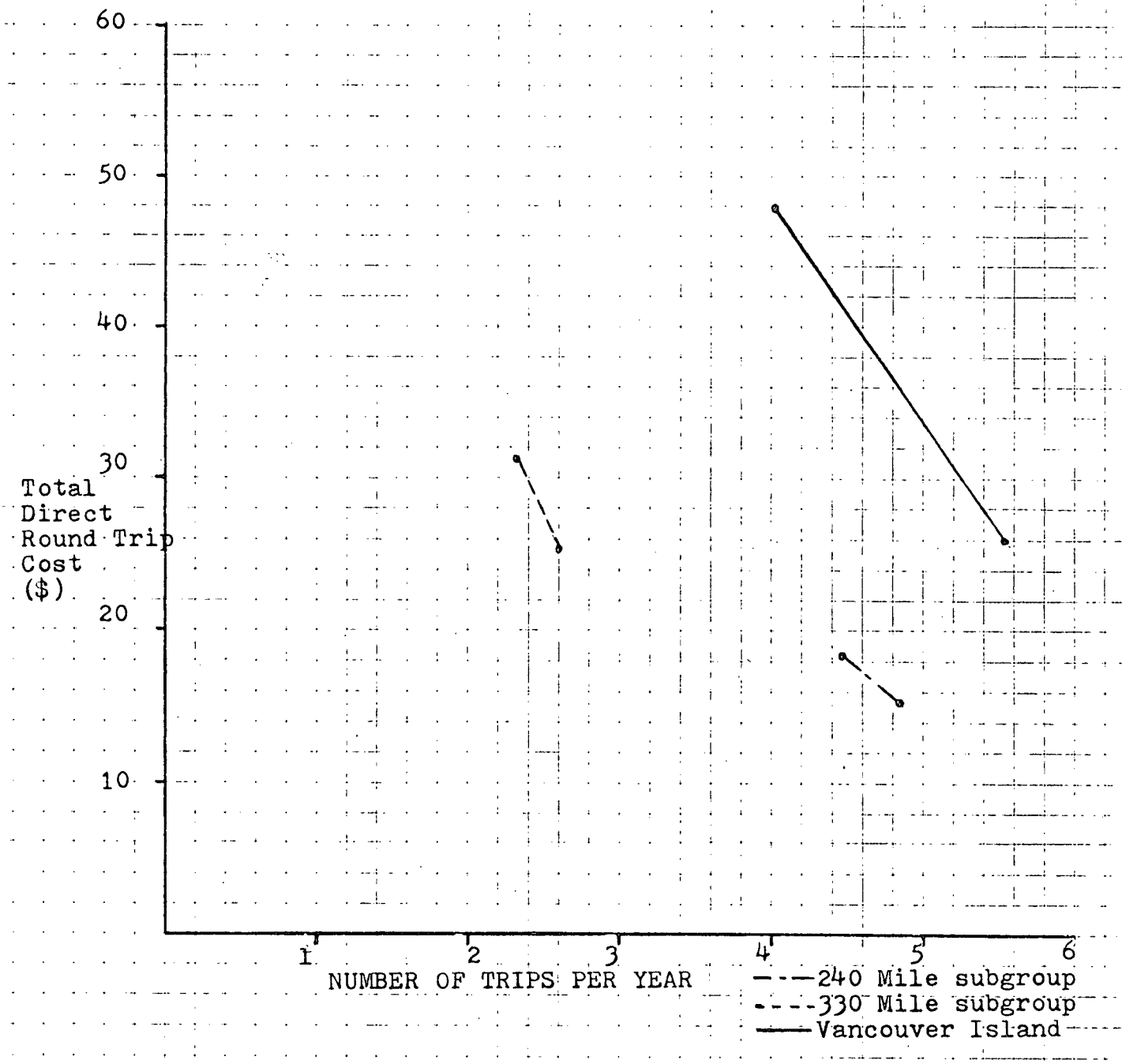
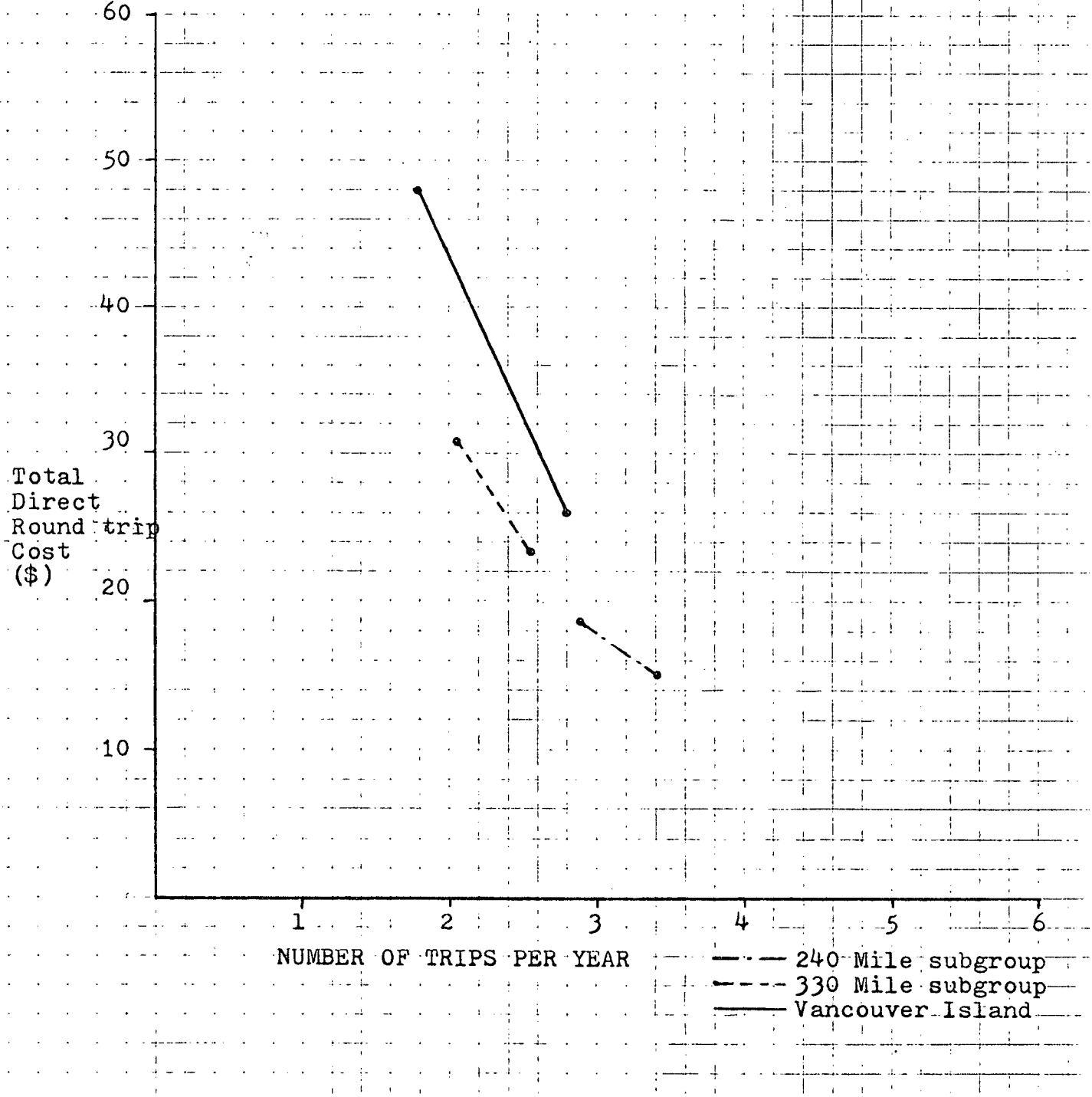


FIGURE #6 - RESPONSES OF VANCOUVER ISLAND AND MAINLAND COTTAGERS TO INCREASED TRAVEL COSTS (holiday weekends)



Tables #15, #16, and #17 show the distribution of responses to a range of reactions to future energy shortages. Many respondents seem to prefer a strategy of switching to a smaller car and continuing present driving patterns. This is to be expected since it would involve the least disruption of their cottaging habits. The use of public transportation to reach the cottage did not seem to be a very popular suggestion but several questionnaires had comments mentioning that there was no public transportaiton to their cottage. Thus it is not clear if the reason for the negative response to the idea of public transportation to cottages is because of a dislike for public transportation to cottage areas or because it is presently not possible to take public transportation to the cottage.

