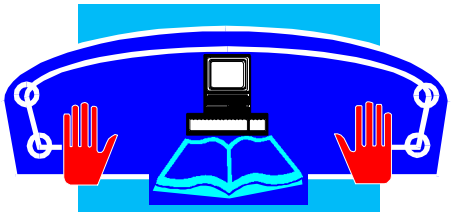

Regional Income Analysis Of Northwest Territories Fishing Lodges Fisheries, Sport Fishing Information

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Regional Income Analysis of Northwest Territories Fishing Lodges

by

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Western Region

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FOREWORD

The major objective of this study was to assemble information on the economic dimensions of the sport fishing lodge industry of the Northwest Territories. I am confident that this objective has been met to the satisfaction of study participants and that the information presented will enhance the dialogue between private and public interests concerned with fisheries, tourism and economic development in the Northwest Territories.

This study and the 1980 National Angling Survey reflect the initial commitments of the Western Region, Fisheries and Oceans Canada, to a recreational fisheries economics program. These studies are considered necessary for the perspective they provide on the industry and angling activity in the Northwest Territories. However, these studies, and their information on angler expenditures or on the economic impacts of the industry serving anglers, should not be equated with the economic values of the sport fishery. Consequently, they are not sufficient information to conduct a valuation of the sport fishery nor are they sufficient to make fisheries resource allocation decisions.

Resource valuation and allocation are major concerns for managers of fisheries resources, but these concerns require that information be provided on the benefits accruing to anglers over and above their expenditures on ancillary goods and services. In the next phase of our program, it is our intention to develop the analytical tools to measure primary values and assess the trade-offs in allocating more or less of the fisheries resource to recreational use.

D.M. Cauvin, Director

Regional Economic and Marketing Services

Executive Summary

RELEVANCE OF STUDY

This study should be of interest to the sport fishing lodge industry and public sector agencies concerned with fisheries, tourism and economic development in the Northwest Territories. The principal contribution of the study is to enhance the understanding of the dimensions of the industry in the Northwest Territories. The study documents the present size, capacity and utilization of lodges; evaluates financial performance and national and regional economic impacts; and finally, reports on the attitudes and perceptions of lodge operators.

The second contribution of this study is in the development of a framework to evaluate economic contribution of the lodge industry. Economic contribution is measured through the use of the national income accounts and input/output analysis, established economic procedures which enable evaluation of: (a) the value added of the lodge industry and (b) the inter-relationships between the lodge industry and other industrial sectors and their cumulative contribution to national income. Furthermore, the use of an inter-provincial input-output model enables comparison of national and regional economic impacts. This approach is considered superior to gross expenditure measures as crude indicators of industry contribution.

This study provides an economic perspective of the lodge industry through the measurement of economic impacts. Economic impact analysis is of particular use to agencies responsible for regional development and employment creation. From a regional viewpoint economic impacts may be equated with regional benefits, dependent upon alternatives within the region and whether or not the impacts would otherwise occur outside the region. However, as the viewpoint changes from regional to national, alternative uses of the resources

which combine to produce the economic impact increase. Conventionally, economists advocate that from a national perspective economic impacts are likely to be matched with these offsetting alternatives. As a result, economic benefits equal costs and there is no net economic yield to the economy.

Therefore, it is suggested that caution must be used in the application of the study findings. The economic impact of the lodge industry on the N.W.T. has been documented and this should be useful for regional development analysis. However, economic impact data are not appropriate indicators to measure the national benefits of sport fishing, the value of fisheries resources, trade-offs between alternative fisheries resource uses, or as justification for public investments in fisheries management. Consideration of these problems requires information on the direct benefits to anglers of the right of access to the fishery. Direct benefit measures reflect the willingness of anglers to pay for the right of access, over and above their expenditures on the ancillary goods and services necessary for them to participate in the fishery.

For fisheries management purposes, it is suggested that economic impact data can be useful provided the data are used in the proper context. Liberal interpretation and/or application of impact data as value measures or as "gross" indicators of value is erroneous and policy prescriptions based on these measures are not likely to be in the public interest. The approach most likely to yield useful management information is the integration of economic impact and primary valuation data to enable systematic assessment of total benefits and costs of the fishery. This approach would be amenable to both national and regional benefit measurement, and more importantly, would make explicit the trade-offs between primary and secondary benefits which so often characterize natural resource management policy decisions.

SUMMARY OF FINDINGS

SIZE, CAPACITY AND UTILIZATION

The study documents the present numbers and capacity of sport fishing lodges in the Northwest Territories. The survey has enabled estimation of 1980 operating statistics.

In the 1980 season, there were 41 lodges actively operating in the Northwest Territories. These lodges ranged in size from the 32 establishments with less than 30 bed capacity to the 9 establishments, principally on Great Bear and Great Slave lakes, with greater than 30 bed capacity. Lodges are estimated to have served 6400 guests with 40,600 guest/days over the course of the 2800 operating days in 1980. This activity is concentrated in the two month period, July and August, during which time 75% of the clientele are served. Of all the clientele served, the U.S. remains the major single market with 75% of the guests reported to be U.S. residents. The seven day package plan was used by approximately 60% of the clientele for their fishing trip to the Northwest Territories.

FINANCIAL PERFORMANCE

The study presents an aggregate income statement for 1980 operations. It is estimated that the lodge industry in the Northwest Territories realized total gross sales of $6,994,000 on 1980 operations. Of this total 87% is derived from package plan revenues. Total expenses are estimated to be $6,822,000, leaving net operating income of $172,000.

For the respondents to the financial survey, a comparison was made between gross sales and direct costs of production. This analysis, referred to as short run viability analysis, suggests favorable price/cost relationships for 17 of 19 operations. A similar analysis was made to examine

long run viability. This involved comparison of cash flows with long-run investment costs. The long run viability analysis indicates only 7 of 17 operations show a positive net present value at a 10% discount rate, an indication that the long-run viability of lodge operations is much less secure.

ECONOMIC IMPACT

The aggregate income statement has been further evaluated to measure the contribution of sport fishing lodges to national and regional product and income. This analysis has been conducted through the use of the Statistics Canada Inter-provincial Input-Output Model. The model also enables measurement of economic linkages between lodges and other sectors of the economy. Three levels of economic impact are examined. First, the direct economic impact measures economic contribution of the lodges. This impact occurs as a consequence of: (a) the wages and salaries, profits and rents realized by the lodges and (b) the wages and salaries, profits and rents realized by the direct suppliers of lodges as a consequence of their sales to the lodge industry. Second, the indirect economic impact is the result of the purchases by all industries in which production is required to provide goods and services to direct suppliers of lodges. Third, the induced economic impact arises from the circular flow of economic activity and the increases in the purchases of other goods and services as a consequence of the inclusion of a household income multiplier.

Direct economic impact is estimated to result in gross domestic product of $4,692,000. The total direct employment impact is 246 person/years of employment. As noted, the direct impact is composed of two parts: the value added of the lodge industry translates into gross domestic product of $2,315,000 and the equivalent of 164 person/years of employment. The gross

domestic product in the industries directly supplying lodges is $2,377,000 and 82 person/years of employment arise as a consequence of lodge purchases from suppliers.

The study also enables measurement of the employment and income retained in the N.W.T. as a direct result of lodge operations. The N.W.T. share of industry value added ranges from $553,000-$1,358,000. If none of the profits and capital consumption allowances are retained in the N.W.T., the $553,000 estimate is presented. On the other hand, if all the profits and capital consumption allowances are retained, the maximum share of industry value added results. With respect to employment impacts, 254 N.W.T. residents are estimated to have received seasonal employment for a total of 16,914 person/days. This is the equivalent of 75 person/years of employment and equals 46% of total employment in lodge operations.

Indirect economic impact is estimated to result in gross domestic product of $1,578,000. The total indirect employment impact equals 45 person/years. These impacts occur in all industries in which production is required to meet the demand for goods and services of direct suppliers to lodges. The analysis suggests the high degree of dependence of the Northwest Territories on other regions of the economy. The indirect' income multiplier for all of Canada is 1.34 and for the Northwest Territories 1.09. The indirect employment multiplier for all of Canada is 1.18 while the employment multiplier for the N.W.T. is 1.05. Multipliers indicate the relationship between indirect and direct income (employment). For example the N.W.T. income multiplier suggests for every additional dollar of direct gross domestic product, there is an additional $0.09 of gross domestic product created within the N.W.T. Employment multipliers have a similar interpretation.

Induced economic impact is estimated to result in gross domestic product of $3,811,000 and to provide the equivalent of 100 person/years of employment.

The total income multiplier for all of Canada is 2.15 and for the Northwest Territories is 1.33. This income multiplier is the ratio of total gross domestic product to direct gross domestic product. The total employment multiplier for all of Canada is 1.59 and for the Northwest Territories is 1.19.

INDUSTRY PERCEPTIONS

Operators were provided the opportunity to complete an attitudinal survey which dealt with: (a) resource availability, (b) resource management and (c) market potential issues.

Resource Availability. The most frequently mentioned resource attribute in attracting anglers to the Northwest Territories is the opportunity to catch large fish. Should there be a decline in large fish catches, the majority felt substitute opportunities would mitigate declines in business volume, the most often mentioned attribute being the opportunity to experience northern landscape and wildlife.

Resource Management. Operators perceive the enforcement of fisheries regulations to be adequate, but they view the current level of funding for fisheries management to be less than adequate. Consequently, they felt biological assessments and the monitoring of harvests from all uses to be less than adequate.

Should the government revenues from the industry prove insufficient to cover the costs of resource management, the majority preferred that any shortfall be covered from general taxation revenues rather than increased licence fees, direct taxes, or royalty charges on the industry.

This position is also reflected in the role operators perceive for

licence systems and licence fees. The current licence system is viewed by operators principally as an aid to officers enforcing fisheries regulations. In looking at future uses of the licence system, one third prefer the system continue to be used as an aid to enforcement, one third as a source of revenues earmarked for resource development, and one quarter as a management tool to control angling pressure by varying the number of licences and the prices charged.

Operators suggest there is little room for adjustment in non-resident licence fees. Approximately 80% of the operators felt a significant decline in business volume would occur at a $50 fee.

Operators prefer that any resource use conflict issues be addressed through resource allocation committees involving representatives of all interested parties.

Market Potential. The availability of the fisheries resource, in particular the opportunity to catch large fish and the abundance of fisheries resources, is perceived by operators as the most important attribute in attracting anglers to the Northwest Territories. Personal advertising efforts were listed next in importance.

Respondents to the survey indicated that, in light of current regulations and economic conditions, they would maintain or expand operations. Land claim issues are the single factor most likely to influence operators' investment intentions in the next five years.

SUGGESTIONS FOR FURTHER STUDY

The Department of Fisheries and Oceans and the Government of the Northwest Territories should examine the feasibility of developing annual operating statistics on the lodge industry through the use of Statistics Canada's Traveller Accommodation Survey. In addition, these departments

should examine the need for a more detailed survey of the industry, similar to this study, to be conducted on a periodic basis.

This study emphasizes that expenditure and economic impact information is not sufficient for resource valuation and allocation decisions. The need for the Department of Fisheries and Oceans to develop methods and information to evaluate the implications of fisheries management allocation policies is clear.

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1.0 Introduction

1.1 Background to the Study

There are some longstanding perceptions of the economic performance of sportfishing lodges and outfitters throughout Western Canada. Taylor (1962), for example, commented on the attributes of Northern Ontario fishing and hunting lodges accessible only by air:

> "The fishing and hunting potentials are superb for those who are willing to pay for the privilege ... As a general group, those (camps) utilizing air access have been the most admired, described, and profitable of all outfitters' camps in Northern Ontario. They have become a mecca for the true sportsman (real or imagined), and by catering to them have proven to be very successful financially, more so than any other type of outfitter's camp."

This perception of the performance of the industry has, in turn, lead to some harsh comment with regard to the adequacy of the industry's contribution to the regional and Canadian economies. This situation is perhaps no more evident than in the Northwest Territories, where, for example, a 1972 Federal-Territorial task force commented:

> "The task force strongly supports the principle that northern development should benefit northerners. Some past developments have not satisfactorily met this criterion. For example, many fly-in sport fisheries, such as some of those which have developed on Great Bear Lake, the East Arm of Great Slave Lake, and the char fisheries of the northern coast are owned and operated by entrepreneurs not resident in the north. The bulk of the financial benefits from these fisheries accrue to southern Canada and the U.S.A. Such fisheries have provided insignificant employment for northern residents."

Presently, there is a large gap in the understanding of the nature, conduct and economic performance of the lodge industry in Western Canada. This has constrained the effectiveness of public policies which impinge on the fishing industry, since more often than not it is necessary to rely on intuition and common belief in the absence of current and relevant information. Suffice to say that public policies would be enhanced if more information were available. This report, which contains a profile of the sport fishing lodges in the Northwest Territories, represents an initial investigation into the performance of N.W.T. operations.

This first chapter outlines the purpose of the study, its relevance, and the methods employed. The second chapter describes the sport fishing lodges and their capacity and outlines the nature of the sample in relation to the population of licensed establishments. Chapter 3 reports on the 1980 operations of the industry, including operating statistics, financial performance, and regional income impacts. Chapter 4 reports on attitudes of the industry with respect to resource availability, resource management issues and future development opportunities. Chapter 5 examines the implications of this study for fisheries management and economic development programs. The final chapter presents the summary and conclusions of the study.

1.2 Objectives of the Study

This study will focus on N.W.T. lodges providing access to the sport fishery. The objectives of the study are:

(a) to provide a description of the present size, capacity and utilization of the industry;

(b) to analyze the financial and economic performance of the industry;

(c) to conduct a regional impact analysis which will examine (i) the total employment and income impacts of the industry and (ii) the N.W.T.

employment and income impacts in relation to total employment and expenditure 'patterns;

(d) to assess the perceptions of the industry with respect to the relationship between resource availability and business viability, the potential for expansion of the recreational fishery and the relationship between prices charged for licence fees and business volume and profitability.

1.3 Relevance of the Study

The principal contribution of the study will be to enhance the understanding of the industry in the N.W.T., both in terms of current performance and potential for expansion. The lodges in the N.W.T. have considerable interface with both federal and territorial management agencies. For example, the natural resource, on which the livelihood of the industry is dependent, is managed by the public sector. The authority to control access to the fishery and to allocate the resource between competing interests also lies with the public sector. Similarly, the conditions of tenure and various other financial and legal conditions which constitute the "rules of the game" lie with the public sector. The public sector, throughitseconomic development initiatives, may assist in the promotion of the industry. Given this mix of public and private interests in the industry, it is clear that the inter-dependencies of industry and government require that (a) the industry be in a position to state their case and (b) the public agencies have a good understanding of the ramifications of regulation, legislation and resource allocation decisions on industry performance. This study provides the means of assembling, in a systematic fashion, industry-wide data on the nature of the secondary fishing industry.

A second application of the study is in demonstrating the current performance of the industry. The relationships between revenues and expenses have important implications to the short and long term survival of the firm and, in aggregate, the need and/or opportunity to maintain, expand or contract the number of operations in the industry. The study provides a means of simulating the effect on the industry of changes in such key variables as utilization rates, price structure, operating costs, investment costs, taxation policy and an expansion in the number of firms.

The third application of the study is in assessing the regional impacts of the industry to the economy of the N.W.T. There are concerns not only with the total revenues and expense incurred by the industry, but also with the regional incidence of these receipts and expenses and their related employment impacts. This study provides a means of estimating the distribution of costs of the secondary fishing industry between N.W.T. expenditures and expenditures in all other regions and documenting the local income component of expenditures made in the N.W.T.

Finally, the study provides a means of assessing the attitudes of the industry with respect to key development issues such as the relationship between resource availability and business viability, the pricing of access to the fishery and the potential for expansion of the recreational fishery. Although this aspect of the survey is more qualitative than quantitative in nature, it will nevertheless provide a means of identifying areas of concern to the industry.

1.4 Methods of Study

The Department of Fisheries and Oceans cooperated with the Travel Industry Association of the Northwest Territories and the Government of the Northwest Territories in establishing the objectives and methods of the

study. The survey instrument, presented in appendix A, was developed by representatives of these organizations. Survey design of the attitudinal section benefitted from consultation with a sociologist from the University of Manitoba.

The survey was designed as a census of N.W.T. lodges and outfitters and was administered by field interviewers. This approach, while relatively expensive, provided the opportunity to explain the purpose of the survey, to complete parts of the survey, and to make arrangements for financial information to be completed. Given the diverse areas of residence of lodge operators, it was not always feasible to conduct personal interviews. Where the cost was considered prohibitive, a telephone contact was made and copies of the survey were distributed by mail.

The survey was conducted in a way which ensured the confidentiality of information provided. The industry assigned survey codes and was the sole agency with control over the coding system. Neither the federal nor territorial agencies have access to the coding system.

The territorial government identified 41 sport fishing lodges and four outfitters who should be included in the survey. Efforts were made to contact all operators, but the survey response resulted in less than complete coverage. Of the 41 lodges, 34 operators completed at least part of the survey. Financial information was obtained from 21 operators, but a complete financial survey was available for only 19 of the operators. One of the four outfitters participated in the survey, but the information is not included in this report.

Statistical tests were used to compare the financial sample with non-respondents. From these tests, it became evident that there was better coverage of larger facilities and a method of stratifying the sample would be

necessary. The approach selected for the development of population estimates involved stratification of the sample into capacity and area categories. Expansion or weighting factors were applied to each stratum to yield estimates of population parameters.

The data analysis package used in this survey is SPSS (statistical package for the social sciences). The input-output analysis has been conducted through the use of Statistic Canada's Interprovincial Input-Output Model.

2.0 Profile of the Fishery

2.1 Dimensions of the Fishery

The Northwest Territories span a geographic area of approximately 1,300,000 square miles, more than one-third of the whole of Canada. The territories begin at the 60th parallel and extend northward for more than 1600 miles to within 500 miles of the North Pole. From the western limits in the Mackenzie Mountains to the eastern limits on Baffin Island, the distance is approximately 2000 miles.

This region is characterized as a relatively undeveloped region of Canada. The population of the Northwest Territories is about 46,400 persons, including 16,000 Inuit (Eskimo), 8000 Dene (Indian), 7500 Metis and 15,000 of other extraction. This population is distributed throughout 64 communities in the territories, the largest being Yellowknife with a population of approximately 10,000. By contrast, there are numerous small communities, such as Bathurst Inlet (population 29), Colville Lake (population 73) and Fort Providence (population 556).