No single strategy for dealing with the conflict between gasoline rationing and cottage use was accepted by all. Rather it appears that most people were rather uncertain about which of the alternatives they would favour and that a typical reaction would probably combine all four. Table #18 shows various details about the trip to the cottage such as size of car, number of people in the car for the trip, average gas mileage, etc., broken down by subgroup. It is evident that those cottagers in the most distant subgroup use the largest cars and consequently get poorer gas mileage than those with cottages nearer to Vancouver.

The data collected also shows that the use of smaller cars is a distinct possibility for many of the cottagers. (See Table #18) The evidence to support this statement is that in all three subgroups there

TABLE #15

RESPONSES TO THE IDEA OF FUTURE GASOLINE RATIONING
70 MILE SUBGROUP

8. In the event of a future energy shortage which resulted in gasoline rationing, which of the following would you do? Please check under the appropriate column.

DEFINITELY	PROBABLY	UNLIKELY	
4	9	7	Continue to use a car as regular transportation in the city and discontinue (or drastically reduce the number of trips to the cottage.
	2	4	Use public transportation to reach the cottage.
2	2	11	Switch primarily to public transit in the city and continue to drive to your cottage.
4	8	7	Switch to a smaller, more economical car and continue present driving patterns.
0	0	0	Other, please specify _____

TABLE #16

RESPONSES TO THE IDEA OF FUTURE GASOLINE RATIONING
240 MILE SUBGROUP

8. In the event of a future energy shortage which resulted in gasoline rationing, which of the following would you do? Please check under the appropriate column.

DEFINITELY	PROBABLY	UNLIKELY	
3	4	7	Continue to use a car as regular transportation in the city and discontinue (or drastically reduce the number of) trips to the cottage.
0	0	10	Use public transportation to reach the cottage.
3	7	4	Switch primarily to public transit in the city and continue to drive to your cottage.
2	10	2	Switch to a smaller, more economical car and continue present driving patterns.
0	0	0	Other, please specify _____

TABLE #17

DISTRIBUTION OF RESPONSES TO THE IDEA OF FUTURE GASOLINE RATIONING - 330 MILE SUBGROUP

8. In the event of a future energy shortage which resulted in gasoline rationing, which of the folloiwng would you do? Please check under the appropriate column.

DEFINITELY	PROBABLY	UNLIKELY	
5	7	10	Continue to use a car as regular transportation in the city and discontinue (or drastically reduce the number of) trips to the cottage.
1	2	11	Use public transportation to reach the cottage.
2	6	7	Switch primarily to public transit in the city and continue to drive to your cottage.
5	10	4	Switch to a smaller, more economical car and continue present driving patterns.
0	1	0	Other, please specify _____

TABLE #18

DETAILS ABOUT THE TRIP TO THE COTTATE (Distribution of responses)

NUMBER OF PEOPLE NORMALLY IN THE CAR FOR THE TRIP TO THE COTTAGE	70 MILE SUBGROUP	240 MILE SUBGROUP	330 MILE SUBGROUP
2 or less	14	13	11
3 - 4	10	7	15
5 or more	3	0	0
SIZE OF CAR USED FOR THE TRIP TO THE COTTAGE			
Full size car (or truck)	18	12	20
Compact	5	4	3
Subcompact	4	4	3
GAS MILEAGE OBTAINED ON THE TRIP TO THE COTTAGE			
Mean	20.6	21.9	17.9

are a substantial number of respondents who report only two people travelling to the cottage in a full sized car. The switch to smaller cars is less of a possibility for the cottagers at the most distant area (330 mile) since they generally have more passengers on the trip. (This is reasonable since it is a newer cottage area [see Table 30] and therefore it is more likely to be used by families with children than are the other areas.) The cottagers at the two closer areas have already made more of a switch to smaller, more economical cars than have those at the 330 mile area.

Tables #15 - #17 indicate that using smaller cars to reach the cottage was regarded with about equal favour by all three groups. However this is reasonable since more of the cottagers at the closer areas already use small cars and thus their opportunities to switch are reduced.

The other major porblem with switching to smaller cars for travel to cottages is that many people feel that small cars are suited only for short trips and are not desireable for long highway trips (200-300 miles). This will tend to encourage the use of smaller cars where they are needed least and discourage it where they are needed most.

Table #19 shows the cottager's estimates of the value of their cottages. The trend here is identical to that of income where the two closest areas (Vancouver Island and Cultus Lake) have higher average values than do the more distant areas.

TABLE #19

CURRENT MARKET VALUE OF COTTAGES AS ESTIMATED BY THE OWNERS (distribution of responses)

CURRENT MARKET VALUE (COTTAGE AND LOT)	VANCOUVER ISLAND SUBGROUP	70 MILE SUBGROUP	240 MILE SUBGROUP	330 MILE SUBGROUP
Less than $5,000	0	0	0	0
$ 5,000 - $10,000	0	1	3	2
$10,000 - $15,000	0	3	4	2
$15,000 - $20,000	4	6	6	6
$20,000 - $30,000	4	7	3	10
$30,000 - $40,000	6	7	3	1
$40,000 +	9	3	2	3
Mean	$32,200	$25,600	$20,800	$22,900

Gasoline Costs in Relation to
Other Costs of Cottaging

Table #20 compares gasoline costs to cottage values. At the present time it appears that travel costs are quite small in comparison to the total cost of owning the cottage. As a rough approximation it can probably be said that taxes, insurance, and maintenance for the cottage will be in the range of $250 - $450 per annum. (This estimate is based on personal communications with cottagers in the Cariboo area and on American data for cottaging expenses) (Ragatz 1969, p. 117) For cottagers in the two more distant subgroups automobile costs other than gasoline (i.e. maintenance, depreciation, etc.) which are attributable to trips to the cottage will probably be in the $200-$300 per year range. (This is based on 4000 miles of driving per year with vehicle depreciation and maintenance costs of 5¢ and 7.5¢ per mile respectively. The 4000 miles of driving represents 7 trips per year to a cottage slightly under 300 miles away.) Table #19 indicates that the average cottage values are slightly over $20,000. Assuming that it is possible to invest this money elsewhere at a 10 percent rate of interest at first glance it appears that there would be an annual opportunity cost of about $2000 incurred by owning the cottage. However the true value of this opportunity cost is much less since cottages generally appreciate in value. During periods in which the values of cottages are rising quickly this opportunity cost would approach zero. It should also be noted that increases in travel costs can also increase opportunity costs to the extent that the increased travel costs reduce demand for cottages and subsequently reduce the rate of their appreciation.

TABLE #20

GASOLINE COSTS AND COTTAGE VALUES
(330 Mile Subsample)

RESPONDENT	NUMBER OF TRIPS PER YEAR*	GASOLINE MILEAGE (M.P.G.)	INCOME ('000's)	VALUE OF COTTAGE ('000 of $)	GASOLINE COST PER TRIP $	TOTAL ANNUAL GASOLINE COST
1	15	16	20-30	15-20	35	560
2	6	13	20-30	10-15	43	260
3	5	18	15-20	15-20	31	155
4	5	20	15-20	20-30	28	140
5	3	16	40+	20-30	35	105
6	8	15	40+	20-30	37	296
7	6	15	10-15	15-20	37	222
8	3	18	10-15	10-15	31	93
9	4	15	10-15	5-10	37	148
10	8	13	?	?	43	344
11	3	12	10-15	30-40	27	141
12	6	15	15-20	5-10	37	222
13	3	25	30-40	20-30	22	66
14	4	12	20-30	20-30	47	188
15	6	22	20-30	20-30	26	156
16	13	20	10-15	20-30	28	364
17	3	15	15-20	40+	37	111
18	6	15	15-20	40+	37	222
19	20	35	20-30	10-20	16	320
20	5	16	15-20	20-30	35	175
21	6	25	15-20	15-20	22	135
22	11	28	?	20-30	20	220
Mean	6.6	17.9	21,700	22,900	$33.23	$219

*Includes weekends, holiday weekends, and vacations.

Thus at the present time the average annual gasoline cost for cottages in the 330 mile subgroup is about one quarter of the total annual cost of owning the cottage. (aside from opportunity cost) While it is true that gasoline costs are not the largest cost associated with cottaging at this time they are becoming ever more important. It also must be remembered that a significant increase in any of the costs associated with cottaging will force out some participants.

Analysis of Profile Data

The analysis up to this point has dealt with data directly related to cottaging and travel cost. The remainder of the analysis will be concerned with other characteristics and responses of the cottagers in the sample.

First of all it is necessary to compare the average incomes of the cottagers in the Vancouver Island sample to those of the cottagers in the mainland subgroup. This is important since when conclusions are being drawn the past behaviour of Vancouver Island cottagers will be used as a guide to estimating the future behaviour of mainland cottagers. Obviously if there are any substantial differences in income between groups these should be brought out so that their effects can be accounted for. Table #21 shows distribution of average family income for each subgroup. It is evident that the two cottage areas most distant from Vancouver are populated with slightly lower income cottagers than either the Cultus Lake area or the Vancouver Island areas sampled. Thus the Vancouver Island data can be applied to the mainland cottagers knowing that their responses will be at least as great since their incomes are slightly lower.

TABLE 21

DISTRIBUTION OF ANNUAL FAMILY INCOME BY SUBGROUP

FAMILY INCOME	VANCOUVER ISLAND	70 MILE	240 MILE	330 MILE
less than $5,000	2	-	-	-
$ 5,000 - $10,000	2	4	3	-
$10,000 - $15,000	3	1	6	4
$15,000 - $20,000	1	4	5	9
$20,000 - $30,000	5	7	2	6
$30,000 - $40,000	5	4	1	1
$40,000 +	4	4	2	2
Mean	$24,600	$24,500	$21,200	$21,800

When occupation and education are combined with income (with each being given equal weight) the average results are as follows:

70 mile subsample - 8.5

240 mile subsample - 7.3 (Range of scale - 0-12 - for Details see

330 mile subsample - 8.1 Appendix 3)

Thus while there is some reversal in trend between the two most distant subgroups it is apparent that cottaters lower in social status travel farther to their cottages than do those of higher social status. While studies have shown that the social class structure of cottaging as a whole is breaking down (Fine and Tuttle, 1966) there still is some distinction between the predominating classes in specific areas. In our survey this has taken the form of lower class cottagers driving farther to their cottage. This of course implies (primarily through income effects) that as gasoline prices rise the areas most distant from Vancouver will probably experience a decline in use which is more than proportional to the distance differential between these areas and the closer ones.

In the following tables a chi-squared test was used to identify the relationships between certain profile variables and the response to travel cost increases. Chi-squared is derived as follows:

Chi-squared $(X^2) = \sum_i \frac{(O-E)^2}{E}$ where O = the observed frequency in a cell, E is the expected frequency in a cell and i is the total number of cells. (i.e. in the first cell of Table #22A where O = 7, E = 8 x 12/21 = 4.5) Chi-squared identifies the relationship between two nominal scaled variables by comparing observed values to calculated

joint probabilities (E). If observed values (O) are equal to calculated joint probabilities (E) in all cells then there is no relationship between the two variables. Conversely substantial differences between observed (O) and expected values (E) imply that the two variables are related. Thus in Table #22 a high value of chi-squared indicates that response to ferry fare increases is strongly related to income. The significance levels quoted show the probability of obtaining the associated value of chi-squared purely by chance. (i.e. for Table #22A the chi-squared value of 4.75 would occur 5 times out of 100 purely by chance)

Table #21 shows that there is a definite relationship between income and response to ferry fare increases among Vancouver Island cottagers. As one would expect the higher income cottagers did not respond to the ferry fare increases with as much of a reduction in number of trips as did the lower income cottagers.

Table #22 shows the relationship between income and total annual number of trips per year to the cottage for mainland cottagers. Although there is evidence of a weak positive relationship between income and total annual number of trips this cannot be considered significant. Table #23 shows that there is no significant relationship (in fact there is a weak inverse relationship) between income and response to gasoline price increases. This is in sharp contrast to the Vancouver Island data which is probably more reliable due to the much greater magnitude of the cost increase in that case (and because the ferry fare increases occurred instantaneously instead of gradually

TABLE #22

FAMILY INCOME AND RESPONSE TO INCREASED FERRY FARES (Vancouver Island Subgroup)

A. Holiday Weekends

Response	INCOME: Less than $20,000	INCOME: $20,000 or More	Row total
Negative (reduction in # of trips)	7	5	12
0 or + (no change or increase)	1	8	9
Column total	8	13	21

Chi square = 4.75 significant at the 0.05 level

B. Weekends

Response	INCOME: Less than $20,000	INCOME: $20,000 or More	Row total
Negative (reduction in # of trips)	6	6	12
0 of + (no change or increase)	2	7	9
Column total	8	13	21

Chi square = 1.73 significant at the 0.20 level

TABLE #23

FAMILY INCOME AND TOTAL NUMBER OF TRIPS TO THE COTTAGE (240 and 330 mile subgroups)

	INCOME		
Number of trips per year (weekends and long weekends)	Less than $20,000	$20,000 or More	Row Total
3 or less	8	5	13
4-6	11	2	13
7 or more	4	4	8
Column total	23	11	34

Chi square = 2.57 significant at the 0.30 level

TABLE #24

FAMILY INCOME AND RESPONSE TO GASOLINE PRICE INCREASES (240 and 330 mile subgroups)

	INCOME		
Response (for weekends & holiday weekends)	Less than $20,000	$20,000 or More	Row Total
Negative (reduction in average number of trips)	4	6	10
0 or positive (no change or increase)	15	7	22
Column total	19	13	32

Chi square = 2.05 significant at the 0.20 level

which reduces the possibility of other factors influencing the observed changes in amount of use).

Tables #25 and #26 indicate that the length of ownership of the cottage is not a significant factor is explaining response to travel cost increases. It was only possible to carry out this analysis for 2 of the 4 subsamples but it is felt that they are representative.

Table #27 shows the distribution of responses to a question regarding reasons for going to the cottage. This information is of limited importance in regard to predicting primary effects of higher gasoline prices on cottaging but is very useful with regard to secondary effects. For example since "getting out of the city" was rated as being an important reason for going to the cottage by many of the respondents the development of additional recreational facilities in or near cities will not be a satisfactory alternative to cottaging. Similarly the relatively lower degree of importance attached to the cottage being "good for children" implies that improved children's recreation facilities in the cities will not be an effective substitute for cottaging. On the other hand it appears that at least for some of the cottagers that additional opportunities to engage in outdoor activities closer to their homes would at least be a partial subsittute to using their cottage. Table #28 (Distribution of responses to: What did you do in your spare time before you had your cottage?) is also intended for use in suggesting alternatives to cottaging at long distances from Vancouver. It does provide an idea of what other types of recreational activities might be popular with cottagers. All

TABLE #25

LENGTH OF OWNERSHIP OF THE COTTAGE AND RESPONSE TO FERRY FARE INCREASES (Weekends & Holiday weekends)

	Length of Ownership		
Response	9 Years or Less	10 Years or more	Row Total
Negative (reduction in use)	5	8	13
0 or positive (no change or increase)	5	5	10
Column Total	10	13	23

chi square = 0.37 significant at 0.60 level

TABLE #26

LENGTH OF OWNERSHIP OF THE COTTAGE AND RESPONSES TO GASOLINE PRICE INCREASES (weekend, and holiday weekends)