The freshwater area of the territories is 51,465 square miles or 4% of the total land area. Two lakes dominate the area, Great Bear and Great Slave lakes, each lake comparable in area at about 11,000 square miles. The diversity of lakes, rivers, and geography throughout the territories provides an impressive range of sport fishing opportunity. The principal species include arctic char, arctic grayling, lake trout, walleye and northern pike.

Arctic char, Salvelinus alpinus, are members of the salmon family, very streamlined, with a dark green back shading to silvery sides and belly, and pink spots on the sides. The char may reach sizes as long as 38 inches and weights to 26 pounds, but the average is much smaller, for example, average weights of seven pounds in the territories. The arctic char is distributed

throughout the northern coastal waters of the Arctic Ocean and the rivers flowing into the ocean. Landlocked char are also found in lakes on the Arctic Islands.

Arctic grayling, Thymallus arcticus, are troutlike fishes with rather small but toothed jaws, large scales, and a large and often colourful flaglike dorsal fin. Arctic grayling are widely distributed throughout the territories, characteristically found in schools in clear water, throughout most lakes and streams of the north. They may also be taken at several points along the Mackenzie River, but usually where clear tributaries enter. In large lakes they are generally found close to shore, along rocky shores and near stream mouths. Although seldom weighing more than two pounds, the grayling is reported to be great sport on light tackle.

The lake trout, Salvelinus namaycush, is perhaps the most reputable of northern species taken in the tributaries, its reputation attributed to the large size of fish caught. For example, the record catch is 65 pounds on Great Bear Lake. Lake trout, normally considered ian inhabitant of deep, cold lakes, are distributed in numerous waters throughout the territories. There are designated waters in the territories, including Great Slave Lake, Great Bear Lake and all tributaries one mile upstream of the two lakes, where there are catch and possession limits on the harvest of trophy-size trout. For these waters, angling restrictions require that not more than one lake trout shall be over 28 inches fork length and no more than two lake trout may be taken during any fishing trip.

Walleye, Stizostedion vitreum vitreum, is a highly prized recreational species. The walleye are a yellow-green fish, with a spiny dorsal fin and silvery eyes. Reported catches as long as 30 inches and weight to 11 pounds are noted, but more typically walleye harvests will not exceed five pounds.

The distribution is restricted to the Mackenzie River system. They are distributed throughout most of the Mackenzie River basin north to Arctic Red River; not ascending the Peace River above the Peace Canyon, onor the Liard above the Liard Canyon.

Northern Pike, Esox lucius, is characterized by the long, flattened snout, large mouth with many teeth, and the backward placement of the dorsal fin. Pike are found generally in shallow waters in lakes and streams throughout the Northwest Territories. Size lengths range to over four feet and weights in excess of 40 pounds have been reported, and it is common to hear of a 20 pound pike being caught.

Currently, there are two types of angling licences. The resident sport fishing licence is available to all persons who have resided in Canada for a period of not less than six months for a fee of $3.00. The non-resident sports fishing licence is sold for a fee of $10.00. No licence is required for children under the age of 16 years or for residents over 65. Over the years, the combined effects of the general growth in the demand for outdoor recreation, the attractive features of the sport fisheries of the N.W.T. and the process of regional growth and development, have resulted in a steady increase in the number of participants in the fishery. The trends in licence sales by type of licence are presented in Table 1.

The national angling surveys, conducted in 1975 and 1980, have provided information on sport fishing activity across Canada. The 1980 survey indicates that 14,113 of 15,124 anglers licensed to fish in the N.W.T. were active participants in the fishery. There were an estimated 183,300 angler days in 1980, with an average of 13 days fished/angler. Anglers reported that 228,580 fish were retained in 1980.

Table 1. Northwest Territories Sport Fishing Licence Sales for the Period 1954/81

Year	Total Licences	Resident Licences	Non-resident Licences
1954-55	133	27	106
1955-56	270	106	164
1956-57	743	120	623
1957-58	839	126	713
1958-59	1,100	229	871
1959-60	1,204	407	797
1960-61	1,406	504	902
1961-62	1,605	810	795
1962-63	2,153	928	1,225
1963-64	2,381	985	1,396
1964-65*	---	---	---
1965-66*	---	---	---
1966-67	4,529	1,218	3,311
1967-68	5,133	1,508	3,625
1968-69	5,586	1,630	3,956
1969-70	5,209	1,355	3,854
1970-71	5,989	1,439	4,550
1971-72**	6,584	3,346	3,238
1972-73	8,124	4,772	3,352
1973-74	9,344	5,742	3,602
1974-75	10,668	6,723	3,945
1975-76	11,375	7,716	3,659
1976-77	11,474	7,593	3,881
1977-78	14,462	10,198	4,264
1978-79	13,528	9,590	3,938
1979-80	13,186	9,175	4,011
1980-81***	15,124	10,656	4,468

* No data available
** Definition of resident changed to include all Canadians
***Subject to revision

The national surveys have documented the importance of the fishery in attracting tourists to the N.W.T. The availability of the unique fisheries resources of the N.W.T. has led to numerous single purpose trips. If the fishery were not available there would be a significant change in tourism activity. For example, the 1975 survey noted that for 86% of the non-resident anglers fishing was reported as the main purpose of travel. Ninety-six percent of these anglers reported that they would not have come to the N.W.T. if the fishery were not available.

The national surveys have also provided information on the expenditures of anglers. In 1980, there was an estimated outlay of $3,047,400 on major purchases such as boating equipment and fishing gear. Direct expenditures totalled $9,788,600 on such items as package tours, lodging, food and fishing supplies. Resident expenditures on major purchases were $2,901,600 while direct expenditures were $1,564,800. As might be expected, major purchases by non-residents of $145,800 are low in relation to their direct expenditures which total approximately $8,224,000. Of this total, package tours account for $6,285,100.

Clearly, expenditures by visitors to the N.W.T. represent substantial inflows of funds to the industries which service anglers. There are two groups who benefit from these expenditures, a service sector directly dependent on the provision of access to the fishery, such as lodges and outfitters, and secondly, the indirect service sector, such as hotels and restaurants, whose business activity increases but is not wholly dependent on the fishery. There is a limited amount of information on the regional impacts of anglers' expenditures. TravelArctic (1970, 1971) surveyed tourists and outfitters and prepared estimates of employment and income impacts of the industry. However, there is no recent information to provide a perspective of the current state of the industry. The focus of this study is to develop a profile of the direct service in the Northwest Territories.

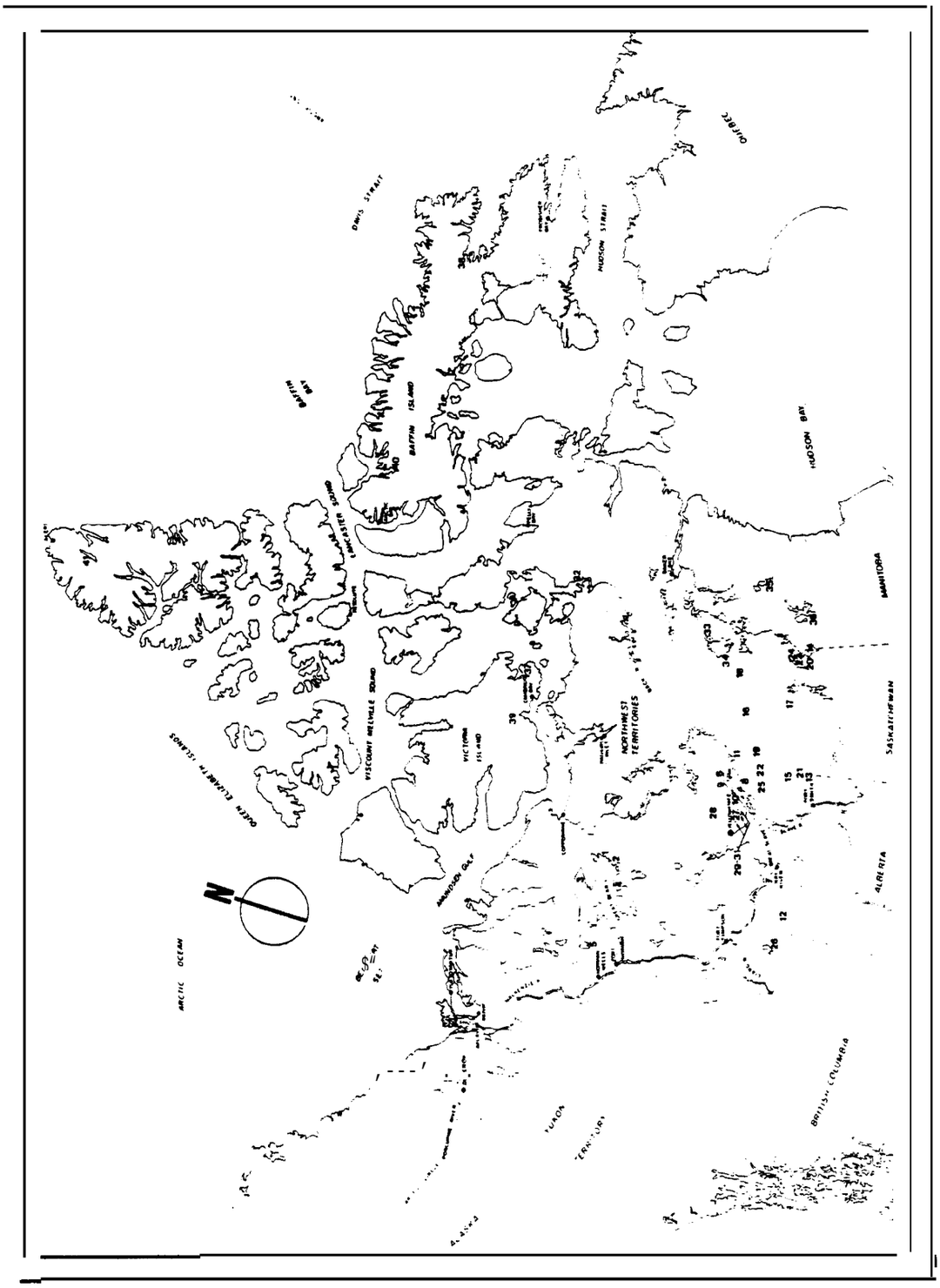


Figure 1. Locations of Sport Fishing Lodges in the Northwest Territories

Index to Figure 1

Map Number	Name	Licensed Bed Capacity
1	Arctic Circle Lodge	34
2	Bransons Lodge	40
3	Great Bear Lake Lodge (Plummers)	54
4	Great Bear Lodge*	54
5	Great Bear Trophy Lodge	40
6	Arctic Star Lodge	32
7	Brabant Lodges	30
8	Frontier Fishing Lodge	24
9	Indian Mountain Lodge	10
10	Plummers Great Slave Lake Lodge	44
11	Trophy Lodge	16
12	Deeghani Lake Camp	10
13	Hanging Ice Fishing Lodge	9
14	Kasba Lake Lodge	35
15	Lady Grey Outfitters	8
16	Lynx Tundra Camp	8
17	Morberg's Smalltree Camp	4
18	Mosquito Lake Lodge	10
19	N macho Lake Fishing Camp	14
20	Obre Lake Lodge	14
21	Pilot Lake Cabins	15
22	Rutledge Lake	20
23	Snowbird Lake Lodge	20
24	Snowbird Kazan River Lodges	15
25	Thuban Lake Lodge	14
26	Trout Lake Indian Lodge	14
27	Hearne Lake Lodge	6
28	Katimavik Lodge	12
29	Namushka Lodge	12
30	Taiga Sports Fishing	10
31	Watta Lake	12
32	Camp Chantry	18
33	Dubawnt Outpost Camp	6
34	Dubawnt West Sport Fishing Camp	8
35	Keewatin Arctic Lodge	12
36	Neultin Narrows SubArctic Camp	8
37	Arctic Outpost Camps	24
38	Clearwater Fiord	16
39	High Arctic Sportfishing Camps	8
40	Koluctoo Bay	16
41	Lake Hazen Lodge	24

*Great Bear Lodge operates out of Neil and Bay and Bear Island Outpost Camps

Table 2 Northwest Territories Sport Fishing Lodges by Area and Bed Capacity

Geographical Area	Number Lodges	Total Bed Capacity	Mean Bed Capacity	Capacity Intervals <30	>30
Great Bear Lake	5	222	44	0	5
Great Slave Lake	6	156	26	3	3
Survey Area 1	11	378	34	3	8
Hay River-Fort Smith	14	196	14	13	1
Mackenzie River and Delta	1	14	14	1	0
Yellowknife	5	52	10	5	0
Survey Area 2	20	262	13	19	1
District of Keewatin	5	52	10	5	0
District of Franklin	5	88	18	5	0
Survey Area 3	10	140	14	10	0
All Areas	41	780	19	32	9

2.2 Description of Northwest Territories Sport Fishing Lodges

The locations of lodges in the Northwest Territories are illustrated in figure 1. The establishments included in this survey include 41 sport fishing lodges which are considered by the Government of the Northwest Territories to be active. (Appendix B details the lodges included in this survey.) Excluded from the survey are outfitters and facilities which operate either primarily as naturalist facilities or which are not considered to be active operations. Table 2 summarizes the number and capacity of lodges by major geographical areas and bad capacities.

Differences among lodges are evident. The lodges on Great Bear and Great Slave Lake are larger than lodges in the balance of the territories. Although lodges on these two lakes represent only one quarter of all establishments, they represent almost one half the total bed capacity. These differences are sufficiently large enough that stratification of the facilities into areas and capacities seemed reasonable.

Consideration of the geographical distribution of lodges, their capacities and the responses received to the survey led to the definition of survey areas. Lodges were grouped into three areas. Area 1 includes the lodges on Great Bear and Great Slave lakes. Eleven lodges with a total bed capacity of 378 beds are included in this area. Area 2 includes the lodges in the District of Mackenzie exclusive of Great Bear and Great Slave lodges.

Area 2 encompasses Hay River-Fort Smith, Yellowknife and the Mackenzie River and delta. In contrast with the Explorers Guide approach of including Keewatin “area” lodges, this survey delineates lodges by district boundaries. Thus, some lodges conventionally described by TravelArctic as Keewatin “area” are included in area 2. Twenty lodges with a total bed capacity of 262 beds are included in this region. Area 3 includes the District of Keewatin and Franklin. There are ten lodges with a total bed capacity of 140 beds in this area.

Table 3 Description of the Financial Sample of Sport Fishing Lodges.

Area/Number	All Capacities	<30 Beds	>30 Beds
Area 1			
Population	11	3	8
Sample	7	1	6
Area 2			
Population	20	19	
Sample	8	7	
Area 3			
Population	10	10	0
Sample	4	4	
All Areas			
Population	41	32	
Sample	19	12	

2.3 Description of the Sample

The survey was designed as a census of lodges and outfitters and efforts were made to obtain total coverage of the industry. In practice, less than full coverage was obtained, as indicated by the summary statistics of table 3 which describe the financial sample in relation to the population of lodges.

The reasons for less than total coverage are not certain. The detailed financial information sought in this survey no doubt influenced the willingness of operators to participate. some operators may have been reluctant to disclose financial information, in spite of the assurances of confidentiality. On the other hand, some operators may have been interested in cooperating, but due to the limitations or absence of bookkeeping records, may have been unable to provide details on their operations.

Whatever the reason, the limited response posed statistical problems. First, it was necessary to assess whether or not the sample was representative of the population. Second, a method of relating survey data to the total operations of the industry had to be developed, since one objective of the study was to provide information on the entire industry.

The statistical test used to assess whether or not the sample is representative of the population was the t test for means. The known population parameter, bed capacity, was used to make a comparison of the mean bed capacity of respondents and non-respondents. To test the null hypothesis of equal means, the t statistic was computed and compared to the critical values of the student t distribution for the appropriate degrees of freedom and level of significance. The t test for means, as detailed in Appendix C, was done for the total sample and total non-respondents, as well as for the sample and nonrespondents for all facilities less than 30 bed capacity; for all facilities less than 30 bed capacity in each of areas 1, 2, and 3; and finally for all facilities greater than 30 bed capacity.

For the sample as a whole, the tests suggest there is a significant difference between the bed capacity of respondents and non-respondents. This arises since there was better coverage of larger facilities (7 of 9 establishments with capacity > 30 beds) than smaller facilities (12 of 32 establishments with capacity < 30 beds). Treatment of the sample as a simple random sample would result in biased estimates of population parameters.

If the sample is stratified into two capacity intervals (< 30 and ≥30), the statistical tests indicate no significant difference between bed capacity of respondents and non-respondents. Treatment of the sample as a stratified random sample would enable estimates of population parameters to be prepared. In addition to the stratification by capacity for all areas, tests were conducted between capacity of respondents and non-respondents for each of areas 1, 2, and 3. Where the numbers warrant the conduct of the test (n>1), the t test suggests there is no significant difference between respondent and non-respondent capacities. This suggested the alternative of stratifying the sample and populations both by area and capacity.

Bed capacity is the one population variable available for comparison with the sample. Obviously, it is not of importance to measure bed capacities alone, the focus being the measurement of such economic indicators as gross sales, employment, and value added. However, should bed capacity be correlated with these economic indicators, there would be additional support for the idea of stratifying the sample by capacity and preparing population estimates of the economic indicators from the stratified sample.

To examine the relationship between bed capacity and key variables, simple correlation analysis was performed. The statistical test examines the hypothesis that bed capacity is not correlated with the other variable measured. The observed value of the correlation coefficient is used to test

for independence. If the correlation coefficient is close to zero, there is not sufficient reason to doubt independence. If the correlation coefficient is far from zero, the hypothesis that the variables are independent is rejected. The statistical tests, as summarized in appendix C, were conducted at a significance level of a = .05. The tests indicate a correlation between bed capacity and gross sales, cost of goods sold, gross profit, total cost of selling and administration, net operating income, cash flows, total original costs, total accumulated depreciation and total replacement costs. There is no significant linear correlation between bed capacity and book value.

These tests provide some insights to the validity of the approach used in the development of population estimates. The approach involves stratification by area and capacity. Expansion or weighting factors were applied to sample estimates on the basis of the ratio of the total population to the sample units for each stratum defined in the survey.