	Length of Ownership		
Response	9 Years of Less	10 Years or more	Row Total
Negative	4	2	6
0 or positive	5	7	12
Column Total	9	9	18

chi square = 0.83 significant at 0.40 level

TABLE #27

REASONS FOR GOING TO THE COTTAGE (distribution of responses)

70 MILE SUBGROUP

9. Why do you go to your cottage? Rate each of the following as to their importance.

Very Important	Important	Not Important	
11	6	3	Good for children
9	8	3	Isolation, peace and quiet
5	6	7	Sense of roughing it, being close to nature
19	5	0	Relaxation
10	0	0	To engage in outdoor activities
15	6	2	Get out of the city
1	1	0	Other -

240 MILE SUBGROUP

9. Why do you go to your cottage? Rate each of the following as to their importance.

Very Important	Important	Not Important	
6	1	3	Good for children
9	6	0	Isolation, peace and quiet
3	9	0	Sense of roughing it, being close to nature
11	6	0	Relaxation
6	8	1	To engage in outdoor activities
6	7	1	Get out of the city
1	1	0	Other -

330 MILE SUBGROUP

9. Why do you go to your cottage? Rate each of the folloiwng as to their importance.

Very Important	Important	Not Important	
1	9	2	Good for children
11	9	0	Isolation, peace and quiet
6	9	0	Sense of roughing it, being close to nature
11	9	0	Relaxation
10	10	0	To engage in outdoor activities
11	9	0	Get out of the city
2	2	0	Other -

TABLE #28

ACTIVITIES ENGAGED IN PRIOR TO COTTAGING

70 MILE SUBGROUP

Can you recall what you did in your spare time (time which you now spend at your cottage) before you had your cottage? Check more than one if necessary.

8	visited local parks or recreation areas (not overnight)				
9	camping	6	visited friends	7	relaxing at home
3	boating	6	visited resorts	7	other (please explain)

240 MILE SUBGROUP

Can you recall what you did in your spare time (time which you now spend at your cottage) before you had your cottage? Check more than one if necessary.

3	visited local parks or recreation areas (not overnight)				
10	camping	3	visited friends	3	relaxing at home
4	boating	7	visited resorts	2	other (please explain)

330 MILE SUBGROUP

Can you recall what you did in your spare time (time which you now spend at your cottage) before you had your cottage? Check more than one if necessary.

3	visited local parks or recreation areas (not overnight)				
15	camping	4	visited friends	6	relaxing at home
4	boating	6	visited resorts	3	other (please explain)

these activities cannot be considered as substitutes at this time or in the future however since some of them indicate a life cycle trend. For example the high incidence of camping as a predecessor to cottaging indicates that as the family grows older it turns away from camping and towards the greater comforts of cottaging. (also cottaging becomes more possible as peak income years are reached) Many of these cottagers would probably not be willing to give up the comforts of cottaging and return to camping.

Relationship of this Survey to the Entire Vancouver Cottage Field

Although this questionnaire study is intended to be a survey only and not a statistical sample of the entire Vancouver cottage field it is useful to present some information about the entire cottage field in order to see exactly where this survey fits in. Table #29 (Taylor 1973) provides a breakdown of where Vancouverites have their cottages and the approximate travel distance to them. The sample does cover a representative range in terms of length of trip from home to cottage. It also covers two of the four major lakeshore cottage areas frequented by Vancouverites.

The cottage owner's survey has a sample of cottagers which are quite representative of the Vancouver cottaging populaiton in terms of income. The mean family income of cottagers surveyed (all sub samples combined) is approximately $23,000 (in 1977). The mean family income for a random sample of Vancouver cottagers in 1972 was found to be about $15,000 (1972 dollars) . (Vancouver Urban Futures, 1972) When this is

TABLE #29

RECREATIONAL ACCOMMODATION OWNED BY RESIDENTS OF GREATER VANCOUVER - LOCATION AND DISTANCE FROM VANCOUVER (1972)

LOCATION	NUMBER OF COTTAGES AT EACH LOCATION	% OF TOTAL	DISTANCE FROM VANCOUVER
Local Mountains	17	8.21	10 - 30 miles
Rural Fraser Valley	17	8.21	40 - 100 miles
North Washington	31	14.97	40 - 120 miles
Mount Whistler	7	3.38	75 miles
Sunshine Coast	19	9.18	20 - 80 miles
Vancouver Island	11	5.31	40 - 150 miles
Gulf Islands	31	14.97	30 miles
Okanagan	17	8.21	250 - 325 miles
Cariboo	21	10.15	220 - 500 miles
Elsewhere in B.C.	24	11.59	
Other Locations	4	1.96	
Missing Data	8	3.86	
Total	207	100.00	

inflated to 1977 levels it equals about $22,300 which is very close to the mean for the sample used in this study. (inflated by cost of living index)

Thus the data presented in this chapter can provide some insight into the entire Vancouver cottage field.

TABLE #30

LENGTH OF OWNERSHIP OF COTTAGE
(distribution of respondents)

TIME	SUBGROUP			
	70 MILE	240 MILE	330 MILE	VANCOUVER ISLAND
1 year	0	0	0	0
2-3 years	2	1	3	4
4-5 years	3	6	10	0
6-9 years	4	1	5	2
10 years	16	9	3	11

CHAPTER THREE

CONCLUSIONS

Gasoline Prices and Reduction in Use of Cottages

The first hypothesis made in this study was that as gasoline prices rise some areas in the Vancouver cottaging field which are presently popular for cottaging will be rejected as being too expensive to reach. The investigation of this hypothesis dealt primarily with reductions in use due to travel cost increases as opposed to attempting to find a point at which the cottages would no longer be used at all. This was done for the following reason:
As travel costs rise the market value of those cottages located at a great distance from Vancouver will tend to fall. Thus if travel costs reach near prohibitive levels the value of the cottages will probably have fallen to such an extent that selling them will not be attractive.

As was mentioned in the previous chapter three methods of estimation will be combined to draw conclusions about the response of cottagers to gasoline price increases. Figures #7 and #8 show the results of this amalgamation of the three estimation methods (Mainland cottager's response to gasoline price increased, mainland cottager's perceptions of their reactions to future price increases, and Vancouver Island cottager's responses to past price increases.) From the analysis conducted in the last chapter it can be concluded that gasoline price increases are not likely to be an important factor in determining cottage use for the seventy mile subgroup.

With regard to the 240 mile and 330 mile subgroups it can be concluded that gasoline price increases will play quite an important role in determining how much these areas are used. In particular the following points should be noted:

1) It appears as if there has already been some reduction in frequency of use in response to recent gasoline price increases.

2) The reduction in frequency of use will be quite severe at first but if prices are raised to much higher levels ($2 - $3.00 per gallon) the rate of reduction in use will decrease (the demand for trips to the cottage becomes less elastic as the number of trips taken per year approaches zero). While this conclusion is based entirely on the cottager's own estimate of how his frequency of use would be affected it is backed up to some extent by the responses to the question regarding gasoline rationing . (See Tables #15-#17) Here the cottagers indicated a preference for a variety of means for coping with the situation. The results basically showed that all activities would be cut back partially instead of one being eliminated. This would suggest a moderation in degree of response with respect to cottaging activity as prices reach extreme levels.

3) Since the Vancouver Island data represents an actual reaction to a substantial travel cost increase (and not answers to hypothetical questions or response to a relatively small increase in travel cost) it should probably be considered as being the most reliable estimate of mainland cottager's future behaviour. For this reason Figure #7 and #8 were constructed with this data being given the most weight in

the middle ranges of travel cost. The past responses of mainland cottagers to travel cost increases were considered primarily at the lower end of travel cost with the aticipated responses of these cottagers to increased travel costs being incorporated at the extreme upper reach of travel costs.