3.0 1980 Performance of Northwest Territories Sport Fishing Lodges

This chapter presents operating statistics on 1980 operations including days of operation, number of guests and total guest days. Information on the source of clients by major geographic regions and the duration of stay is also presented. These operating statistics serve as the background for estimates of the financial performance of lodges. Gross sales are related to the costs of production and estimates of net operating income are presented. The relationship between gross sales and the variable costs of production is examined for the financial sample, providing a perspective of short-run viability. Cash flows are estimated and related to the fixed asset valuation of the industry, providing a perspective of long run viability. Finally, concepts from national income analysis and input-output analysis are developed and then applied to the information developed in this study. Economic impacts are described for 1980 operations.

3.1 1980 Operating Statistics

Table 4 presents information on the 1980 operations for all Northwest Territories lodges. There were an estimated 6,372 guests serviced by lodges in 1980 with a total of 40,557 guest/days. Lodges operated for approximately 2,800 days in the 1980 season. The seasonal nature of N.W.T. operations is evident, with lodges operating only during the months of June through September. As well, the operations are highly concentrated in the two months of July and August, when over 75% of the business activity is generated, Thus, the operating statistics highlight one major constraint to the viability of the industry in the Northwest Territories a very short operating period to generate revenues for lodge operations.

Table 5 summarizes area operating statistics for 1980 operations. Consideration of the distribution of operations show that the lodges of Great

Table 4 1980 Operating Statistics for Northwest Territories Sport Fishing Lodges

Month	Days Operation	Number Guests	Guest Days
January	---	---	---
February	---	---	---
March	---	---	---
April	---	---	---
May	---	---	---
June	484	915	4803
July	985	2692	18645
August	1015	2292	14510
September	339	473	2599
October	---	---	---
November	---	---	---
December	---	---	---
Total 1980	2823	6372	40557

Table 5 1980 Area Operating Statistics for Northwest Territories Sport Fishing Lodges

Area	Days of Operation		Number Guests		Guest Days	
1	702	(25%)*	3021	(47%)	17980	(44%)
2	1533	(54%)	2103	(33%)	12028	(30%)
3	588	(21%)	1248	(20%)	10549	(26%)
All	2823	(loo%)	6372	(loo%)	40557	(100%)

*Numbers inbrackets are % Of column total

Table 6 1980 Statistics for Northwest Territories Lodges: Length of Stay of Clients

Length of Stay	Number Guests	% Total
Less than 7 Days	2411	38%
7 Days	3931	62
Greater than 7 Days	30	0
	6372	100%

Table 7 1980 Operating Statistics for Northwest Territories Sport Fishing Lodges: Source of Clientele

Category	Numbers	% Total
Non-residents, U.S.A.	4843	76
Residents, Other Provinces/Territories	1203	19
Residents, Northwest Territories	243	4
Non-residents, Other Countries	84	1
Total, All Clientele	6373	100%

Bear and Great Slave lakes, Area 1, while representing 11 of 41 lodges in the survey, serviced approximately 47% of the guests and generated 44% of the guest/days. By contrast, the remaining 20 lodges in the District of Mackenzie serviced 33% of guests and provided 30% of the guest/days. Area 3, encompassing the districts of Franklin and Keewatin, provided 20% of the guests and 26% of the guest/days.

Lodge operators were asked to estimate the average duration of stay of their clients. Table 6 summarizes the information provided and reflects the utilization of the seven-day package in promoting access to the lodges in the Northwest Territories.

Lodges generate their business from a wide geographical area but there is an obvious reliance on the U.S. market. Table 7 indicates that 76% of the customers served in 1980 came from the United States with the remaining clientele largely coming from other Provinces and Territories within Canada.

3.2 Financial Performance

A uniform cost accounting model, as presented in Appendix D, was developed for this study. The accounting model, while internally consistent, has limitations which should be made explicit. First, no effort is made to evaluate extraordinary income or expenses for the period, as might occur where a longlived asset is sold at other than book value. Such transactions require treatment of the taxation implications of capital gains or losses. Second, consideration of parent/subsidiary relationships in the N.W.T. lodge industry is beyond the scope of this study. Insofar as a parent and subsidiary relationship influences the preparation of financial statements for any one entity, for example, to minimize total tax liabilities, these effects can be significant. The exploratory nature of this study, however, restricts the

analysis to an examination of lodge operations. The extent to which these factors actually influence the financial performance of lodges as an entity is unknown, but caution in the interpretation of the following results is warranted.

3.2.1 Aggregate Financial Statement

The aggregate income statement for 1980 operations is presented in table 8. Total gross sales are estimated to be $6,994,000. Gross sales are defined as the total of receipts from package plans, housekeeping cabins, dining room, retail store, boat and motor rentals, guiding services, outpost camps and miscellaneous revenues. In the Northwest Territories, package plans are the prevelant means of marketing, so it is not surprising that package plans represent the single largest source of revenu eat $6,111,400 or 87% of total gross sales. By contrast, outpost camps, the second largest source of revenues is estimated to provide $349,500 or 5% of total gross sales.

The cost of goods sold is estimated to be $5,077,400. These costs include expenses in purchasing or manufacturing the goods that were sold during the annual operating period. For N.W.T. lodges, cost of goods sold includes such items as total direct labour payments (guides, cabin staff, yardmen, etc.), aircraft rentals, transportation charges for guests, automobile rentals, building repairs, boat and motor repairs, freight expenses and groceries. The high transportation costs in moving guests, staff and material supplies in and out of remote areas is a large cost to the industry. In 1980, these costs are estimated to be $1,961,000 or 39% of the cost of goods sold. Direct labour payments are estimated to be $1,188,000 or 23% of cost of goods sold.

Gross profits or "gross margin" is defined as the difference between gross sales and the cost of goods sold. It enables consideration of whether or not there is a basically healthy relationship between the cost and selling price of products. Gross profit on 1980 operations is $1,917,000, providing an aggregate gross profit margin on sales of 27%.

The estimated selling and administration expenses are $1,329,000. These expenses include the cost of marketing products, such as advertising, travel and entertainment expenses. They also include such administrative expenses as Officer and officesalaries and wages, office supplies, and other general and administrative costs. Marketing expenses are estimated to be $569,600 or 43% of total selling and administrative costs.

The total depreciation charges for 1980 operations are estimated to be $581,000. Depreciation of plant and equipment is a non-cash outlay. Depreciation accounting is a method of distributing the costs or other basic value of tangible capital assets over the estimated useful life of the assets in a systematic and rational manner. Depreciation for the year is the portion of the total charge under such a system that is allocated to the year. For sport fishing lodges, these items will typically include such assets as aircraft, boats and motors, buildings, land vehicles, wharves and other equipment.

Net operating income is the difference between gross sales and the cost of sales, selling and administrative expenses, and the depreciation charges for plant and equipment. This figure shows the results of operations in the normal course of business. Aggregate net operating income for the period is estimated to be $7,000.

The industry-wide financial statement has been disaggregate to provide area income statements, as presented in table 9. Area 1 lodges realized an

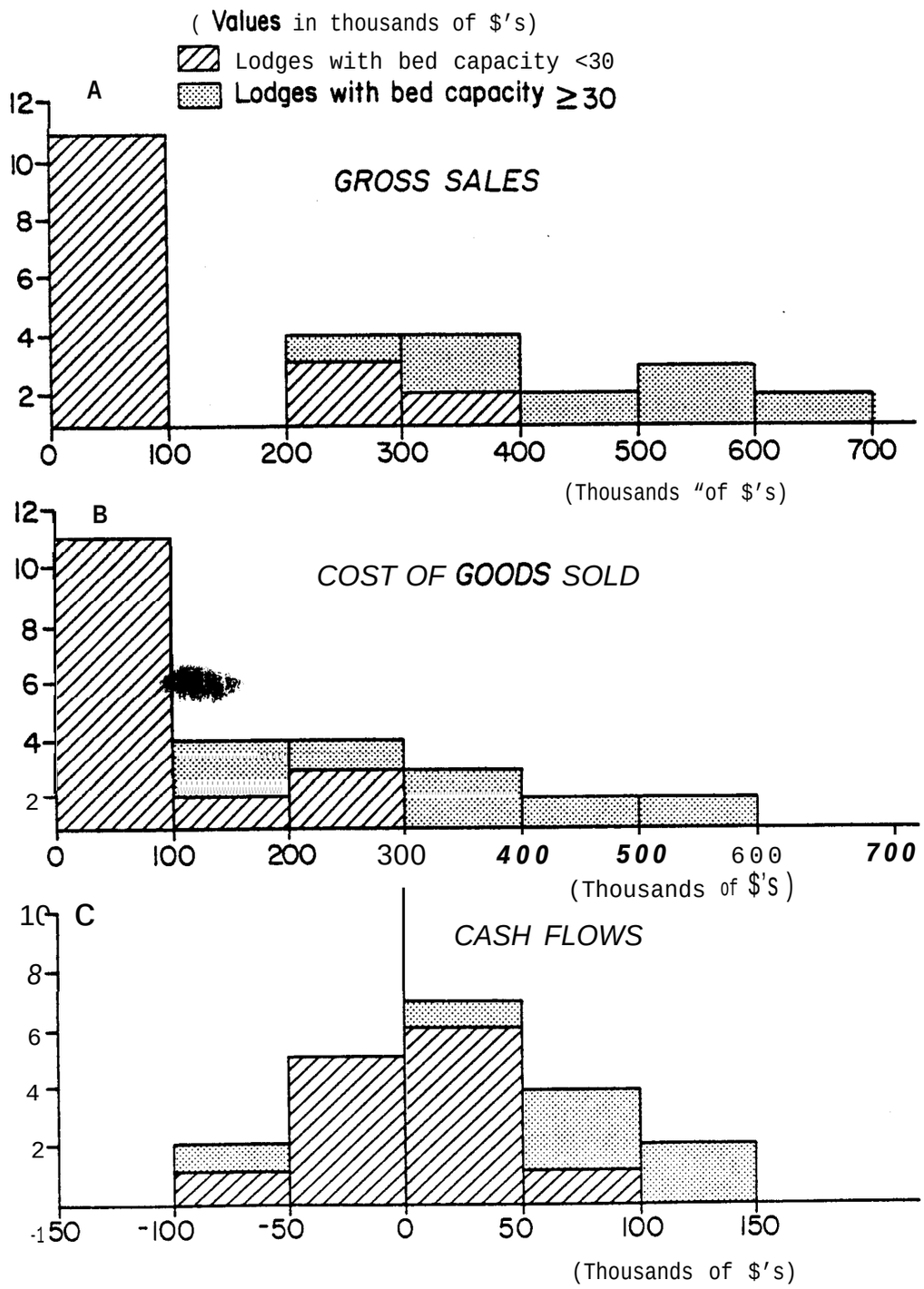
Table 8 Aggregate Income Statement For 1980 Operations
(Values in thousands of $)

I tern	$	(% Gross)
Gross Sales	6,994	
Cost of Goods Sold	5,077	73
Gross Profit	1,917	27
Selling and Administration	1,329	19
Depreciation of Plant and Equipment	581	8
Net Operating Income before Taxes	7	--

Table 9 Aggregate Income Statement by Area For 1980 Operations
(Values in thousands of dollars)

Item/Area	Area 1	Area 2	Area 3	All Areas
Number of Operations	11	20	10	41
Gross Sales	3,809	1,655	1,067	6,994
Cost of Goods Sold	2,673	1,337	1,067	5,077
Gross Profit	1,136	318	463	1,917
Selling and Administration	683	266	380	1,329
Depreciation of Plant and Equipment	281	184	116	581
Net Operating Income before Taxes	172	-132	-33	7

Figure 2. Illustration of the Variability of Operating Characteristics of the Sample of Sport Fishing Lodges



estimated $3,809,000 or 5% of total gross sales, This is the only study area to show, in aggregate, positive net operating income before taxes, with an estimated net income of $172,000. Area 2 lodges realized $1,655,000 or 24% of gross sales and show an aggregate net operating loss of $132,000. Area 3 lodges are estimated to have realized gross sales of $1,530,000 and a net operating loss of $33,000.

It must again be emphasized that the process of aggregation may mask a wide range of performance of lodge operations. Differences in operating characteristics may arise from a variety of factors, such as transportation costs and accessibility, the productivity of the fisheries resources, capacities of establishments, and the entrepreneurial skills of operators. For example, economic theory suggests that, due to a variety of physical, technological and financial forces, economics of scale may be realized in the production process. Expansion of the scale of production with a given managerial input, for example, may result in corresponding reductions in unit production costs.

The sample information collected in this study indicates there is considerable variation in the operating characteristics of N.W.T. lodges. (Appendix F contains the statistical analysis of the variability of the estimates presented in this section.) Figure 2 illustrates the variation in gross sales, cost of goods sold and cash flows for the lodges providing financial data. Furthermore, there appear to be substantial differences in the operating characteristics of lodges when they are categorized by bed capacities. Clearly, there are differences in gross sales and production costs for lodges of less than 30 bed capacity when compared with lodges of greater than 30 bed capacity.

3.2.2 Economic Viability of Lodges

One objective of the survey was to examine the economic viability of the lodge industry in the N.W.T. Insofar as the coverage of establishments was limited, it was decided to restrict this portion of the analysis to an examination of the sample of facilities. The section proceeds through a discussion of short-run and long-run viability analysis.

Short-Run Viability: Financial Sample. Short-run analysis treats historic investments as sunk and ignores these expenses for operational planning purposes. A business enterprise will, according to economic theory, continue production in the short-run provided that the price received covers the variable costs of operation. If price is greater than average variable cost, there is a positive contribution to fixed expenses and profitability. This "contributed margin" may yield a positive net operating income. However, it may also entail continued production in a loss situation, a situation which arises when the operation loses less by producing than ceasing operations. This latter circumstance is often described as a "loss minimizing" situation. Should price be less than variable cost, the contribution margin is negative, and the optimum output is zero. Rather than incurring increased losses with expanded production, the enterprise should cease production.

The short-run viability of the financial sample has been examined through a comparison of gross sales with variable costs of production. costs were categorized as to their degree of variability and defined to be either variable, semi-variable or fixed expenses. The frequency distribution of gross sales minus variable and semi-variable costs was prepared, as summarized in Figure 2. While two operations showed a negative contribution margin on 1980 operations, the remaining 19 operations in the financial sample show a positive price/cost relationship. In this regard, the short-run viability of

the operations, based on 1980 operations, appears favorable. Relative shifts in prices or costs may of course alter the short-run prospects of the industry.

Long-Run Viability: Financial Sample. In contrast with the short-run analysis which treats existing investments as sunk and 'irrelevant to short-run operating decisions, long-run analysis is largely concerned with capital investments and the benefits they yield. Long run viability measures require assessments of investment costs and revenue and expenditure patterns over the estimated life of the project. If the net present value of total capital investments is positive, lodges may be regarded as viable in the long run. Conversely, if the net present value is negative, it would not be possible to replace the existing asset. Rather, it would be necessary to terminate operations in the long run or adjust the scale of operations.

A capital budgeting model is developed. The benefits are the cash flows of the investment, measured by depreciation allowances plus fixed asset interest charges plus net operating income. Figure 2 illustrates the distribution of cash flows. The annual flow of these benefits over an assumed 20 year investment period is converted into present values through the use of discount rates of 5%, 10%, 15% and 20%. (Since relative prices and costs are held constant in this analysis, the discount rates are referred to as the "real" rate of discount. These rates do not include an inflation factor). The investment costs used are the lodge operators' estimates of 1980 replacement costs. Comparison of the present value of benefits with the present value of costs enables the determination of the net present value of investment. A positive net present value is indicative of a viable investment proposal, a negative net present value of a nonviable proposal. Should the proposal yield a net present value of zero, the investor would presumably be indifferent to the investment proposition.

Table 10 Long-run Viability Analysis For the Financial Sample

Discount Rate	Net Present Value	Bed Capacity of Lodges.		
		<30	<30	All
5%	+	4	3	7
	-	8	2	10
10%	+	4	3	7
		8	2	10
15%	+	3	2	5
		9	3	12
20%	+	3	1	4
		9	4	13

The analysis must be considered preliminary, The information on gross sales, production costs and returns to owner/operators managerial services covers the 1980 operation only, Since there is no trend information to support a comparative analysis, there is no basis to comment on how representative 1980 costs and revenues are. The replacement costs used in this analysis reflect lodge operators' estimates of the 1980 replacement costs of existing assets. The level of precision to be associated with these costs is unknown. Further, the analysis assumes the economic life of the investments to be 20 years with no salvage values realized at the termination of the investment. Constant price and cost relationships are projected over the course of the investment period.

Results of the capital budgeting calculations are summarized in table 10. This analysis suggests that the long run viability of lodges is much less secure than the short-run prospects outlined above. At a real discount rate of 10%, 10 of the 17 lodges show a negative net present value with the remaining seven lodges showing long-run economic viability. A reduction in the real discount rate from 10% to 5% is not sufficient to overcome the basically unfavorable price/cost relationships of the 10 non-viable lodges. Conversely, at higher discount rates the potential for economic viability diminishes. Five of the 17 lodges show positive net present values at a 15% rate, the erremaining 12 lodges being non-viable. At a 20% discount rate, only four of the 17 lodges show long-run viability.

3.3 Economic Impacts of N.W.T. Lodge Operations

3.3.1 Definition of Concepts

The economic impacts of the N.W.T. lodge operations are best described through the use of national income and product statistics. These statistics are widely used by government agencies in their evaluation of the economy and in arriving at decisions concerning economic pol icy (Smith 1970). The national income statistics are compiled in a systematic accounting framework, hence the phrase national income accounting. The discussion in this section develops, by example, some of the key concepts of national income accounting and the relationships between the business accounts of the industry and the national income accounts. Second, the concept of linkages among different sectors of the economy is developed and the formal method of examining these linkages, input-output analysis, is described.

Concepts from National Income Accounting

National income has been described in three different -but: equivalent ways:

(a) the sum of amounts spent on final output by the various groups or sectors of the economy; (ex. sales of automobiles to consumers);

(b) the sum of all incomes earned from productive activity; (ex. wages, salaries and profits for the automobile manufacturer, tire manufacturer, and rubber manufacturer;

(c) the sum of the outputs of all producing units in the economy; (ex. the gross sales of the automobiles, tire and rubber manufacturers less their purchases from other firms).