The other major conclusion which can be drawn in relation to the magnitude of the effects of gasoline price increases on cottage use is that use will decline more markedly at the more distant areas than it will at the areas closer to Vancouver. This is shown clearly in Table #10 (Chapter 2) where the absolute value of the price elasticity of demand for trips to the cottage increases steadily with distance from Vancouver. These values correspond fairly closely with other estimates such as those made by Houthakker and Verleger for the price elasticity of demand for gasoline. (short run = -.43, and long run = -.75) It is difficult to make a distinction between the short and the long run with regard to cottaging (non essential nature of the trips, difficulty in selling the cottage if gasoline prices rise too much, etc.). The major point to note here is simply that the estimates in this study were close to the range recorded by other studies.

The distribution of the effects of increased travel costs among the different categories of trips to the cottage (weekend trips, holiday weekend, trips, vacation trips, etc.) should also be considered. As was mentioned earlier there was some confusion regarding weeks of vacation versus number of vacation trips. However the basic trend among all subgroups was one of little change in amount of extended

vacation use. All sub-groups indicated that holiday weekend use would be cut more than normal weekend use in response to travel cost increases which was contrary to expectations. The elasticities (price elasticities of demand for trips to the cottage) for weekend and long weekend trips were very similar for the Vancouver Island subgroup which is felt to be the most reliable. The most reasonable conclusion which can be made from this information is as follows:
Weekend and holiday weekend use will decline to approximately equal degrees in response to a given increase in travel cost while extended vacation use will remain constant. The only way in which extended vacation use will be affected by travel costs is if a family of cottagers finds that since weekend and holiday weekend use has been curtailed to such an extent that they would rather dispose of the cottage than use it only for extended vacation.

Income and Location of Cottage

The second hypothesis made in this investigation was that lower income cottagers travel a greater distance to their cottages (in order to escape high land prices). This was found to be true in the areas sampled. Also the Vancouver Island portion of the investigation suggests that income is an important variable with respect to travel cost increases. These findings suggest that the cottagers at the more distant areas will respond to increased travel costs to a much greater degree (i.e. a greater reduction in use) than will those cottagers at areas closer to Vancouver. (a greater differential in response than what increased distance alone would suggest) It also suggests that the mainland

cottagers at the two most distant areas will exhibit a greater reaction to increased travel costs than did the Vancouver Island cottagers (due to the income differential).

Travel Time and Travel Cost

The third hypothesis made in this project was that at the present time the extent of Vancouver's cottage field is primarily limited by travel time as opposed to travel cost whereas in the future travel cost will be the major limitation. It is very difficult to draw definite conclusions about this since both factors will play some part in limiting distances travelled to cottages. By relating the Vancouver Island results to the mainland results it can be seen that while the primary influence (on the mainland at least) on distance travelled in still travel time the situation is changing to one in which cost is more important (i.e. Vancouver Island travel costs are more similar to the 330 mile subgroup while their travel time is closer to the 240 mile subgroup. Their frequency of use is still closer to the 240 mile group but is beginning to approach that of the 330 mile subgroup (for regular weekends)). This study does show that travel cost is becoming a very important component of distance in regard to frequency of use of cottages (note the substantial responses in terms of reduction in number of trips to both gasoline price increases and ferry fare increases).

In addition to the conclusions which relate directly to the earlier stated hypotheses there are some additional comments which should be made. One of these is with regard to the possibility of this study's observed effects (of travel cost increases upon number of trips to the

cottage) being reduced considerably by a massive switch of cottagers to subcompact cars. Although as was mentioned earlier it is difficult to distinguish between the short run and the long run with respect to demand for trips to the cottage the following breakdown can at least be suggested:

1) The short run - this involves no change in the capital equipment required for cottaging (i.e. the cottage and car).

2) The medium run - this time period involves keeping the cottage but changing to a smaller car.

3) The long run - both the cottage and car can be disposed of or traded for alternatives in this time period.

Additional Comments

While it is clear that my methods of estimation have been based on the first time period it is less clear as to how significant the last two time periods are. If gasoline prices increase quickly it is likely that large cars will be as difficult to sell as distant cottages. Also the data suggest that a major switch to small cars is unlikely to occur at the most distant areas. Although the federal government has said that by 1985 the sales weighted average mileage for all cars sold in Canada must be at least 33 miles per gallon (Energy, Mines, and Resources, 1976) it is not likely that the cars used by cottagers for travel to their cottage will attain that level of performance. The reasons for this are:

1) It will be nearly 10 years after that date before that figure is

reached for all cars on the road due to the stock of older cars.

2) Cottagers are generally middle and upper income people. Therefore they will usually have two cars, one of which will probably be a sub-compact which gets less than 33 miles per gallon. It is likely (particularly for those cottagers who take children with them, and those who travel long distances) that the larger car will be used for the trip to the cottage and smaller one in the city.

3) The figure of 33 miles per gallon is a laboratory test result only and is unlikely to be achieved in practice.

For these reasons it was concluded that a switch to smaller cars by cottagers would alter this study's previously made estimates of effects of gasoline price increases on use by a relatively small amount in the foreseeable future. The cottagers anticipated future responses probably includes the effects of using smaller cars and thus shows a diminishing response to price increases beyond a certain level. The effect is shown in Figures #7 and #8.

Another important consideration is the possibility of the use of public transit to reach the cottage. The results suggested that public transit to cottages would not be very popular but it is possible that this was due to cottagers reacting to the present state of public transit in their area and not to the idea of possible future public transit arrangements.

It can be said that travel cost is becoming an important factor in determining the amount of use which cottages receive.

FIGURE #7 - ESTIMATED RESPONSE TO FUTURE GASOLINE PRICE INCREASES (330 Mile Subgroup)

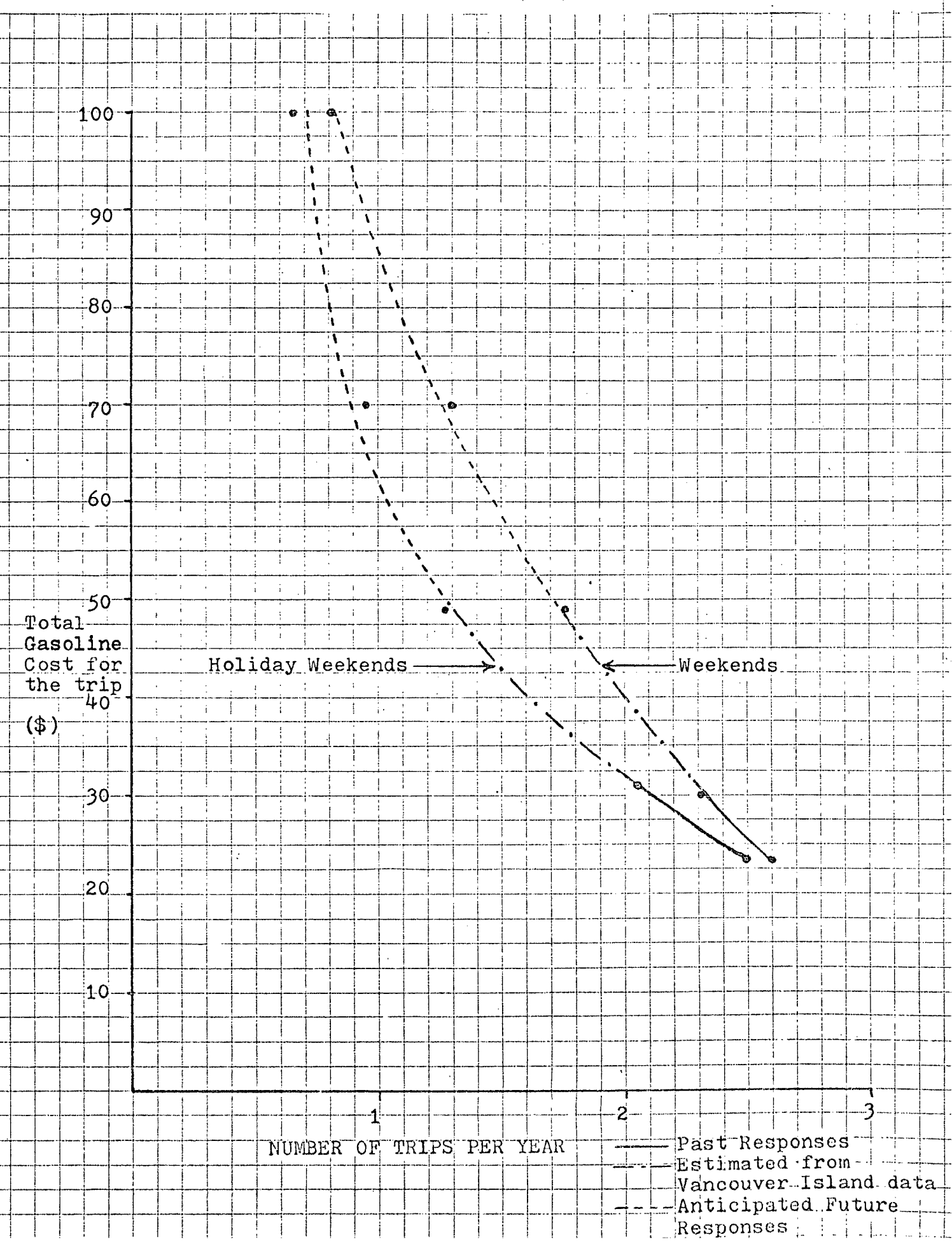
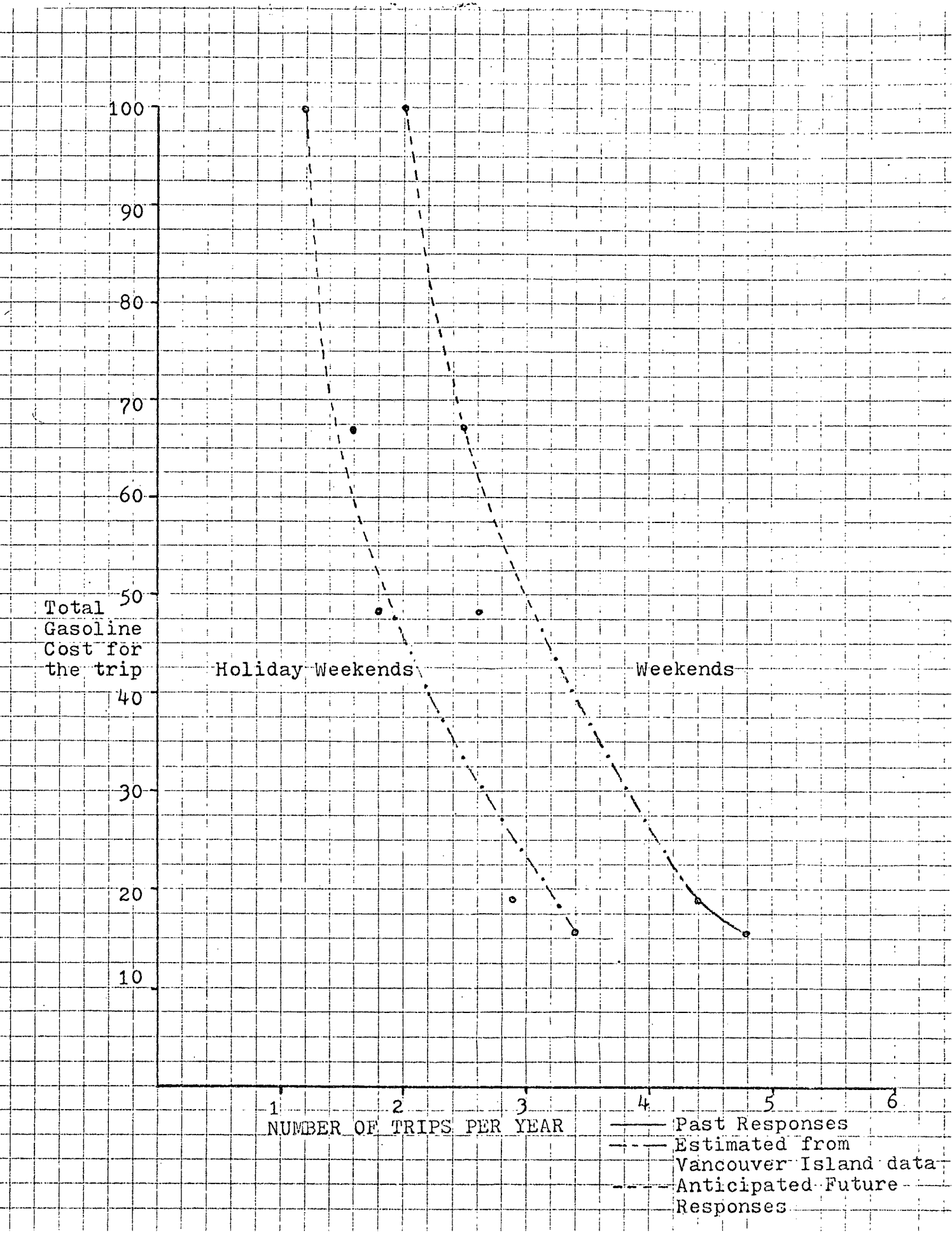


FIGURE #8 - ESTIMATED RESPONSE TO FUTURE GASOLINE PRICE INCREASES (240 Mile Subgroup)



CHAPTER FOUR

THE RELATIONSHIP OF THE STUDY TO REGIONAL PLANNING

Indirect Effects of Gasoline Price Increases

In order to place this investigation in context with regard to regional planning it is first necessary to consider the secondary effects which will occur if increased gasoline prices make some of Vancouver's present cottage areas unpopular. These secondary effects will be in the form of increases in the demand for alternative activities and other cottages close to Vancouver. While none of the questions on the questionnaire used in this study asked cottagers directly what they would do instead if it became too expensive to go to their cottage (this would probably not produce meaningful results) some of the data which was collected provides insight into this question. When this data is considered (Tables #27 and #28) it is apparent that if these people can no longer afford to go to their distant cottage they will be looking for a very similar alternative (high value attached to getting out of the city, relaxation, peace and quiet, engaging in outdoor activities, and the high incidence of camping being an activity participated in before owning the cottage. All of these observations suggest that a similar activity will be sought as a replacement for cottaging). It is unlikely that cottagers displaced due to higher costs for gasoline will be content to sit at home and relax in their backyards. These people will look elsewhere to satisfy desires such as those listed above. Two major possibilities exist for the provision of these types of opportunities

closer to Vancouver:

1) Intensive development of land around small lakes in or close to the Lower Mainland. This could be done in a manner similar to the Block Brothers 108 mile recreational ranch or many of the recreational developments in Northern Washington where a large number of cottage lots near a small lake are made available. The loss in attractiveness due to the lots being non waterfront is usually compensated for by more intensively developed recreational facilities (such as golf courses, etc.) being included. The reduction in privacy normally associated with higher densities is usually minimized by increased attention to design and layout.

2) Increased development of the coastal recreation resource near Vancouver. This could take three forms:

(a) Standard sea shore cottage lots.

(b) Sea shore recreation villages similar to those described in section 1 where a large number of cottage lots utilize a small shore area.

(c) Development of more marina space and marine parks to encourage weekend sailing trips in the Georgia Strait area.

Cottaging and Planning

In order to attain objectives like those outlined above cottaging must be planned for on a scale which considers the location of both the cottager's permanent residence and his cottage. The province of British Columbia does not have a comprehensive cottage policy. In the past few years some policies relating to the development of crown land for

cottage purposes have appeared but these have been site specific in scope. No attempts have been made to direct Vancouver cottagers towards particular areas.

Vancouver cottagers tend to travel longer distances to reach their cottages than do residents of other large North American cities. Friedman and Miller suggest that for most large American cities the recreational field is predominantly within one hundred miles of the city centre. (Friedman and Miller, 1965) A study of metropolitan Toronto cottagers also suggested that shorter travel distances were involved there than is the case with Vancouver cottagers. (Hodge, 1970)

When considering the future of the Vancouver cottaging field the following points should be taken into account:

1) Vancouver cottagers travel farther to reach their cottages than do cottagers in most other cities.