The third approach is useful in developing the national income concepts since it uses the business accounts of the industry. The income statement of

Table 11 Hypothetical Income Statement for Lodge Industry

Gross Sales	5,000	
cost of Goods Sold		
Direct Labour Payments		1,200
Boat and Motor Expenses		400
Camp Supplies		400
Transportation Costs		1,400
		3,400
Gross Profit	1,600	
Selling and Administration		
Indirect Labour Payments		400
Advertising		400
Office Expenses		100
		900
Depreciation Expense		500
Net Operating Income	200	

Table 12 Hypothetical Statement of Sources and Allocations for the Lodge Industry

Allocations		Sources	
Depreciation	500	Gross Sales	5,000
Wages and Salaries		Less:	
Indirect Labour	1,400	Purchases from other Firms	
Direct Labour	1,200	Boat and Motor Expenses	400
	1,600	Camp Supplies	400
		Transportation Costs	1,400
Net Profit before Tax	200	Advertising	400
		Office Expenses	100
			2,700
Total Allocations of Value Added	2,300		

the industry can be presented in a way which brings out the firm's contribution to national product and income.

For example, consider the hypothetical income statement shown in table 11. The industry is seen to have realized $5 million in gross sales and purchased goods and services from other firms in the form of boat and motor expenses, camp supplies, transportation services, advertising expenses, and general office expenses. As calculated in the statement of sources and allocations, these purchases from other firms total $2.7 million. Thus, in relation to the $5.0 million in gross receipts, the industry has added $2.3 million ($5 million less $2.7 million) to the value of the goods and services purchased from other firms. This amount, referred to as value added, is an indication of the value of the industry's production. It is also possible to show how the value added is distributed among the economic factors of production. The allocation of value added to capital (.5 million), labour (1.6 million) and profits (.2 mill ion) is illustrated in table 12, the statement of sources and allocations.

Value added is a widely used measure. It has particular significance in that it provides an unduplicated measure of the value of production by excluding intermediate inputs. This is appropriate because, for each industry, intermediate inputs represent the accumulated values originating at earlier stages of production (Dominion Bureau of Statistics 1969). Thus, the value of the camp supplies, and all such purchases from other firms, are measured at an earlier stage of production under the appropriate industry classification.

If this process of measuring the value added of each industry were repeated across all industries, it would be possible to measure the value of production for the economy as a whole. This would equal the gross national

product, this being the total gross value, at market prices, of the output of all goods and services produced in the economy during a particular period. Once again, it is emphasized that it is an unduplicated measure in the sense that repeated sales of the same goods have been eliminated.

The national income accounts are closely related to the input-output models of the economy which will be introduced in the next section. One concept integral to the input-output models is that of gross domestic product. Gross domestic product measures the value of production arising within the geographical boundaries of the economy irrespective of whether the factors of production are resident or nonresident. Gross domestic product is equal to gross national product less investment income received from non-residents plus investment income paid to non-residents. If net direct taxes are excluded, measures of gross domestic product at factor cost are provided. The factor costs comprise wages and salaries plus operating surpluses, this being the sum of profits and other investment income, inventory valuation adjustments and capital consumption allowances (depreciation) plus miscellaneous valuation adjustments (Statistics Canada 1975),

Concepts from Input-output Analysis

Input-output models have been developed to examine inter-relationships in the flows of goods and services among producing industries. These models enable consideration of economic linkages between a particular industry and the rest of the economy.

For example, it is obvious that the lodges in the N.W.T. do not operate in isolation. Their production activity requires the efforts not only of those in the lodge industry, but also those concerned with the provision of intermediate inputs, the expenditures on the goods and services from other

firms. In the example above, such items as transportation services, camp supplies and office expenses were classified as intermediate inputs.

In turn, the production of these intermediate inputs is only possible if yet other materials and services are available. For example, the aviation industry's demand for maintenance materials and services arises, in part, from the lodge operator's demand for transportation services. This process is futher complicated by the fact that, as income expands as a consequence of the direct and indirect effects, households will increase their purchases of goods and services, thereby giving rise to still further production and income. Thus, it is evident that the lodge industry implicates a long chain of activity which links diverse human, material and technological resources of the economy. (This example is analogous to the example used by Statistics Canada in their guide to the national income and expenditure accounts.)

While it is easy to think of the circular flow and inter-dependencies of economic activity, the measurement of these impacts requires very detailed and rigorous models of the economy as a whole. A good understanding of the interrelationships between industries and the production processes involved is necessary for the development of these models. The quantitative analysis is done through the use of input-output models. There are a variety of these models, each suited to a particular application. For this study, there was interest in developing a profile of how the N.W.T. economy trades with other producing industries and regions. This objective requires a model which allows for inter-regional production relationships. The model best suited for this purpose is Statistic Canada's interprovincial input-output model.

Input-output models enable the measurement of three types of economic impact. The direct economic impact is the consequence of lodge operators'

expenditures on primary and intermediate inputs. The direct economic impact consists of two elements, the value added of the lodge operations (i.e. their total purchase of primary inputs) and the value added at an earlier stage of production for all intermediate inputs purchased by the lodges.

The availability of intermediate inputs is dependent on yet other goods and services having been produced. In the formal methods of input-output analysis, this is described as an indirect economic impact. It results from the purchases by all industries in which production is required in order to supply goods and services to the direct suppliers of lodges. For example, the aviation equipment parts manufacturer increases his output in response to the aviation Industry's demand for services which has, in part, arisen from the demands of the lodge industry. The expansion of the parts manufacturers output creates income which is described as an indirect economic impact.

The third impact of lodge operations is described as an induced economic impact. It arises as a consequence of the inclusion of a household income multiplier. Incomes that accrue to individuals are allocated to consumption, savings and taxes. Increased consumption results in an increase in purchases of other goods and services, thereby giving rise to still further production and income.

The indicators used to measure the size of the economic impacts include the gross domestic product at factor cost and the levels of employment (man/years). There are also a series of relative measures which provide an indication of the nature and extent of the linkages between an industry and the rest of the economy. These measures are described as employment multipliers and income multipliers. For example, the indirect income multiplier is measured by direct plus indirect income over direct income. Similarly, the ratio direct plus indirect plus induced employment over direct employment would be described as the total employment multiplier.

3.3.2 Empirical Assessment of Economic Impacts

This section presents the results of an input-output analysis of N.W.T. lodge operations. The information generated in the lodge survey was categorized by commodity grouping in accordance with the standard commodity codes used by Statistics Canada. In addition, information on the N.W.T. composition of expenditures was estimated from the survey. Insofar as an inter-provincial input-output model was used for the analysis, additional details on the regional pattern of expenditures had to be provided. Ideally, it would have been possible to provide provincial allocations based on the actual patterns of material purchases. In practice, this was not possible and expenditures were allocated to the lodges' head office location in relation to the proportion of plant capacity shared by the various provinces.

Direct Economic Impacts

The total direct economic impact is measured as the sum of the impacts due to expenditures on primary inputs and intermediate inputs. Total gross domestic product equals $4,692,000 as shown in Table 13. Wages and salaries plus supplementary labour income total $2,892,000 or 62% of gross domestic product. The operating surplus (the sum of profits and capital consumption allowances) equals $1,277,000 or 26% of gross domestic product.

The model used in this study is the Statistics Canada inter-provincial input-output model, a model which illustrates the nature and extent of the interactions of the N.W.T. economy with other regions. Thus, $2,117,000 of the gross domestic product (47% of total) estimated in the model is realized within the N.W.T., while the remaining $2,575,000 occurs in other regions. The principal interactions with other regions include Alberta ($1,371,000 or 29% of total gross domestic product), Manitoba ($791,000; 17%), and Ontario ($413 ,000; 9%).

Table 13 Direct Gross Domestic Product of Northwest Territories Lodge Operations (values in thousands of $)

Item/Jurisdiction	Ontario	Manitoba	Alberta	Yukon and N.W.T.	Canada
Government Goods and Services	5	10	18	20	53
Commodity Indirect Taxes	19	32	71	51	173
Subsidies	-2	-4	-6	-lo	-22
Other Indirect Taxes	5	10	22	27	64
Wages and Salaries	264	518	849	1183	2814
Supplementary Labour Income	7	14	19	37	77
Net Income Unincorp. Business "	11	20	41	60	132
Other Operating Surplus	104	191	357	749	1401
Total	413	791	1371	2117	4692

Table 14 Direct Employment Impact of Northwest Territories Lodge Operations

Type (Area)	N.S.	Que.	Ont.,	Man.	Sask.	Alta.	B.C.	Yukon & N.W.T.	Canada
Lodges (Primary)*	--	--	14.2	26.7	--	48.1	--	75.0	164.0
Suppliers (Intermediate)**	--	--	6.6	13.9	--	20.0	--	41.9	82.4
Total Employment	--	--	20.8	40.6	--	68.1	--	116.9	246.4

* Source of estimate is N.W.T. lodge survey

**Source of estimate is Statistics Canada. 1974 interprovincial input-output model

The wages and salaries estimated directly from the lodge survey and indirectly from the input-output model can be translated into their person/year equivalents. The direct employment impact of lodge operations is 246 person/years, as illustrated in Table 14. The N.W.T. share of this total is 117 person/years or 48% of total direct employment.

Direct gross domestic product can be separated into two major components, as shown in Table 15. First, there is the gross domestic product which arises from the lodge industry's purchase of primary inputs, often referred to as the value added of the industry. This is estimated to equal $2,315,000 and creates the equivalent of 164 person/years of employment. Second, there is the economic impact which arises from the linkages between lodge operations and their direct suppliers. This impact reflects the linkages between the lodge operations and their direct suppliers of goods and services. The lodge's purchases of goods and services from other firms, from the income- statement analysis, totalled some $4.9 million. At an earlier stage of production, these expenditures generated gross domestic product equal to $2.4 million dollars. The employment impact due to expenditures on intermediate inputs totals 82 person/years.

One objective of the study was to estimate the employment and income retained in the N.W.T. as a direct result of lodge operations. This entails measurement of the portion of the industries' wages and salaries, profits, rents and capital consumption allowances which remain in the N.W.T. That is, an estimate of the N.W.T. portion of the total wages and salaries of $1,500,000 and the total operating surplus of $814,000 is required.

The survey information provides a measure of the N.W.T. component of the wage bill. This was developed in two steps. First, the industry was asked to estimate total employment created in their operations in 1980 and the N.W.T.

Table 15 Direct Gross Domestic Product of Northwest Territories Lodge Operations by Expenditure Category
(values in thousands of $)

Item/Area	Primary Inputs	Intermediate Inputs	Total Inputs
Government Goods and Services	--	53	53
Commodity Indirect Taxes	--	173	173
Subsidies	--	-22	-22
Other Indirect Taxes	--	64	64
Wages and Salaries	1,501	1,303	2,814
Supplementary Labour Income	--	77	77
Net Income Unincorporated Business	--	132	132
Other Operating Surplus	814	587	1,401
Gross Domestic Product	2,315	2,377	4,692

Table 16 1980 Employment in Lodges by Type Employment

Type Employment	Total Employees	N.W.T. Employees	Total Man/Days	N.W.T. Man/Days
Guides	274	158	17,525	9,616
Cabin Staff	129	50	8,297	3,302
Yardman	27	18	1,674	1,147
Pilots	10	3	781	251
Maintenance Staff	9	1	640	80
Bookkeeper	8	1	775	133
Manager	28	9	3,710	1,378
Owner/Operator	26	13	1,708	927
Others	11	1	1,791	80
Totals	522	254	36,901	16,914

Table 17 Labour Payments for N.W.T. Fishing Lodges For 1980 Operations
(values in thousands of dollars)

Type Employment	Total Payments	N.W.T. Payments
Guides	636	322
Cabin Staff	336	107
Yardmen	47	31
Pilots	47	8
Maintenance Staff	47	3
Bookkeeper	20	0
Manager	256	82
Owner	35	0
Others	76	0
Total Labour Payments	1,500	553

share of this total. This information is presented in Table 16. Second, the industry was asked to report on the wages and salaries paid by their establishment in 1980, with information requested on total wages and salaries and the payments to residents of the N.W.T. This information is presented in Table 17. N.W.T. residents received an estimated $553,000 of total wages and salaries of $1,500,000.

The regional income component of the total operating surplus is estimated only in the crudest of fashion, on an all-or-none basis. Thus, if none of the operating surplus accrues to the N.W.T., regional income is estimated to be $553,000. If all of the regional income is retained within the N.W.T., then regional income is estimated to be $1,358,000. Of course, regional income lies somewhere between these extremes.

There are both conceptual and practical problems which have led to such a crude estimation procedure. In concept, it is sometimes difficult to delineate the flows of profits, debt charges and capital consumption allowances. For example, it is not reasonable to assume that debt charges, even if they were all financed in the N.W.T., can be equated with regional income. Financial institutions are "supra-regional" transactors and it becomes a bit of a guessing game to determine what fraction of a transaction is internal or external to a given region. In practice, the survey did not seek sufficient details on the flow of operating surplus, restricting questioning on the incidence of expenditures as either within or external to the N.W.T. For example, since the occurrence of capital consumption allowances within the N.W.T. does not necessarily equal retention within the N.W.T., it has been necessary to resort to the crude approximations noted above.

Indirect Economic Impact

The indirect economic impact results from the purchases by all industries in which production is required in order to supply goods and services to the direct suppliers of lodges. The total indirect gross domestic product, presented in Table 18, equals $1,578,000. Wages and salaries comprise $791,000 or 51% of indirect gross domestic product while the operating surplus represents $646,000 or 33% of indirect gross domestic product.

The N.W.T. share of indirect gross domestic product is $196,000 or 12%, a much lower share than the N.W.T. portion of direct gross domestic product, which is estimated to be 47% of direct gross domestic product. In contrast, the indirect gross domestic product for Alberta is $552,000 (35%) and for Ontario $384,000 (24%). These results are indicative of the dependence of the N.W.T. on other producing regions for the provision of finished goods and services.

A relative indicator of the size of indirect economic impact is the indirect income multiplier. Presented in the final row of Table 18, this statistic is calculated as the ratio of direct gross domestic product plus indirect gross domestic product over direct gross domestic product. The indirect income multiplier is 1.34 for the Canadian economy as a whole. The regional income multipliers vary considerably, with multiplier estimates of 1.09 for the N.W.T., 1.40 for Alberta and 1 93 for Ontario. The interpretation of this multiplier for the N W.T., for example, is that for every additional dollar of gross domestic product created in the Northwest Territories by lodge operations there is an additional $0.09 of gross domestic product created within the N.W.T. economy.

Table 18 Indirect Gross Domestic Product of Northwest Territories Lodge Operations

(values in thousands of dollars)

Item/Jurisdiction	Nfld.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Yukon & N.W.T.	Canada
Government Goods and Services	0	0	0	0	0	2	0	0	2	0	2	6
Comodity Indirect Taxes	0	0	0	0	3	12	7	1	19	2	13	57
Subsidies	0	0	-1	-O	-8	-9	-3	-1	-9	-2	-5	-38
Other Indirect Taxes	0	0	0	0	7	16	6	2	24	4	5	64
Wages and Salaries	0	0	2	1	74	222	107	8	221	47	109	791
Supplementary Labour Income	0	0	0	0	5	14	7	1	14	3	8	52
Net Income Unincorp Business	0	0	0	0	7	20	16	8	53	5	15	124
Other Operating Surplus	0	0	1	1	39	107	48	21	228	28	49	522
Total Indirect Gross Domestic Product	0	0	3	2	127	384	188	38	552	88	196	1578
Indirect Gross Domestic Product Multipler*	--	--	--	--	--	1.93	1.24	--	1.40	--	1.09	1.34

*The indirect gross domestic product multiplier is calculated as the ratio of direct grossdomesticproduct PIUS indirect gross domestic product/direct gross domestic product

Table 19 Indirect Employment and Indirect Employment Multipliers for Northwest Territories Lodge Operations

Item/Region	Nfld.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Yukon & N.W.T.	Canada
Total Employment	0	0	0.2	0.1	4.1	33.1	47.5	.4	80.8	2.4	123.2	291.8
Indirect Employment	0	0	0.2	0.1	4.1	12.3	6.9	.4	12.7	2.4	6.3	45.4
Direct Employment	0	0	0	0	0	20.8	40.6	0	68.1	0	116.9	246.4
Indirect Employment Multiplier	--	--	--	--	--	1.59	1.17	--	1.19	--	1.05	1.18

*The indirect employment multiplier is calculated as the ratio of direct employment plus indirect employment (i.e. total employment)/direct employment

The indirect employment impact is presented in Table 19. There are the equivalent of 45 person/years of indirect employment created as a consequence of lodge operations expenditures. The employment multipliers, presented in the final row of Table 19, are calculated in a similar way to the income multipliers. The indirect employment multiplier is the ratio of direct employment plus indirect employment over direct employment. The indirect employment multiplier for all of Canada is 1.18 while the multiplier for the N.W.T. is 1.05. This suggests that for every 100 jobs in direct employment activities there are an additional 5 jobs created indirectly within the NWT.

Induced Economic Impact

The third level of economic impact is the induced impact. It takes account of the incomes which accrue to households as a consequence of the expansion of economic activity and the subsequent consumption, savings and taxes. This impact is measured in the "closed" model which incorporates a household income multiplier.

The induced economic impact, as presented in Table 20, results in an addition to gross domestic product of $3,811,000. The N.W.T. share of induced gross domestic product is $493,000 or 13%. Again, the implications of the N.W.T. 'S dependence on other regions for finished goods and services are evident. The distribution of these secondary impacts is largely throughout the balance of the economy, with the strongest linkages occurring in the Province of Ontario ($1,067,000) and the Province of Alberta ($1,082,000).