2) Energy costs are liable to continue to increase.

3) Increased energy costs will result in a considerable reduction in cottage use. (See previous chapter)

With these points in mind it is apparent that comprehensive cottage policy for British Columbia (and particularly for the Vancouver cottage field) is desireable in order to minimize future problems. It is also evident that the need for this sort of planning is more pressing with respect to the Vancouver cottage field than it is for other large North American cities since the greater distance travelled by Vancouver cottagers has the following implications:

1) Greater distances mean higher initial travel costs and thus for a given income group a greater sensitivity to increased costs.

2) Due partially to the greater distances travelled the Vancouver cottage field is more dispersed than is the case around most other cities. This makes the provision of public transit from city to cottage even less practical here than it is in other places.

With regard to a comprehensive policy for Vancouver's cottage field there are two relevant time periods.

Short Run

First of all in the short run emphasis should be on the continued acceptance of automobile dependant cottaging as a reasonable form of recreation with attempts being made to direct cottaging into locations somewhat closer to Vancouver. There are many natural forces at work in the Vancouver cottage field which have the effect of directing the prospective cottager to the interior of the provinces. Some of these are as follows:

1) A physical shortage of lakeshore areas close to Vancouver.
2) A sunnier climate in the interior of the province.
3) The price for land generally drops as one travels farther away from Vancouver.

These forces can be counteracted to some extent (except for climatic variations) by a concerted effort at planning and development. The intensive development of small lakes near to Vancouver suggested earlier could result in the provision of many more cottaging opportunities close to Vancouver. Increased development of the sea coast resource could also provide more cottaging and other recreational

opportunities close to Vancouver. If a concerted and coordinated effort is made many more cottagers can be accommodated close to their homes. Some changes in the type of cottage setting will occur but these can be compensated for. The other advantage of more intensive cottage developments is that they are more readily adaptable to the use of public transit from home to cottage than are today's dispersed cottage development.

The Long Run

A long run cottaging policy for the Vancouver cottage field could be one of discouraging further development once all possible local areas are developed intensively. (discouraging further distant development) At that time emphasis can be placed on encouraging use of alternative forms of transportation to existing areas and on developing other forms of recreation as alternatives to cottaging. Transportation possibilities could include:

1) More efficient use of the automobile (more efficient cars, organization of car pools, etc.)

2) Public transit to intensively developed areas.

3) Combinations of public trnasit and private automobiles left at transit terminals. A system like this is presently used on Saltspring Island where many cottagers leave a very old car at the island ferry terminal for the trop from the terminal to thier cottage.

Summary

While these suggestions may give the impression of calling for a

much greater degree of government involvement in an activity where the participants may prefer to be left alone this does not need to be so. Various levels of government are involved in cottaging now. Regional districts regulate developments. In the past the Provincial Lands Branch has been directly involved in lakeshore subdivisions as a developer. Thus the major change suggested here is simply that a coordinated cottage policy be developed which considers both where the cottager comes from (location of permanent residence) and where he goes to (location of cottage). If this is done the objectives suggested here (or others) could be attained within the present planning framework of the province.

This study has shown that it would be very beneficial to have a coordinated cottaging policy for the Vancouver cottage field. It has outlined an area where further development of the regional planning process would be helpful.

This thesis has examined the relationship between cottaging and the cost of travel from the viewpoint of an existing cottager (i.e. one who already owns his cottage). The prospective cottager has not been considered. Thus the implications of travel cost increases for the recreational property market have not been included in this study.

It is likely that increases in the cost of travel to cottages will cause the value of cottages to drop at the most distant areas. Cottages located close to Vancouver will probably rise in value as the demand for cottages is shifted from the more distant areas to the closer ones.

It is possible that as travel cost rises and cottage prices fall

that the total cost of cottaging will remain approximately constant. It could then be suggested that in the long run use of the cottages would change very little in response to increasing travel costs. This theory assumes that cottagers treat fixed and variable costs in the same manner. On the basis of this study it does not appear that this is the case. Further investigation into the reactions of cottagers to the different categories of costs associated with this activity would be helpful.

Investigation into the relationship between travel cost increases and the market value of cottages would be helpful. A study based on data of at least several years duration would be desirable in order to determine:

1) If there is a relationship between travel costs and recreational property values.
2) What that relationship is.
3) If the relationship is constant or variable over time.

Further investigation into the total costs of cottaging would also be desirable. Research of this nature would provide a greater understanding of the responses of cottagers to travel cost increases.

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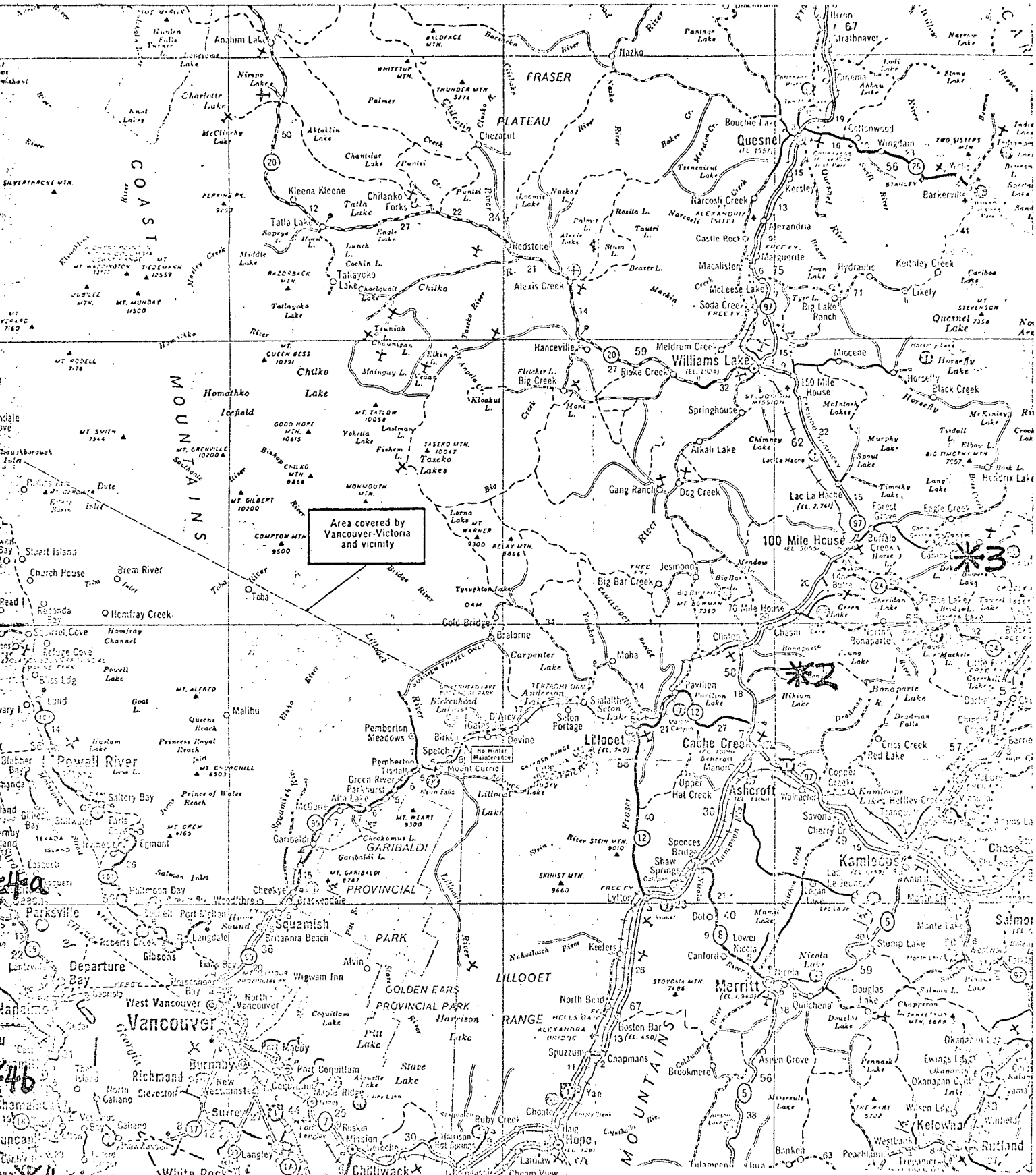
MAP OF COTTAGE AREAS STUDIED