The total income multipliers are also presented in Table 20. These multipliers are calculated as the ratio of total gross domestic product (direct, indirect, induced) over direct gross domestic product. The total income multiplier for all of Canada is 2.15, which is interpreted to mean that for every dollar of direct gross domestic product there is an additional $1.15

Table 2 Induced Gross Domestic Product of N.W.T. Lodge Operations
(Values in thousands of dollars)

	Nfld.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Yukon & N.W.T.	Canada
Government Goods and Services	0	0	0	0	2	3	1	0	3	1	1	11
mm ty ndirect Taxes	0	0	1	1	33	93	52	3	74	14	1 1	382
Subsidies	0	0	-2	-1	-16	-13	-7	-3	-28	-4	-6	-80
Other Ind rect Taxes	0	0	2	1	27	70	29	4	89	18	26	266
Wages and Salaries	1	0	7	4	207	514	189	18	416	112	196	1664
Supplementary abour Income	0	0	1		13	32	11	1	25	7	9	99
Net Income Unincorp Bus ness	0	0	1	1	30	79	50	24	152	17	51	405
Other Operating Surplus	1	0	5	4	114	289	99	26	351	70	105	1064
Induced Gross Domestic Product	2	0	15	0	410	1067	424	73	1082	235	493	3811
Total Gross Domestic* Product Multipliers	--	--	--	--	--	4.5	1.78	--	2.20	--	1.33	2.15

*The total gross domestic product multiplier is calculated as the ratio of total gross domestic product (direct + indirect + induced) over direct gross domestic product

Table 21 Induced Employment and Induced Employment Multipliers for Northwest Territories Lodge Operations

Item/Jurisdiction	Nfld.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Yukon & N.W.T.	Canada
Total Employment	0	0	0.6	0.4	16.6	61.7	59.5	1.6	104.3	8.4	139.1	392.1
Induced Employment	0	0	0.4	0.3	12.5	28.6	12.0	1.2	25.3	6.0	15.9	100.3
Indirect Employment	0	0	0.2	0.1	4.1	12.3	6.9	.4	12.7	2.4	6.3	45.4
Direct Employment	0	0	0	0	0	20.8	40.6	0	68.1	0	116.9	246.4
Total Employment Multiplier	--	--	--	--	--	2.97	1.47	--	1.53	--	1.19	1.59

*The total employment multiplier is calculated as the ratio of total employment (direct plus indirect plus induced)/direct employment

created in related sectors of the economy. The total income multiplier for the N.W.T. is 1.33, reinforcing the earlier observation on the degree of dependence of the regional economy on other regions.

The wages and salaries can, as for the other levels of impact, be translated into their employment equivalents. This estimate, presented in Table 21, indicates that 392 person/years of employment can be attributed to the expenditures of lodge operations in the N.W.T. Of this total, it is estimated that 139 person /years or 35% of total employment arises within the N.W.T.

The total employment multiplier is calculated as the ratio of total employment (direct, indirect, and induced) to direct employment. The total employment multiplier for the Canadian economy is 1.59. The total employment multiplier for the N.W.T. is 1.19, indicating that for every 100 jobs in direct employment, there are an additional 19 jobs created in the N.W.T. through the indirect and induced economic impacts.

4.0 Industry Perceptions

The survey was designed to provide operators with an opportunity to comment on a variety of issues. The attitudinal section of the survey focused on three areas. The first area is resource availability, in particular, the availability of fish as a factor in attracting anglers to the N.W.T.. The second area is resource management, in particular, the management practices of the Department of Fisheries and Oceans in assessing, monitoring and allocating fisheries resources. The final section deals with market potential, in particular, the industry impressions of recent performance, the market outlook and investment intentions.

4.1 Resource Availability

Operators were asked to identify the resource attributes most important in attracting clients to the N.W.T. Eleven attributes were presented for consideration, ranging from "fish" attributes such as the opportunity to catch large fish to "other service" attributes such as the availability of recreational activities other than fishing. The results are presented in Table 22. The most frequently mentioned resource attribute was the opportunity to catch large fish. In total, "fish" attributes accounted for 69% of the responses. "Geography" and "wilderness" attributes accounted for 23% of the responses, with the opportunity to experience northern landscape and wildlife being mentioned in 12% of the responses. The quality of accommodation was mentioned in 7% of the responses.

Operators were then presented with the same list of attributes and asked to select three attributes also important in attracting clients to their operation. These results are shown in Table 23. The most frequent response

Table 22 Resource Attributes Most Important in Attracting Clients to Northwest Territories Lodges

Resource Attribute	Frequency Response*	% Response
Large Fish	21	31
Unique Species	12	18
Northern Environment	8	12
Freedom from Crowding	7	10
Ease of Catching	7	10
Large Numbers of Fish	7	10
Quality of Accommodation and Other Services	4	7
Diverse Lakes and Rivers	1	1
Unknown	1	1
	68	100%

*2 responses were sought from each of 34 reporting units

Table 23 Resource Attributes also Important in Attracting Clients to N.W.T. Lodges

Attribute	Frequency* Response	Relative Frequency
Remoteness	16	16%
Ease of Catching Fish	13	12
Large Numbers of Fish	13	12
Large Fish	10	10
Unique Species	9	9
Quality Accommodation	9	9
Lack of Crowding	8	8
Unpolluted Water	8	8
Northern Environment	8	8
Diverse Lakes and Rivers	3	3
Other Activities	3	3
Unknown	2	2
	102	100%

*3 responses were sought from each of 34 reporting units

was the opportunity to experience being in remote areas. Responses to this question were grouped as follows: "geography" and "wilderness experience" attributes encompassed 43% of the responses; "fish" attributes 43% and other services 12% of the responses.

Operators were asked whether or not there had been a change in the proportion of large fish taken in recent years. Overall, 10 of 32 operators noted a decline, 15 operators noted no change, and seven operators indicated there had been an increase in the number of large fish taken. Two operators did not respond to the question. These results, presented in Table 24, also show differences in operators' perceptions across the study areas. Five of the nine respondents in the Great Slave-Great Bear fisheries noted a decline in the proportion of large fish. By contrast, only five of the 25 respondents in the balance of the territories suggested that a decline had occurred. Operators were then asked to consider the implications of a significant decline in the number of large fish taken on the future prospects for their business. Their responses are presented in Table 25. Eight (8) of the thirty-four operators suggested that their business would not change. Eleven (11) of the operators indicated there would be a moderate decline in business, while twelve (12) felt a substantial decline would occur.

Operators were asked to consider whether or not any features of the N.W.T. fisheries could be given greater emphasis, should there be a decline in large fish catches with the potential for corresponding declines in business volumes. Thirteen (13) of the thirty-four (34) reporting operators felt that no substitutes would be available. The remaining 21 operators indicated that substitute opportunities would exist, with the most frequently suggested substitute being the opportunity to experience northern landscape and

Table 24 Lodge Operators' Perceptions of the Change in Proportions of Large Fish Taken in Recent Years

Rating/Area	1	2	3	All
Significant Decline	2	0	0	2
Moderate Decline	3	3	2	8
No Change	3	9	3	15
Moderate Increase	1	4	1	6
Significant Increase	0	0	1	1
Unknown	0	1	1	2
Total Responses	9	17	8	34

Table 25 Lodge Operators' Perceptions of the Consequence of a Significant Decline in the Number of Large Fish Harvested

Rating/Area	1	2	3	All
No Change in Business	2	5	1	8
Moderate Decline in Business	4	5	2	11
Substantial Decline in Business	3	5	4	12
Unknown	0	2	1	3
Total	9	17	8	34

Table 26 Substitute Features should there be a Substantial Decline in the Proportions of Large Fish

Resource Attribute	Frequency Response*	% Response
Northern Environments	12	29
Other Recreational Activities	7	16
Unique Species	7	16
Large Numbers of Fish	4	10
Freedom from Crowding	4	10
Unpolluted Waters	4	10
Ease of Catching	2	5
Diverse Lakes and Rivers	1	2
Quality of Accommodations and Other Services	1	2
	42	100%

*13 of the 34 operators suggested there would be no resource attributes of the Northwest Territories which could substitute for large fish catches.

wildlife. The perceived substitutes for large fish catches, presented in Table 26, suggest that "wilderness experience" and "geography" attributes in total represented 50% of the responses, other fish attributes 31% and "quality of service" attributes 31% of the responses.

4.2 Resource Management

The Department of Fisheries and Oceans is responsible for the management of the fisheries resources of the Northwest Territories. As such, there is a concern for the preservation of fish stocks, for the allocation of fisheries resources among competing uses, and for the economic contribution of fisheries resources and the fishing industry to the Canadian economy. Various management programs and incentives have been developed by the Department of Fisheries and Oceans. Biological studies, restrictions on fishing effort and the enforcement of regulations are all resource management programs considered necessary for the good management of the resource.

Operators were asked to comment on how well a variety of resource management functions were being conducted by the Department of Fisheries and Oceans. The results of this evaluation, presented in Table 27, suggests that almost half the respondents felt that the biological assessments of resource abundance are less than adequate as are the monitoring programs of harvests from all uses. The majority of operators feel that the enforcement of fisheries regulations is adequate while the present level of funding for resource management programs is less than adequate.

The adequacy of funding for resource management programs raises related concerns over who should pay. There is a commercial principle that it is only fair to pay for what you get. When someone receives a direct benefit from

Table 27 Lodge Operators' Perceptions of the Adequacy of Current Resource Management Programs

Function/Rating	More than Adequate	Adequate	Less than Adequate	Unknown
Biological Assessments of Resource Abundance	3	12	15	4
Enforcement of Fisheries Regulations	3	24	5	2
Monitoring Total Harvests from all Uses	0	18	13	3
Allocating Fish Resources between Competing Uses (e.g. Recreational/Commercial Conflicts)	3	16	10	5
Present Level of Funding for Resource Management Programs	1	3	27	3

Table 28 Lodge Operators' Perceptions of How Any Shortfalls in Government Revenues Should Be Covered

Approach	Frequency Response	Relative Frequency
Subsidies from General Taxation Revenues	19	56%
Increased Licence Fees, Royalties and Taxes on Fishing Industry	12	35
Unknown	3	9
	34	100%

government, it has been suggested that he should pay for it. Several questions were asked of operators which related to the concept of "beneficiary taxes".

Operators were asked how any shortfall should be covered, if government revenues from the fishing industry proved insufficient to cover the cost of the present services provided. Results to this question are summarized in Table 28. Nineteen (19) of the operators felt that the shortfall should be covered through subsidies from general taxation revenues while twelve (12) operators preferred that the shortfall be made up through increased licence fees, royalties and taxes on the fishing industry. Three (3) operators did not select either alternative.

Licence revenues represent the principal source of direct revenues generated by the fishery in the Northwest Territories. A sport fishing licence is required by anglers in the Northwest Territories, with the exception of residents under the age of 16 and over the age of 64, and non-residents under the age of 16 accompanied by a licensed angler. Currently, licence fees are $3.00 for residents of Canada and $10.00 for non-residents, providing approximately $75,000 in revenue. Operators were asked which of three uses they felt was the principal purpose of the licensing system. These results, shown in Table 29, indicate that the majority of operators (21) feel the licence serves principally as an aid to officers in enforcing fisheries regulations.

It was noted that there are different ways that licences could be used in the future. Some of the alternatives were outlined and operators were asked to select which of several alternatives should be the principal use of a licence system. As shown in Table 30, twelve (12) operators felt that the licence should serve primarily as an aid to officers in enforcing fisheries

Table 29 Lodge Operators' Perceptions of the Existing Uses of Sport Fishing Licences and Revenues

Use	Responses	%
Source of Revenue to Defray Administration Costs	7	21
Aid to Officers in the Enforcement of Fisheries Regulations	21	61
Earmarked Revenue for Resource Development Projects	5	15
Unknown	1	3
	34	100%

Table 30 Lodge Operators' Perceptions of the Preferred Uses of Sport Fishing Licences and Revenues

Use	Responses	%
Source of Revenue to Defray Administration Costs	--	--
Aid to Officers in the Enforcement of Fisheries Regulations	12	35
Earmarked Revenue for Resource Development Projects	12	35
Management Tool to Control Angling Pressure by Varying Number of Licences and Prices	8	24
Unknown	2	6
Total Responses	34	100%

regulations. Twelve (12) operators preferred that the licensing system serve as a source of revenue earmarked for resource development projects. Eight (8) of the operators preferred that licences be used as a management tool to control angling pressure by varying the number of licences and the price charged. Two operators did not select any alternative.

The licence price provides the only tangible measure of direct benefits to anglers. As such, the use of a price system has important implications for the economic valuation of resource management programs. The use of a price system with an economic rationale, for example based on the marginal cost of supply, would likely result in a very different set of fees. A radical departure from the existing licence fees may influence the number of anglers who travel to the N.W.T. Operators were asked at what licence price they would expect to see a significant decline in the number of non-resident anglers. These results, presented in Table 31, suggest that, as an industry group, operators perceive little room for adjustment in the licence fee structure. Seventy-nine percent (79%) of the operators suggested that at a licence fee of $50. there would be a significant decline in the number of non-resident anglers. The critical licence fee reported by the four remaining operators was $60. and $100. These four operators were lodges of less than 30 units of bed capacity. In contrast, the establishments with bed capacity greater than or equal to 30 beds indicated a maximum critical licence fee of $40.

Resource use conflict issues may arise between competing interest groups. Within the Northwest Territories, there is evidence of resource use conflict between recreational, commercial and domestic fishing interests. Conflicts may also arise between lodge operations and itinerant anglers. There are several alternatives which might be used to resolve these kinds of

Table 31 Lodge Operators' Perceptions of Licence Price Which Would Cause a Significant Decline in Non-resident Angling

Licence Fee/Capacity	All Lodges		Lodges < 30 Beds	Lodges >30 Beds
15	1	(3)%*	--	1
20	8	(24)	5	3
30	7	(47)	5	2
40	5	(62)	3	2
50	6	(79)	6	--
60	2	(85)	2	--
70	--	(85)	--	--
80	--	(85)	--	--
90	--	(85)	--	--
100	5	(100)	5	--
Reporting Units	34		26	8

*Cumulative frequency distribution

Table 32 Lodge Operators' Perception of the Best Way to Resolve Use Conflicts

Mechanism/Area	Responses	%
Resource Allocation Committee	20	58%
Market the Fishery Resource	4	12
Independent Evaluation by the Government	8	24
Unknown	2	6
Total Responses	34	100%

conflicts. Operators were asked to select which of three approaches they would prefer. Their responses, summarized in Table 32, indicate a preference that the government form a resource allocation committee involving representation of all interested parties. This is the approach now being used for one important fishery, the Great Slave Lake fishery. The second choice of operators was to have the government evaluate alternatives and independently allocate the resource to the perceived best use. Only four (4) of the operators felt it would be preferable to market the resource and allocate the right of use to those interests willing to pay the most for it.

4.3 Market Potential

The level of N.W.T. tourism activity is influenced by a variety of factors, ranging from the inherent recreational attributes of the north, to the efficiency of promotion and advertising of both the private and public sectors, to the impact of changes in the national and foreign economies. In this section of the attitudinal survey, operators were asked to look at the recent performance and the market outlook for their businesses and some of the factors which influence performance.

A list of factors which are commonly believed to influence the volume of business of N.W.T. lodges was outlined and operators were asked to select which two of the factors have been the most important in attracting clients. Responses of lodge operators are presented in Table 33. The factor most often mentioned was the opportunity to catch large fish followed by the abundance of fish resources. These two factors accounted for 45% of the responses. Next in importance was the operators' advertising efforts, accounting for 16% Of the responses. The prices charged relative to other N.W.T. operations represented 12% of responses. The role of fish in the overall experience marketed by operators is evidenced by the inclusion of the third "fish

Table 34 Market Potential Factors Also Important in Attracting Clients to N.W. T. Lodge Operations

Factor	Absolute Frequency*	Relative Frequency
Abundance of Fish Resources	22	22%
Unique Species	14	13
Income of Clients	14	13
The Opportunity to Catch Large Fish	11	11
Operator's Advertising Efforts	11	11
Prices Charged Relative to Other Operators in N.W.T.	6	6
Prices Charged Relative to Other Operators Outside N.W.T.	8	8
Changes in Foreign Exchange Rates	6	6
TravelArctic and Canadian Government Office of Tourism Advertising	5	5
Leisure Time Available	3	3
Unknown	2	2
	102	100%

*3 responses were sought from each of 32 reporting units

Table 35 Operators' Perceptions of Changes in the Number of Clients

Level Change/Period	Recent Past		Next Five Years	
Significant Increase	12	(35)%	11	(32)%
Slight Increase	14	(41)	16	(47)
No Change	4	(12)	6	(18)
Slight Decrease	2	(6)	1	(3)
Unknown	2	(6)	--	(--)
	34	(loo)%	34	(loo)%

Table 36 Market Potential Attributes Most Important in Attracting Clientele in the Future

Factor	Absolute Frequency*	Relative Frequency
The Opportunity to Catch Large Fish	20	29%
Operator's Advertising Efforts	15	22
The Abundance of Fish Resources	11	16
Prices Charged Relative to other Operators in N.W.T.	7	10
Income of Potential Clients	6	9
The Opportunity to Catch Unique Species	5	7
Unknown	2	3
Prices Charged Relative to Other Operators outside N.W.T.	1	2
Changes in Foreign Exchange Rates	1	2
TravelArctic and Canadian Government Office of Tourism Advertising	--	--
Leisure Time Available	--	--
	58	100%

*2 responses were sought from each of 34 reporting units

Operators were asked, in the context of the current regulations and the economic climate, which of several investment intentions they would follow. Responses to this question are shown in Table 37. Approximately one-half of the respondents (18) indicated they would maintain their current operations, while one-third (11) suggested they would expand the existing fisheries they operated. No operators planned to reduce current operations, but two (2) suggested they intend to cease operations over the period.

Several of the factors which are believed to influence investment intentions of lodge operators were identified. Operators were asked to select which two factors would most influence investment intentions over the next five year period. Responses to this question, outlined in Table 38 show that land claim issues were most frequently mentioned (37%), followed by the costs of operations (32%). Limitations on the supply of fish were' mentioned in 16% of the cases.

The expansion-of lodges and outfitters' services is looked upon as one means of promoting further economic developments in the Northwest Territories. Operators were asked to comment on the most likely consequence of further industry expansion. Nineteen (19) operators felt that further industry expansion would result in an increased share of the North American tourism market while thirteen (13) of the operators felt that any further expansion would result in a constant share of the market fragmented among more operators. These results *are* summarized in Table 39.

paid out as owning and operating expenses a portion of which accrues to the Northwest Territories. These expenditures represent incomes to labour and ancillary industries, such as wholesale, retail, transportation, communication and construction, a portion of which will be spent on investment and consumption of new goods and services. This process will continue a chain reaction of new rounds of spending thus expanding income by a multiplied amount.

5.2 Interpretation and Application of Impact

While the fishing lodges of the Northwest Territories do in fact provide an incremental contribution to the economy of the Northwest Territories, care must be taken in the interpretation and application of the data. Do these data mean that we can divide the gross sales of fishing lodges by the number of fish caught as a measure of the recreational value of fisheries resources? No! Not if you wish any long term credibility. Do these data provide a correct, consistent and complete basis on which to divide the fishery pie between the commercial and recreational use of fisheries resources? No, they do not. Do these data provide total justification for public investment in fisheries management and the promotion of recreational fisheries? From an economic perspective, the answers to these questions are all no!