*1 - 70 mile group - Cultus Lake
*2 - 240 mile group - Loon Lake
*3 - 330 mile group - Canim, Deka, and Sulphurous Lakes
*4a - Qualicum Beach
*4b - Lake Cowichan

CALCULATIONS OF TRAVEL COSTS FOR MAINLAND AND VANCOUVER ISLAND COTTAGES

1) MAINLAND GASOLINE COSTS

660 miles (Round trip) ÷ 18 miles per gallon = 36.6 gallons

1974 cost = 36.6 x $.55 = $20.31

1976 cost = 36.6 x $.85 = $31.16

2) VANCOUVER ISLAND TRAVEL COSTS

Assume: 3 Persons per vehicle and a constant gasoline cost of $4.00 per round trip.

1975 Cost = Ferry fare ($5 + $2 + $2 + $2 = $11 x 2 = $22) + $4 = $26.

1976 Cost = Ferry fare ($10 + $4 + $4 + $4 = $22 x 2 = $44) + $4 = $48.

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SCHOOL OF COMMUNITY & REGIONAL PLANNING

February 15, 1977

Dear Cottager:

I am undertaking a study of the effects of possible higher future prices for gasoline on cottaging in British Columbia. Several lake areas in the province have been selected. This study is part of a research project at the School of Community and Regional Planning at the University of British Columbia.

In order to carry out this study it is necessary for me to obtain some information about cottaging in the province and about cottager's responses to future gasoline price increases. To this end here is a questionnaire which I would ask you to complete. Some thought will be required for a few of the questions but very little writing is involved. The questionnaire will only take about 15 minutes of your time. The data which you provide will be treated with strict confidence and your response will be anonymous.

Please complete the questionnaire as soon as possible and forward it in the stamped self-addressed envelop which is enclosed for your convenience. Please do not sign the questionnaire. I will contact you again at a later date to check as to whether or not you have returned the questionnaire.

Thank you for your help and co-operation.

Yours very truly,

Greg A. Rowe

gar/b

COTTAGE OWNER'S SURVEY

1. How long have you owned your property?

   ____ 1 year ____ 2-3 years ____ 4-5 years ____ 6-9 years
   ____ 10 years

2. How close is your cottage to the lake?

   ____ waterfront ____ non-waterfront

3. What is your principle form of transportation to your cottage?

   ____ private car ____ carpool with nearby cottagers
   ____ train ____ bus ____ other (please specify) _____

4. How often do you use your cottage now? Please indicate the total number of visits you made in the last 12 months in each category.

   ____ visits on ordinary weekends ____ visits on holiday weekends
   ____ visits on extended vacation

5. Please indicate the number of visits you made per year before the gasoline price increases of the last few years.

   ____ visits on ordinary weekends ____ visits on holiday weekends
   ____ visits on extended vacation.

6. The price of gasoline will probably continue to increase. Could you please try to estimate how often you would go to your cottage at the following gasoline prices (assuming other prices and your wages remain as they are today). Please give your estimate of the total number of visits per year in each category.

GASOLINE COSTS		ESTIMATED NUMBER OF VISITS PER YEAR		
Per Gallon	Round trip gasoline cost for 330 mile one way trip @ 20 miles per gal.	Weekends	Holiday Weekends	Extended Vacation
$1.00	$33.00	_____	_____	_____
$1.50	50.00	_____	_____	_____
$2.00	66.00	_____	_____	_____
$3.00	100.00	_____	_____	_____

7. If you use a car to reach your cottage would you please answer the following questions:

   (a) How many people normally ride in your car for the trip to the cottage? ____ 2 or less ____ 3-4 ____ 5 or more
   (b) What size of car do you use for the trip?
   ____ full size car (or truck) ____ compact ____ subcompact
   (c) What gas mileage do you get on the trip? ____ miles per gallon
   (d) Do you often tow a trailer? ____ regularly ____ occasionally
   ____ never

8. In the event of a future energy shortage which resulted in gasoline rationing, which of the following would you do? Please check under the appropriate column.

DEFINITELY	PROBABLY	UNLIKELY	
			Continue to use a car as regular transportation in the city and discontinue (or drastically reduce the number of) trips to the cottage.
			Use public transportation to reach the cottage.
			Switch primarily to public transit in the city and continue to drive to your cottage.
			Switch to a smaller, more economical car and continue present driving patterns.
			Other, please specify _____ _____

9. Why do you go to your cottage? Rate each of the following as to their importance.

Very Important	Important	Not Important	
			Good for children
			Isolation, peace and quiet
			Sense of roughing it, being close to nature
			Relaxation
			To engage in outdoor activities
			Get out of the city
			Other - _____ _____

10. What was the primary purpose of buying your cottage?

____ vacation home ____ investment ____ retirement home

____ permanent home

11. Can you recall what you did in your spare time (time which you now spend at your cottage) before you had your cottage? Check more than one if necessary.

____ visited local parks or recreation areas (not overnight)

____ camping ____ visited friends ____ relaxing at home

____ boating ____ visited resorts ____ other (please explain)

_____

12. In your opinion what is the current market value of your cottage, including the lot?

____ less than $5,000 ____ $15,000-$20,000 ____ $40,000 or greater

____ $5,000-$10,000 ____ $20,000-$30,000

____ $10,000-$15,000 ____ $30,000-$40,000

13. Under what arrangement do you hold your property?

____ clear title ____ lease

14. What is your annual income of your family?

____ less than $5,000 ____ $15,000-$20,000 ____ $40,000 or greater

____ $5,000-$10,000 ____ $20,000-$30,000

____ $10,000-$20,000 ____ $30,000-$40,000

15. What is your occupation?

____ managerial ____ transport and communication

____ professional and technical ____ craftsman

____ clerical ____ labourer

____ sales ____ retired

____ service and recreation ____ other

16. Check the highest level of education that you have achieved.

____ elementary school ____ high school

____ trade training or technical school ____ university

VANCOUVER ISLAND COTTAGE OWNER'S SURVEY

1. How long have you owned your property?

___ 1 year
___ 2-3 years
___ 4-5 years
___ 6-9 years
___ 10 years and over

2. How often did you use your cottage this past summer? Please write total number of trips per year in each category.

___ Number of ordinary weekends
___ Number of holiday weekends
___ Number of weeks vacation

3. How often did you use your cottage in other years (average use before the ferry rates were increased)? Please write total number of trips per year in each category.

___ Number of ordinary weekends
___ Number of holiday weekends
___ Number of weeks vacation

4. Why do you go to your cottage? Rate each of the following as to their importance.

VERY IMPORTANT	IMPORTANT	NOT IMPORTANT	
			Good for children
			Isolation, peace and quiet
			Sense of roughing it, being close to nature
			Relaxation
			To engage in outdoor activities
			Other -

5. In your opinion what is the current market value of your cottage, including the lot?

___ less than $5,000
___ $5,000 - $10,000
___ $10,000 - $15,000
___ $15,000 - $20,000
___ $20,000 - $30,000
___ $30,000 - $40,000

6. What is the annual income of your family?

___ less than $5,000
___ $5,000 - $10,000
___ $10,000 - $15,000
___ $15,000 - $20,000
___ $20,000 - $30,000
___ $30,000 - $40,000

7. What was the primary purpose for buying your cottage?

___ vacation home (and/or weekend home)
___ investment
___ retirement home
___ permanent home