In order to more fully understand the reasons for the above assertions, it is important to look at the division of labour between the public sector and the private sector and the concept of economic efficiency in the provision of recreational fisheries resources. In addition, it is important to differentiate between the benefits generated and the costs incurred by the

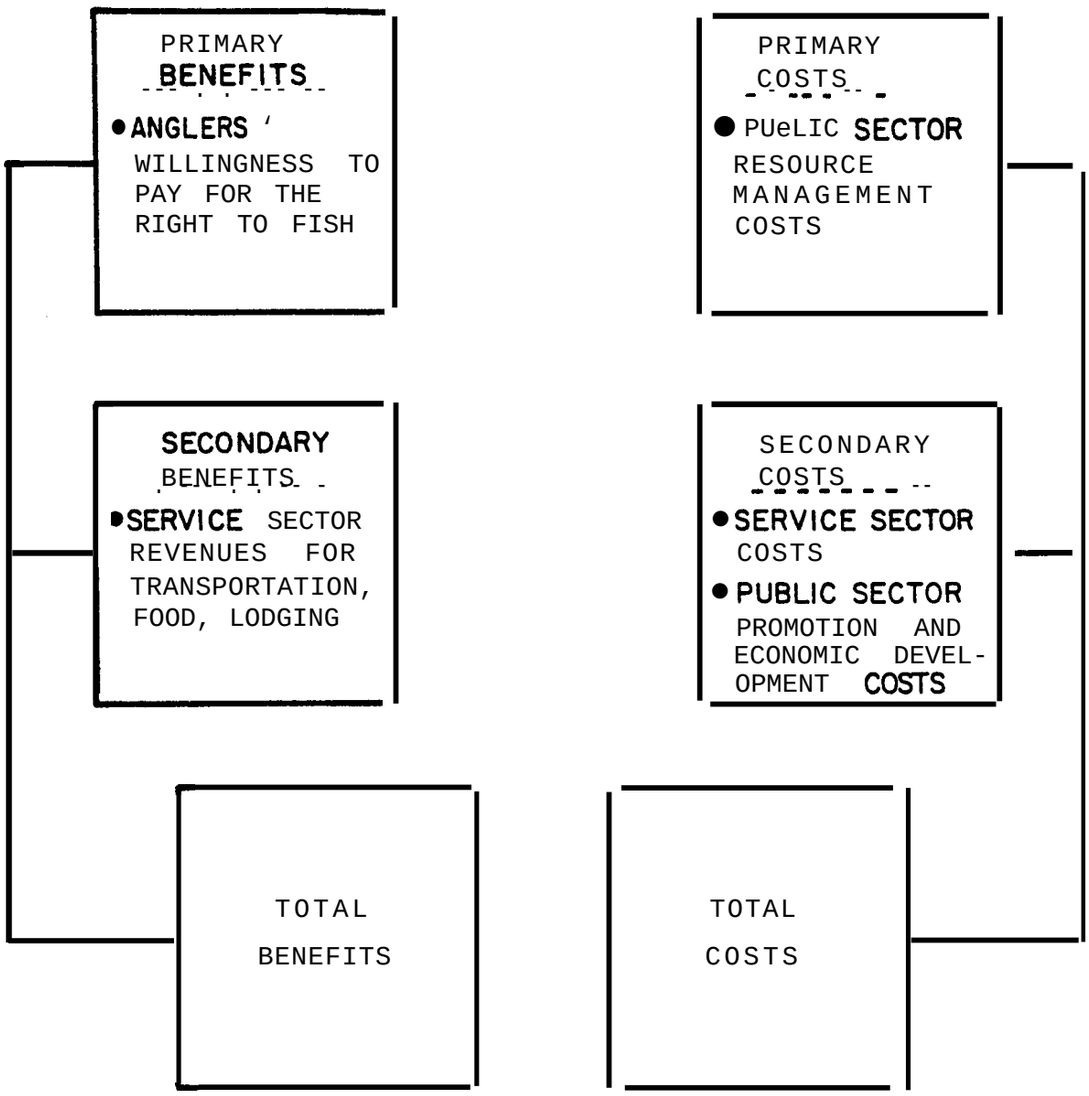
public sector and the private sector. First, it has traditionally been the responsibility of the public sector, as stewards of fisheries resources, to manage (supply) the use of Canada's fisheries resources. On the other hand, the provision of goods and services to anglers, such as those provided by recreational fishing lodges, has generally, although not exclusively, been the domain of the private sector.

It is, perhaps, not unrealistic to assume that it would be socially desirable for all sectors of our economy to function efficiently. For the private sector, it would be desirable that fishing lodges avoided bankruptcy by profiting from their operations. Similarly, for the public sector, it would be desirable that the benefits generated from the recreational use of fisheries resources exceeded the public costs of providing the resources. The resulting surplus, the resource rent, provides a measure of the contribution of the public sector in the provision of fisheries resources.

Given the division of labour between the public sector and the private sector, it is worthwhile making a distinction between the benefits and costs of the public sector function of supplying fish and the benefits and costs of lodge operations, as outlined in this study. Primary or direct benefits may be defined as those beneficial effects that accrue to anglers who make direct use of fisheries resources. The real value of these primary benefits is the maximum amount of money that anglers are willing to pay for the opportunity to fish. This represents the "final demand" for recreational fishing and the interface between the final consumer - the angler - and the public sector whose function it is to supply fish.

The measurement of primary benefits is a major problem where the provision of fisheries resources is concerned. Because the public sector provides access to harvest fish free, or at a nominal fee that does not

FIGURE 3
BENEFITS AND COSTS
OF THE SPORTS FISHERY



NET BENEFITS = TOTAL BENEFITS - TOTAL COSTS

necessari 1 y reflect a wi 11 i ngness to pay, i t is extremely di fficul t to measure primary benefits. Primary or direct costs, on the other hand, are all too apparent to those persons concerned with the size of government budgets. They include the public costs of managing and enhancing fisheries resources. They also include the value of alternative resource uses which must be foregone as a result of the recreational use of fisheries resources. Such costs, known as opportunity costs, include the commercial and domestic use of fisheries resources.

Secondary or indirect benefits may be defined as those beneficial effects which are induced by, stem indirectly from, or are a "downstream" consequence of the recreational use of fisheries resources. Incomes to factors of production (labour and capital) providing goods and services to anglers, such as recreational lodge operations, fall into this category. Unlike the above-noted direct benefits, the indirect benefits are readily measured by what anglers actually pay for the goods and services of lodge operators. The demand for these goods and services may be defined as a "derived" demand - derived from the anglers' demand for the opportunity to fish. Secondary or indirect costs are those costs ·nvolved in the production of secondary benefits, as identified in this study. While secondary benefits and costs are very real, they clearly stem indirectly from the final demand for the recreational use of fisheries resources.

Given this basic framework for aria' ysis, as outlined in Figure 3, this section proceeds to examine the following issues:

1. What is the value of the recreational use of f· sheries resources and to what extent can information generated in this study be used to measure values.
2. What are the trade-offs between primary benefits, such as the resource rent, and secondary benefits, such as regional employment.

3. What information is required for economic analysis of resource allocation decisi ens.

4. What are the implications of this survey for control mechanisms in the sports fishery.

5.3 The Value of Fisheries Resources

This study addresses the gross value of goods and services provided by recreational fishing lodges and the costs of providing those goods and services. It does not address the primary value of fish per se. Further, the study does not address the primary cost of providing the fish.

As discussed previously, the demand for and the value of the recreational use of fisheries resources is, in large measure, reflected in the benefits received by anglers for the opportunity to fish. There is a general consensus among economists that the appropriate measure of value is derived from the recreational fisherman's willingness to pay for the opportunity to fish over and above all private expenditures on travel, accommodation, and equipment necessary to participate in the fishery. In a primarily market economy, such as that employed in North America, the value of such basic necessities as food, clothing and housing can be estimated more or less readily in monetary terms by observed prices and costs. The same is true of such recreational activities as participating in curling or attending movies.

In the case of outdoor recreation, such as sports fishing, however, observed prices provide no insight as to the economic value of the recreational opportunity. This results from the public policy decision that nominal prices be charged for the right to fish. Consequently, it is necessary to simulate the results of a market pricing mechanism which is not permitted to operate because it is inconsistent with a policy of complete

equality of access to outdoor recreational opportunities (Clawson and Knetsch 1966) .

In the absence of a market system, numerous authors have contributed to the theoretic valuation of the recreational use of fisheries resources. In the process, models have been developed in an attempt to trace out demand schedules for recreational fishing. These demand schedules attempt to simulate the relationship between what anglers are willing to pay for the opportunity to fish. While the results of this work is helpful in forming public policy decisions, the veracity of the results can only be determined by actually charging a price.

Despite the consensus among economists of the appropriate valuation procedure, numerous erroneous measurements of value have been embedded in the litany of recreational fisheries. Two such measurements entail the measurement of angler expenditures on goods and services in ancillary industries, such as the gross sales and multipliers used in this study. These measurements have variously been used as proxies for the primary values of fisheries resources and as justification for government allocation decisions in fisheries management. As such, they deserve further comment.

5.3.1. Expenditures for Ancillary Services

One approach to the valuation of the recreational use of fisheries resources which has considerable intuitive appeal, involves the calculation of the total amount spent on recreation by the user. The summation of spending on food, lodging, travel and fishing equipment, for example, is suggested as the value of the recreation opportunity. It seems logical that the value of a day's recreation is worth at least the amount spent by a person for the use of that recreation.

As so often is the case, what is intuitively appealing also proves to be incorrect. Thus, professional analysts who specialize in outdoor recreation have rejected such calculations, more generally described as the "gross expenditures method", as a means of economic evaluation of outdoor recreation. For example, consider the following comment in 1961 on the relevance of an expenditure survey conducted by the United States Fish and Wildlife Service:

> "Absolutely nothing. These expenditures were for food, lodging, travel, clothes, guns, rods and similar items. These values account for the ... dollars (spent), and there is nothing left over as a return to the recreational use of the land.
>
> Certainly the particular groups serving the recreationists are benefiting from these expenditures, the data on expenditures may well be highly useful in gaining the support of such groups in lobbying for higher budgets for recreation. But from a broader public standpoint, all that is achieving is a transfer of expenditures from one group to another: there is little if any net gain to society from this level of effects. The social case for public support of recreation must rest on the value to the users, not the increased profits of certain recreational service industries." (Zivnuska 1961)

Professional opinion, over the years, has not waivered. For example, in 1974 the following analogy was drawn:

> "Prior to the development of market simulation techniques, one of the most common method of recreational evaluation was based on equating the gross expenditures users made to visit a recreational site with the benefits generated by that recreational resource. It is true that the costs associated with reaching a recreational area are an important

variable affecting the decision whether or not to visit the area. Yet, regardless of the level of travel and other associated expenditures, access to the site itself is usually enjoyed free even though most recreationists would be willing to pay some positive price rather than be excluded from the site. If the site were eliminated, these recreationists would suffer a loss in their level of welfare or well-being as a result of being forced to their second choices. It is this welfare loss that measures the value of the site to the recreationists. The gross expenditure approach is analogous to measuring the value of a filet mignon dinner in an exclusive restaurant by looking at the cost of traveling from your residence to the restaurant, whereas the correct measure of value is what you are willing to pay for the dinner when you get there. The gross expenditure approach is still used occasionally as a crude indicator of site value because it is so simple to apply." Unfortunately, its simplicity does not compensate for the fact that this method is generally invalid even if only crude estimates are required." (Laub 1974)

The arguments against the use of these expenditure calculations revolve around the basic problem that the expenditures and values relate to the provision of goods and services ancillary to the actual recreation opportunity. These are the secondary benefits and costs discussed in section 5.2. It is wrong to suggest that expenditures on food and lodging represent both the consumers' willingness to pay for food and lodging and his willingness to pay for the recreation opportunity. Clearly, they represent his valuation of the food and lodging and no more. Valuation of the nominally priced recreation opportunity eludes the gross expenditure approach.

The approach is also criticized insofar as it does not provide a measure which is consistent with other value measures. What is required is a measure of the net yield of the recreation opportunity, for example, the value of fishing rights. This is the only calculation which will permit accurate comparison of the recreation opportunity's benefits and costs with the benefits and costs of alternative resource uses i.e. the resource use conflict issue.

Thus, it must be emphasized that the dollar amounts, and the dollar/pound calculations, which may be presented as the value of the fishery, are not acceptable measures of value.

5.3.2 Multipliers

Professional analysts have also placed a strict and limited interpretation on the application of multipliers. Referring to section 3.3, it will be recalled that the multiplier concept was described in an "input-output" framework. Isard (1960)-pictured input-output analysis as a useful descriptive device that:

1. records rather concisely, in an internally consistent manner, a large amount of information about a regional economy and the interrelations of its sectors;
2. imposes a desirable statistical discipline on data collection agencies and empirical investigations;
3. reveals gaps in our data and may help in filling them; and
4. presents an economy in perspective and facilitate comparison of the magnitudes of its major sectors and bonds with other economies.

These are rather modest applications of this analytic tool. Often, there is an interest in using these measures for another purpose, raising the benefit estimate of a public project or program by the appropriate multiplier

effects. Such attempts, however, could strain the credibility of an analyst. In this regard, Rothschild et al. (1977) have discussed the appropriate multiplier effects and relevance of input-output measures which traces the . direct, indirect, and induced output and income effects of the recreational industry. They provide examples which suggest that the indicated direction of changes does not accord well with common sense notions of value and enhanced well being. For example, consider an increase in costs incurred by recreational fishermen, whether fuel and travel costs, or costs of charter vessels and fishing gear. If these costs increase, so would the induced impacts from an increase in recreational fishing. It does not seem sensible, however, to suggest that a rise in these costs make participants in recreation "better off". Another example would be a decrease in fish density available to recreational fishermen. Expenditures in a region are a function of user-days rather than fish caught per se. Consequently, a decrease in fish density would have no apparent impact and no induced impacts on the regional or national economy.

Rothschild et al. conclude that there is limited relevance of this type of analysis to decisions which are to be evaluated in terms of the allocation of scarce resources in a fashion which makes society "better off". The reason is:

"... in fact, induced benefits, like the gross national product, were never intended as indices of welfare per se, but simply an accounting of the exchange values of goods and services exchanged in markets. It is of course true that there must exist at least some correlation between these measures and welfare."

5 .3.3 What does all of this Mean

Though somewhat of a paradox, the principal contribution of this study may be in the understanding of what it does not mean.

This study does not provide the required data to measure the value of the recreational use of fisheries resources, to assess the trade-offs between alternative fisheries resource uses, or as total justification for public investments in fisheries management. As explained previously, the required data involves the measurement of the anglers' willingness to pay for the opportunity to fish. In the absence of a market system, such as that which exists for the services of recreational fishing lodges, the resource manager's hands are tied behind his back in attempting to make economic policy decisions. Consequently, it is necessary to simulate the operation of a market in order to obtain extimates of the primary benefits of recreational fishing. This will be the next step in our analysis of the recreational fisheries of the Northwest Territories.

The study does have relevance. It provides a profile of the contribution of fishing lodges to the national economy and to the economy of the Northwest Territories. Further, the inter-relationships of sectors within the regional economy are better understood as a consequence of the input-output analysis. In addition, the study provides a measure of what the regional economy might forego and what compensation might be required if environmental impacts and/or policy decisions resulted in the termination of recreational fishing lodge operations.

The study also provides some insights as to how fishing lodge operators view fisheries management issues in general and marketing fishing rights in particular. A fundamental policy issue exists in the provision of recreational fisheries and in outdoor recreation generally (Clawson and

Knetsch 1960). Should the demand for Northwest Territories sports fishing be promoted by government subsidies? How much can or should the Department of Fisheries and Oceans spend in the provision of free or nominally priced fishing opportunities? Stated alternatively, to what degree should the direct beneficiaries of the Northwest Territories fisheries resources pay for the benefits - individually and directly, as opposed to raising revenues collectively through taxation in order to provide fishing benefits? What standard of quality should be maintained in the fishery and who should pay for the cost of quality maintenance?

In response to these issues, the recreational fishing lodge industry expressed a concern that there is limited room to adjust licence fees. It was suggested that a non-resident licence fee of $50. would result in a significant decline in the number of non-resident anglers. As such, there appeared to be a preference that licence fees be retained at a nominal level. Further, there appears to be a preference that licence fees be earmarked for resource development projects and that any shortfall in government revenues relative to resource management costs should be covered out of general taxation. These views are understandable. However, the question arises whether or not such policies serve the public interest. The ability of the sports fishery to demonstrate a tangible direct economic contribution will be constrained should there be a continuation of existing policy approaches. Failure to measure the primary value of the recreational use of fisheries resources will not enhance the industry's case where resource allocation decisions are made.

5.4 Trade-Off between Primary and Secondary Benefits

From an economic perspective, the primary objective of fisheries management should be to assure that fisheries resources contribute to the welfare of all members of society. Translating this objective into operational terms, requires that fisheries resources generate the greatest possible benefits at the least possible cost. These objectives may be compromised by secondary objectives concerned with policies relating to social considerations, protection of fish, employment and regional growth. However, it is only by analyzing policies on purely economic grounds that it is possible to measure the costs of serving secondary objectives.

It is of interest to note that the primary and secondary objectives of fisheries management may be complimentary. For example, a regional growth and development program could result in an increase in national income. To the extent that there are alternative uses of society's resources, however, a regional growth and development program may simply result in the transfer of income from the rest of the nation to a specific region. This is the trade-off inherent in multi-purpose planning. Scott and Pearse (1968) suggest a method of evaluating the magnitude of the trade-off:

> "There is, however, a more appropriate method available to account for the real costs, albeit not for the benefits, of non-monetary, non-national income objectives. This method would utilize the actual reductions in potential total net income benefits as a yardstick of the costs of achieving non-national income objectives."

Schramm et al. (1970) also emphasize that this approach enables one to measure the national income costs of achieving other goods -and objectives. "They do not provide a positive assessment of the real value of any of those goals. The question whether the latter are worth less, the same or more than the

amount of national income gains foregone will have to remain a matter of judgement by policy makers in each and every case."

The distinction between national income and regional income benefits provides a fundamental policy issue in the management of the sports fishery. In looking at the current pricing practices of the Department of Fisheries and Oceans in managing and allocating fisheries resources, it is evident that the prices are administratively determined and there is no necessary relationship to the concept of the economic prices (marginal cost pricing policy) which would be obtained if the department endeavored to maximize net economic yield. Presumably, this pricing policy is justified in terms of the extra market benefits to Canadian anglers and the secondary benefits generated by the industry servicing anglers. The relationship between subsidized primary fishing activity and real gains to the national or regional economies has not been demonstrated.

At best, this study provides only a partial insight into 'the underlying' issue. The material documents the regional income and employment generated by lodge operations. These have been described as the regional benefits of the industry and may be interpreted as the outcomes of the existing policy framework in which efficiency benefits, the resource rents, are traded off for secondary benefits. What remains to be evaluated is the rent potential foregone and the incremental regional benefits realized as a consequence. That is, implications of rent recovery considerations on the performance of the fishery at the primary and secondary levels remains to be evaluated. This analysis, which provides a cross-sectional study of the secondary level of the industry, must be viewed as only one part of the information necessary for such an evaluation.

5.5 Resource Allocation

Resource use conflicts are increasingly evident in the Northwest Territories. For example, conflicting pressures on the resource now exist between domestic/recreational interests (e.g. Tree River or the Fort Franklin domestic fishery on Great. Bear Lake), between recreational interests (e.g. itinerant anglers and lodge operations on the east arm of Great Slave Lake), and between fishing interests and competing industrial uses (e.g. Beaufort Sea energy developments).

There is a need to define the appropriate criteria for resource allocation decisions. Economic analysis, through the use of marginal productivity analysis, can be used to examine the economic efficiency of resource allocation. Where multiple objectives are to be served through resource development, the evaluation of efficiency benefits foregone provides guidance measuring the cost of serving secondary objectives. The economic efficiency objective can be interpreted as the maximization of the value of the resource in either or both uses (i.e. how big a pie can be baked).

The measurement of efficiency benefits in the recreational fishery, the primary value of the resource, derives from the willingness of consumers to pay for the right of access to the fishery. Measures of consumers' surpluses and economic rents reflect the primary values of the fishery. For the commercial fishery, the appropriate measures of value, as outlined by Copes and Knetsch (1981), Copes (1972), Rothschild et al. (1977), include the consumer's surpluses, economic rents and producer's surpluses (returns to fishermen's labours and excess of the compensation they would receive in their next best alternative).

Pearse (1969) has noted that the solution to the multiple use problem involves marginal analysis;

> "the determination of the optimum combination of outputs depends not on the total potential quantity or value that can be produced but on the implications of having a little more of one at the expense of another. It is a confrontation of the trade-off in physical quantities at the margin with their relative values on the other that enables the analyst to prescribe the appropriate direction of adjustment".

The difficulty in the application of this concept is the measurement of the social costs that catches in one fishery impose on the other (Copes and Knetsch 1981).

The relevance of the study in addressing the resource allocation problem should be clear. The information on existing employment and regional income benefits, in isolation, is not sufficient to examine the value of one sector. It is clearly inadequate as a means of commenting on the comparative values of industrial sectors. Furthermore. it is necessary to consider marginal benefits and costs, so that the implications of changes in resource allocations can be carefully evaluated.

5.6 Management of Access

Fisheries resources are public resources, owned by the public and public property in the conventional sense of the term. In law and economics, however, public ownership need not imply that access rights are obtained or enjoyed in any sense differently from the way they are on private lands (Krutilla and Fisher 1975). Fisheries resources (and their aquatic environment) are viewed as common property, a resource used, if not necessarily owned, in common by all of the members of the community. It is widely accepted that a tradition of "open access" leads to overuse of the

common property resource. Alternative methods of access are suggested as a means of mitigating the degradation of the resource and the dissipation of economic values. For example, fisheries leases might be instituted, in a system analogous to timber or grazing permits on Crown lands. The pricing of individual access in a more realistic manner offers another alternative for management. The matter of management of access rights brings the discussion full circle. If DFO continues to charge only nominal prices for N.W.T. fisheries, questions will arise over the effectiveness of resource management programs. It will not be evident that fisheries resources have been managed to make their greatest contribution to the welfare of Canadian or territorial society. It will be evident that resource rents have been sacrificed to achieve secondary objectives, but the extent of the trade-off will be the matter for debate. The solution to this impasse is a system of resource allocation and management which ensures that those who value the resource greatest have the opportunity to express their preferences in a tangible manner. This approach involves a direct system of pricing access to the fishery. No doubt an economic pricing system, with the potential for higher beneficiary charges, will be resisted by anglers and the lodge industry. The present study has documented industry preferences and the desire to perpetuate the status quo is clear. These preferences notwithstanding, the ability to manage the fishery resources for the maximum benefit of Canadian society will require careful consideration of alternatives to the status quo.

6.0 Summary and Conclusions

The principal objective of this study is to enhance the understanding of the dimensions of the sport fishing lodge industry in the Northwest Territories. This has been accomplished through the documentation of the present size, capacity and utilization of lodges. Financial information has been examined to provide a perspective of short and long-run viability. Economic impacts have been measured through the use of an inter-provincial input-output model. The attitudes and perceptions of lodge operators have been documented. Finally, the interpretation and use of this array of information has been considered.

The information presented in this study should be of use to both industry representatives and government organizations concerned with fisheries, tourism and economic development in the Northwest Territories. Hopefully, there will be a general consensus as to the validity of the information presented. With respect to the interpretations to be placed on this information, it is anticipated the information will be used to reflect the particular objectives and mandates of the participants to the study. Thus, the lodge industry will likely use the information to emphasize their contribution to the regional and Canadian economies. No doubt, the temptation to use multipliers and dollar/pound calculations as the criteria for resource allocations will be hard to resist. For regional development organizations such as the Government of the Northwest Territories, the information on regional income and employment in relation to total economic impacts will be of use in the design and evaluation of programs.

For fisheries management purposes, the implications of the study are not quite as clear. Certainly, the study provides a perspective of the major fisheries based industry in the Northwest Territories. However, it has been

emphasized that the information presented in this study cannot be used in isolation to measure the national benefits of sport fishing, the value of fisheries resources, trade-offs between alternative fisheries resources uses, or as the justification for public investment in fisheries management. These are contemporary issues in fisheries management all across Canada. The need to develop the methods and the information to make resource allocation decisions remains. Given the diversity of objectives which influence policy decisions for the fishery, the approach most likely to be of use entails the integration of primary benefit and cost information with economic impact data as presented in this study. This approach would serve a variety of needs. It would be amenable to both national and regional benefit measurement. More important, it would make explicit the trade-offs between primary and secondary benefits which so often characterize natural resource management policy issues.

DIRECTIONS FOR FUTURE RESEARCH

Industry Monitoring

The Department of Fisheries and Oceans and the Government of the Northwest Territories should explore the feasibility of monitoring industry performance through the use of the Traveller Accommodation Survey (63-204). This survey provides statistics on receipts, employment, expenses and occupancy rates for hotels, motels, tourist camping grounds and other types of traveller accommodation. Some aggregate indicators could be provided on an annual basis at minimal expense.

These agencies should also evaluate the feasibility of developing more detailed information on industry performance on a periodic basis. Information on regional employment and income impacts could be developed for a sample of establishments in the industry. Since this program would require the

commitment of more substantial outlays, an evaluation of the need and potential costs should be conducted.

Fisheries Management

This study, in conjunction with the national angling survey, represents an initial commitment of the Western Region, Department of Fisheries and Oceans to a recreational fisheries economics program. These studies were designed to "profile" the sport fishery in the Northwest Territories. Subsequent to these studies, it was our original intention to initiate studies more directly related to resource valuation and allocation.

The need for this type of work has been emphasized in this report. It is hoped that sufficient resources will be available to initiate primary valuation work for at least one fishery in the Northwest Territories in the forthcoming fiscal year.

Ultimately, the objective of the program is the development of a comprehensive framework of analysis which would integrate benefit and cost measurement at both levels of the industry and the trade-offs between primary and secondary benefits inherent in many fisheries management decisions.

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Appendices

Appendix A

Survey Instrument

CONFIDENTIAL

WHEN COMPLETED

SURVEY OF SPORT FISHING LODGES AND OUTFITTERS IN THE NORTHWEST TERRITORIES

SURVEY NUMBER _____

SECTION A

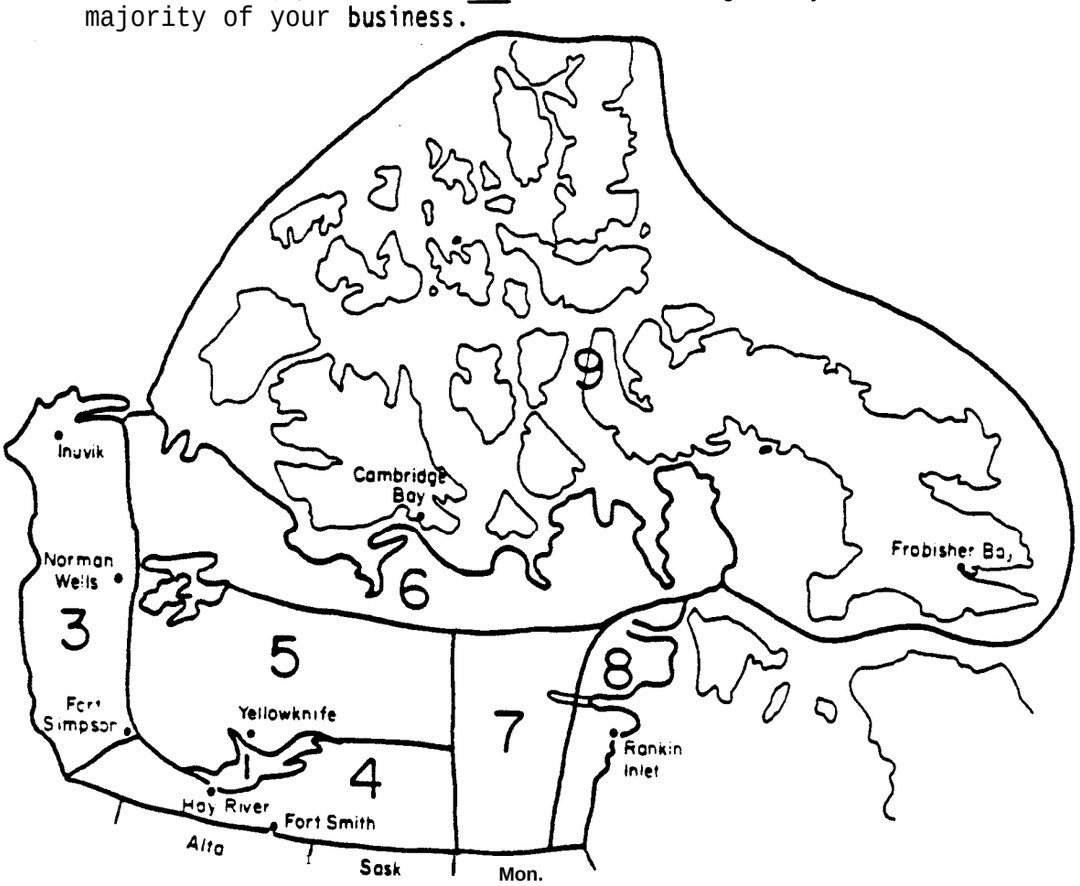
DESCRIPTION OF THE SIZE, CAPACITY AND UTILIZATION
OF SPORT FISHING LODGES AND CAMPS

1. Please check (✓) the category which best describes the type of business operated:

Sport Fishing Lodge _____

Sport Fishing Outfitter _____

2. The map below divides the territories into nine geographical regions. Please check (✓) in which one of the nine regions you conduct the majority of your business.



1. Great Slave Lake _____
2. Great Bear Lake _____
3. Mackenzie River and Delta _____
4. Hay River-Fort Smith _____
5. Yellowknife Area _____
6. Northern Coastal Char _____
7. District of Keewatin (Inland) _____
8. Hudson Bay Coastal Char _____
9. District of Franklin Char _____

3. Please check (✓) the years in which this business has operated in the Northwest Territories. The record of operation, to the extent possible, should include both your involvement and prior operators of the same business.

If the business operated in all years 1960 through 1980, please check in the box below.

Yes ☐

If the business did not operate in all years, please complete the following table by checking the years operated:

1980	_____	1975	_____	1970	_____	1965	_____
1979	_____	1974	_____	1969	_____	1964	_____
1978	_____	1973	_____	1968	_____	1963	_____
1977	_____	1972	_____	1967	_____	1962	_____
1976	_____	1971	_____	1966	_____	1961	_____
						1960 and prior	_____

4. Please estimate what percentage of your customers in 1980 would be included in each category, (e.g. N.W.T. residents 20%, Canadian residents from other provinces and Yukon Territory 30%, non-residents from the United States 50%, non-residents from other countries 0%).

Category	Percentage Total
N.W.T. Residents	_____
Canadian residents from other provinces and Yukon Territory	_____
Non-residents U.S.A.	_____
Non-residents from all other countries	_____
Total Customers	100%

QUESTIONS 5 AND 6 RELATE ONLY TO SPORT FISHING LODGE AND CAMP OPERATIONS. IF YOU ARE A SPORT FISHING OUTFITTER, PLEASE GO ON TO QUESTION 7, SECTION B.

5.(a) What is the licensed guest capacity of your main camp? _____

How many outpost camps do you have? _____

What is the total licensed guest capacity of your outpost camps? _____

5.(b) What is the normal open/close date of your establishment?

From _____ To _____

Total days _____

5.(c) Please describe the 1980 period of operation and occupancy rate by completing the following table.

FOR EXAMPLE, IF YOU DID NOT OPERATE IN JANUARY, PUT A 0 UNDER DAYS OPERATED. IF YOU OPERATED IN JUNE, RECORD THE DAYS OPERATED (E.G. 30), THE NUMBER OF GUESTS FOR THE MONTH (E.G. 120) AND THE TOTAL NUMBER OF GUEST-DAYS (E.G. 60 GUESTS @ 7 DAYS PLUS 40 GUESTS @ 5 DAYS PLUS 20 GUESTS @ 3 DAYS EQUALS 680 GUEST-DAYS IN TOTAL).

Month	Days Operated	Number Guests	Total Guest-Days
e.g. January	0		
e.g. June	30	120	680
1980 January			
February			
March			
April			
May			
June			
July			
August			
September			
October			
November			
December			

5.(d) Please estimate the percentage of guests in 1980 by length of stay, e.g. 80% of the guests purchased a 7 day package, 20% a 3 day package.

Length of Stay	% Total Guests
Less than 7 days	_____
7 days	_____
Greater than 7 days	_____
Total Guests	100%

SECTION B

REVENUES AND EXPENDITURES OF SPORT FISHING LODGES AND OUTFITTERS

Your answers to questions in this section will be used to prepare a profit and loss statement for 1980 operations on an industry-wide basis. This section is also designed to document industry expenditure and employment impacts in total and to the Northwest Territories.

6.(a) Does your business provide package plans? Yes _____ No _____

If no, please go to question 7.

(b) If yes, please describe the 1980 price structure and the services included in your package:

RATES: Specify prices per person, period in days and the point of origin/destination for transportation services. PLEASE SPECIFY THE CURRENCY IN WHICH RATES ARE QUOTED (i.e. U.S. OR CANADIAN FUNDS)

_____

_____

_____

_____

SERVICES PROVIDED: Please check(✓) whether or not the following services are included in the package plan:

Service	Included	Not Included
Transportation	_____	_____
Accommodation	_____	_____
Meals	_____	_____
Fishing Licence	_____	_____
Guides	_____	_____
Boats	_____	_____
Motors	_____	_____
Fuel	_____	_____
Cold Storage	_____	_____
Outpost Trips	_____	_____
Fish Cleaning	_____	_____
Others (Specify)		

_____

7. If the price structure of your business includes individual charges for services, please describe the rates for 1980 operations:

Transportation: _____

_____

_____

Accommodation: _____

_____

_____

Meals: _____

_____

_____

Guides: _____

_____

_____

Boat and Motor Rentals: _____

_____

_____

Fuel: _____

_____

_____

Cold Storage: _____

_____

_____

Outpost Trips: _____

_____

_____

Fish Cleaning: _____

_____

_____

Other Services (Specify) : _____

_____

_____

3. Please estimate the percentage change in 1980 prices over the previous year's operation. For example, if package plans in 1980 were priced at $1,100. versus $1,000. in 1979, the percentage increase is 10%.

Item	Percentage Increase
Package Plans	_____
Housekeeping Cabins	_____
Boat and Motor Rentals	_____
Guiding Services	_____
Outpost Camps	_____
Fish Cleaning and Freezing	_____
Other Services	_____

9. What were your revenues in 1980 from the following sources:

Item	1980 Revenues
Package Plans	_____
Housekeeping Cabins	_____
Dining Room	_____
Retail Store	_____
Boat and Motor Rentals	_____
Guiding Services	_____
Aircraft Charters	_____
Outpost Camps	_____
Fish Cleaning and Freezing	_____
Other Sources (List):	
_____	_____
_____	_____
_____	_____
TOTAL REVENUES	_____

10. This question relates to the 1 abour employed by your business in 1980. Information is requested on (a) how much employment was provided and (b) the payments to labour.

(a) Please complete the following table on the amount of employment provided in 1980. Information is requested on the total number of employees by type of employee, (e.g. 10 guides), the number of N.W.T. residents (e.g. 8 of the 10 guides), the total man/days of employment (10 guides x 90 days), and the total man/days of N.W.T. employment (8 guides x 90 days). Please include the management and related services provided by the owner/operator and family. For example, if the business were owned and operated by a husband and wife, there would be 2 persons employed. The duration of employment would depend on both the direct involvement in the operation of business and the time spent in preparing and promoting for the actual operating season.

Type Employment	Total Number Employees	N.W.T. Residents	Total Nan/Days Employment	N.W.T. Man/Days Employment
Example: Guides	10	8	900	720
Guides				
Cooks				
Serving Staff				
Housekeeping Staff				
Yardman				
Pilots				
Maintenance Staff				
Bookkeeper				
Manager				
Owner/Operator(s)				
Others (List):				
TOTAL				

(b) Please complete the following table on payments to labour in 1980. Information is requested on the total payments to hired labour in 1980 including wages, benefits (UIC, CPP, vacation pay, bonuses) and room and board expenses. The proportion of wage payments received by N.W.T. residents is also requested in this question.

FOR EXAMPLE, if total payments for guiding services were $27,000 including $19,000 in wages, $4,000 in benefits and $4,000 in room and board expenses, and 70% of these payments or $19,000 were realized by N.W.T. residents, then the table would be filled out as shown below.

Please specify whether or not these expenses include an explicit wage payment for the owner/operator and members of the family, i.e. include the wage paid for 1980 operations.

Employment	Wage	Benefits	Room & Board	Total Payments	N.W.T. Payments
Example: Guides	19,000	4,000	4,000	27,000	19,000
Guides					
Cooks					
Serving Staff					
Housekeeping Staff					
Yardman					
Pilots					
Maintenance Staff					
Bookkeeper					
Manager					
Owner/Operator(s)					
Others (List)					
Total					

11. What were the expenses of your establishment in 1980 on the following items of expense. Please estimate the distribution of your expenses between those expenses made within the N.W.T. and those expenses made outside the N.W.T.

Items of expense are listed in alphabetical order. It is assumed that all expenses are reported in Canadian funds. If this is not the case, please specify the source of funds.

Item	Total Expense 1980 $1,000	N.W.T. Expense 1980
Aircraft rental		
Accounting and legal		
Advertising		
Automobile - repairs and gas		
Automobile - rental		
Building repairs		
Business tax		
Boats and motors - repairs		
Boats and motors - gas		
Boats and motors		
Camp supplies		
Camp fuel		
Depreciation allowances		
Aircraft		
Boats and motors		
Buildings		
Land Vehicles		
Wharves		
Other equipment		
Dues and memberships		

11. Continued

Item	Total Expense 1980 $1,000	N.W.T. Expense 1980
Equipment and repairs		
Fish packing		
Freight		
Groceries		
Insurance		
Interest and bank charges		
Licences and leases		
Office expense		
Propane		
Rent - office		
Transportation - guests		
Transportation - staff		
Travel and entertainment		
Telephone		
Miscellaneous		
Amortization of goodwill		
Other Items (List) :		

12. Please provide the following information with respect to your 1980 operations:

Net profit (loss) before tax _____

Corporate tax _____

Net profit (loss) after tax _____

13. Please complete the following table which deals with the valuation of fixed assets. Assets have been categorized according to the major capital cost allowance categories as provided in schedule B of the Income Tax Regulations. The information in columns (1) original cost plus acquisitions, (2) accumulated depreciation and (3) book value should be available from the balance sheet for your business. Column (4) replacement cost seeks your best estimate of what it would cost to replace the existing assets.

FOR EXAMPLE, if the original cost of buildings and component parts were $300,000, if there were no additional acquisitions, and accumulated depreciation were $200,000 the book value, as shown in the balance sheet, would be $100,000. The 1980 replacement cost of buildings and component parts might be $700,000. This information would be entered in the table as shown in the example.

The table is on page 13.

13. Continued **Fixed Asset Valuation**

Asset Description	Original Cost Plus Acquisitions	Accumulated Depreciation	Book Value	Replacement cost
Example: Buildings and component parts	$300,000	200,000	100,000	700,000
Class 1 Assets				
• Aeroplane runway - Roads				
Class 2 Assets				
- Electrical generating equipment - Equipment (greater than 15 KW)				
Class 3 Assets				
- Docks - Wharves - Breakwater				
Class 6 Assets				
- Buildings including component parts (wiring, plumbing, etc.)				
Class 7 Assets				
- Boats				
Class 9 Assets				
- Electrical generating equipment - Radio transmission or receiving equipment				
Class 10 Assets				
- Automotive equipment - Outboard engines				
Class 12 Assets				
Linens, chinaware, cutlery, tableware · Tools(less $100.!				

14. This question is for lodge operators. It deals with guest expenditures in all of Canada in relation to the amount of fish harvested. While some of the information has been requested in earlier questions, the following questions are intended as summary statistics:

(a) What was the estimated number of pounds of fish (round weight) your average guest took home from your lodge in 1980?

_____ pounds

(b) What was the estimated number of pounds (round weight) killed and eaten for shore lunch or other meals by your average guest?

_____ pounds

(c) Total pounds per average guest:

add (a) and (b) _____ = _____ pounds

(d) What is the average amount each of your guests paid in total to you for such things as their package charge, guide fees, tips, licences, fees, et al?

$ _____

Check (4): U.S. Funds _____ Canadian Funds _____

(e) What would you estimate your average guest spent in Canada for hotel, meals, surface transportation, fishing gear, etc. prior to visiting your lodge and upon his return? Include amount of his airfare costs attributable to the distance he traveled in Canada.

$ _____

(f) Total average expenditures in Canada.

add (d) and (e) = $ _____

(g) Average guest total expenditures in Canada per pound of fish harvested.

(f) divided by (c) = $ _____

SECTION C

ATTITUDES AND PERCEPTIONS OF LODGE OWNERS AND OUTFITTERS

This section of the survey deals with your attitudes with respect to (a) the availability of fish as a factor in attracting anglers to the N.W.T., (b) the management practices of the Department of Fisheries and Oceans in assessing, monitoring and allocating fisheries resources and (c) the market potential of the industry in the N.W.T.

PLEASE ANSWER THE QUESTIONS IN SECTION C
BY CIRCLING THE NUMBER OF YOUR CHOICE(S)

RESOURCE AVAILABILITY

15. What TWO factors do you feel were most important in attracting clients to your operation last year?

1. The possibility of catching unique species (e.g. arctic grayling, char, lake trout).
2. The ease of catching fish (i.e. higher catches per rod-day).
3. The availability of large numbers of fish.
4. The opportunity to catch large fish.
5. The opportunity to fish diverse lakes and rivers.
6. The opportunity to experience northern landscape and wildlife.
7. The opportunity to fish without feeling pressured or crowded by other anglers.
8. The opportunity to fish in unpolluted water.
9. The quality of accommodation and other services.
10. The availability of recreational activities other than fishing (e.g. hiking, sightseeing).

16. What other THREE factors were also important in attracting clients to your operation last year?

1. The possibility of catching unique species (e.g. arctic grayling, char, lake trout).

2. The ease of catching fish (i.e. higher catches per rod-day).

3. The availability of large numbers of fish.

4. The opportunity to catch large fish.

5. The opportunity to fish diverse lakes and rivers.

6. The opportunity to experience northern landscape and wildlife.

7. The personal experience of being in a remote area.

8. The opportunity to fish without feeling pressured or crowded by other anglers.

9. The opportunity to fish in unpolluted water.

10. The quality of accommodation and other services.

11. The availability of recreational activities other than fishing (e.g. hiking, sightseeing).

17. Biologists tell us that lakes in this region should soon quit producing large fish at the rate they have in the past. In recent years, how much of a change in the proportion of large fish taken has occurred?

1. a significant decline
2. a moderate decline
3. no real change
4. a moderate increase
5. a significant increase

13. If a significant decline in the number of large fish taken does occur, how might this affect your business?

1. no real change
2. a moderate decline
3. a substantial decline

19. If declines in large fish catches someday substantially decreased your business, do you feel any features of the Northwest Territories could be given greater emphasis to maintain or expand your clientele?

1. Yes

2. No

20. If yes, which TWO of the following features could be best substituted?

1. The possibility of catching unique species (e.g. arctic grayling, char, lake trout).

2. The ease of catching fish (i.e. higher catches per rod-day).

3. The availability of large numbers of fish.

4. The opportunity to fish diverse lakes and rivers.

5. The opportunity to experience northern landscape and wildlife.

6. The opportunity to fish without feeling pressured or crowded by other anglers.

7. The opportunity to fish in unpolluted water.

8. The quality of accommodation and other services.

9. The availability of recreational activities other than fishing (e.g. hiking, sightseeing).

RESOURCE MANAGEMENT ISSUES

Biologists suggest that fish resources in northern environments are sensitive to fishing pressure. Biological studies, restrictions on fishing effort and enforcement of regulations are thought to be necessary for good management of the resource.

20. In your area. how well are the following being handled by the Department of Fisheries and Oceans?

FUNCTION	MORE THAN ADEQUATE	ADEQUATE	LESS THAN ADEQUATE
biological assessments of resource abundance;	1	2	3
enforcement of fisheries regulations;	1	2	3
monitoring total harvests from all uses;	1	2	3
allocating fish resources between competing uses (e.g. recreational/ commercial conflicts);	1	2	3
present level of funding for resource management programs.	1	2	3

There is a commercial principle that it is only fair to pay for what you get. When someone receives a direct benefit from a government activity, it has been suggested that he should pay for it.

In this context,' we would like your response to the following questions;

21. If government revenues from your industry proved insufficient to cover the cost of the present services provided, how should the shortfall be made up?

    1. through subsidies from general taxation revenues;

    2. through increased licence fees, royalties and taxes on the fishing industry.

22. A sport fishing licence is required by anglers in the Northwest Territories, with the exception of residents under the age of 16 and over the age of 64, and non-residents under the age of 16 accompanied by a licensed angler. Currently, licence fees are $3.00 for residents of Canada and $10.00 for non-residents. This provides approximately $90,000 in revenue. What do you think the principal purpose of the licensing system is;

    1. a source of revenue to defray some of the costs of administering licence sales;

    2. an aid to officers in enforcing fisheries regulations;

    3. a source of revenue earmarked for resource development projects.

23. There are different ways that licences could be used. Some suggested alternatives are listed below. Which do you think should be the principal reason for licensing?

    1. a source of revenue to defray some of the costs of administering licence sales;

    2. an aid to officers in enforcing fisheries regulations;

    3. a source of revenue earmarked for resource development projects.

    4. a management tool to control angling pressure by varying the number of licences and the prices charged.

24. The number of tourists who travel to the N.W.T. may be influenced by the price of a sports fishing licence. At what licence price would you expect to see a significant decline in the number of non-resident anglers?

    $15 $20 $30 $40 $50 $60 $70 $80 $90 $100

25. Within the Northwest Territories, there is evidence of resource use conflict between recreational, commercial and domestic fishing interests. There are several alternatives which might be used to resolve such conflicts. When the government is faced with a resource use conflict in the future, should they;

1. form a resource allocation committee involving representatives of all interested parties? For example, the Great Slave Lake Advisory Committee;

2. market the resource and allocate the right of use to those interests willing to pay most for it;

3. evaluate alternatives and independently allocate the resource to the perceived best use.

MARKET POTENTIAL

These questions relate to (a) the recent performance and (b) the market outlook for your business.

Recent Performance

26. The following are some factors which are believed to influence your volume of business. Of these factors, which TWO do you feel have been most important in attracting clients to your business?

1. the abundance of fish resources in your area;
2. the opportunity to catch unique species;
3. the opportunity to catch large fish;
4. the relationship of the price you charge to the prices charged by other operators in the N.W.T. ;
5. the relationship of the price you charge to the prices charged by lodges and outfitters outside the N.W.T.;
6. your advertising efforts;
7. advertising efforts of Travel Arctic and Canadian Government Office of Tourism;
8. incomes of potential clients;
9. leisure time available for potential clients;
10. changes in foreign exchange rates.

27. Which other THREE factors do you feel were also important in attracting clients to your business?

1. the abundance of fish resources in your area;
2. the opportunity to catch unique species;
3. the opportunity to catch large fish;
4. the relationship of the price you charge to the prices charged by other operators in the N.W.T.;
5. the relationship of the price you charge to the prices charged by lodges and outfitters outside the N.W.T,;
6. your advertising efforts;
7. advertising efforts of Travel Arctic and Canadian Government Office of Tourism;
8. incomes of potential clients;
9. leisure time available for potential clients;
10. changes in foreign exchange rates.

28. Over the past five years, how has your average number of clients changed?

1. significantly increased
2. slightly increased
3. not changed
4. slightly decreased
5. significantly decreased

Market Outlook

29. Over the next five years, how do you expect your volume of business will change?

1. significantly increase
2. slightly increase
3. no change
4. slightly decrease
5. significantly decrease

30. Which TWO of the following factors do you think will be most important in attracting clients to your operation in the future?

1. the abundance of fish resources in your area;
2. the opportunity to catch unique species;
3. the opportunity to catch large fish (trophy);
4. the relationship of the price you charge to the prices charged by other operators in the N.W.T.;
5. the relationship of the price you charge to the prices charged by lodges and outfitters outside the N.W.T.;
6. your advertising efforts;
7. advertising efforts of Travel Arctic and Canadian Government Office of Tourism;
8. incomes of potential clients;
9. leisure time available for potential clients;
10. changes in foreign exchange rates.

31. Given the current regulations and the economic climate, which of the following best describes your investment intentions in the next five years?

1. expand the existing fisheries you operate

2. expand to new fisheries

3. maintain current operations

4. reduce current operations

5. cease operations

32. Following are some factors which are believed to influence your investment intentions. Which TWO factors will most influence your plans for the next five years?

1. limitations on the supply of fish in your areas

2. the potential number of anglers and their preferences

3. the costs of operation

4. land claim issues

33. The expansion. of lodges and outfitters' services is looked uPon as a means of promoting further economic development in the Northwest Territories.

What do you feel is the most likely consequence of further industry expansion?

1. increased share of the North American tourism market

2. constant share of the North American tourism market fragmented among operators

SURVEY LOG (To be completed by interviewer)

Contact by personal interview

telephone interview ____

Date of Survey: _____

Location of Survey: _____

Total Time Spent Interviewing _____ minutes

Survey completed in total —

or

survey only partially completed with subsequent mailing expected —

Appendix B

Northwest Territories Lodges and

Licensed Bed Capacity by Area

Table B.1 Northwest Territories Lodges and Licensed Bed Capacity by Area

Area 1: Great Bear and Great Slave Lakes

Location	Name	Licensed Bed Capacity
Great Bear	Arctic Circle Lodge	34
Great Bear	Bransons Lodge	40
Great Bear	Great Bear Lake Lodge (Plummers)	54
Great Bear	Great Bear Lodge	54
Great Bear	Great Bear Trophy Lodge	40
Subtotal	5 lodges	222 beds
Great Slave	Arctic Star Lodge	32
Great Slave	Brabant Lodges	30
Great Slave	Frontier Fishing Lodge	24
Great Slave	Indian Mountain Lodge	10
Great Slave	Plummers Great Slave Lake Lodge	44
Great Slave	Trophy Lodge	16
Subtotal	6 lodges	156 beds
Total Area 1	11 lodges	378 beds

Table B.1 Northwest Territories Lodges and Licensed Bed Capacity by Area

Area 2: Hay River-Fort Smith/Yellowknife/Mackenzie River and Delta

Location	Name	Licensed Bed Capacity
Hay River-Fort Smith	Deeghani Lake Camp	10
Hay River-Fort Smith	Hanging Ice Fishing Lodge	9
Hay River-Fort Smith	Kasba Lake Lodge	35
Hay River-Fort Smith	Lady Grey Outfitters	8
Hay River-Fort Smith	Lynx Tundra Camp	8
Hay River-Fort Smith	Morberg's Smalltree Camp	4
Hay River-Fort Smith	Mosquito Lake Lodge	10
Hay River-Fort Smith	Nonacho Lake Fishing Camp	14
Hay River-Fort Smith	Obre Lake Lodge	14
Hay River-Fort Smith	Pilot Lake Cabins	15
Hay River-Fort Smith	Rutledge Lake	20
Hay River-Fort Smith	Snowbird Lake Lodge	20
Hay River-Fort Smith	Snowbird Kazan River Lodges	15
Hay River-Fort Smith	Thuban Lake Lodge	14
Subtotal	14 lodges	196 beds
Mackenzie River and Delta	Trout Lake Indian Lodge	14
Subtotal	1 lodge	14 beds
Yellowknife	Hearne Lake Lodge	6
Yellowknife	Katimavik Lodge	12
Yellowknife	Namushka Lodge	12
Yellowknife	Taiga Sports Fishing	10
Yellowknife	Watta Lake	12
Subtotal	5 lodges	52 beds
Total Area 2	0 lodges	262 beds

Table B.1 Northwest Territories Lodges and Licensed Bed Capacity by Area

Area 3: Districts of Keewatin and Franklin

Location	Name	Licensed Bed Capacity
Keewatin	Camp Chantry	18
Keewatin	Dubawnt Outpost Camp	6
Keewatin	Dubawnt West Sport Fishing Camp	8
Keewatin	Keewatin Arctic Lodge	12
Keewatin	Neultin Narrows SubArctic Camp	8
Subtotal	5 Lodges	52 beds
Franklin	Arctic Outpost Camps	24
Franklin	Clearwater Fiord	16
Franklin	High Arctic Sportfishing Camps	8
Franklin	Koluctoo Bay	16
Franklin	Lake Hazen Lodge	24
Subtotal	5 Lodges	88 beds
Total Area 3	10 Lodges	140 beds
Total All Areas	41 Lodges	780 beds

Appendix C

Statistical Tests

Table C.1 Statistical Test of the Hypothesis that the Mean Bed Capacities of the Financial Sample and Non-respondents are Equal

HO: Mean Bed Capacity Financial Sample = Mean Bed Capacity Non-respondents

HA: Mean Bed Capacity Financial Sample Mean Bed Capacity Non-respondents

Level of Significance t = 0.10.

Group	Sample Mean Bed Capacity	Non-respondents' Mean Bed Capacity	Computed T Statistic	Critical T Statistic
All Areas/All Capacities	23.47 (19)	15.18 (22)	-2.135	±1 .684
All Areas/Capacity <30	14.0 (12)	12.5 (20)	-0.761	±1 .697
All Areas/Capacity ≥30	39.7 (7)	42.0 (2)	0.303	±1 .895
Area l/Capacity <30	16.0 (1)	-17.0 (2)	.082	±6 .314
Area 2/Capacity <30	14.1 (7)	11.0 (12)	-1.423	±1.740
Area 3/Capacity c30	13.25 (4)	14.0 (6)	0.183	±1.860

Table C.2 Correlation of Bed Capacity with Selected Financial Variables

Variable	Intercept	Slope	Correlation Coefficient (R)	Computed T Statistic
Gross Sales	-974	142.7	.95	11.85
Total Cost of Goods Sold	-571	95.5	.92	8.89
N.W.T. Cost of Goods Sold	-486	48.0	.72	3.89
Gross Profit	-403	47.2	.84	5.74
Total Selling and Administration	-123	23.3	.80	5.06
N.W.T. Selling and Administration	-80	6.7	.71	3.76
Net Operating Income	-269	14.7	.52	2.45
Cash Flows	-236	23.5	.57	3.71
Total Original Costs	-47	85.6	. 7 7	4.56
Total Accumulated Depreciation	-573	59.8	.92	8.89
Total Book Value	517	26.3	.31	1.22
Total Replacement Costs	-1658	247.2	.90	7.73

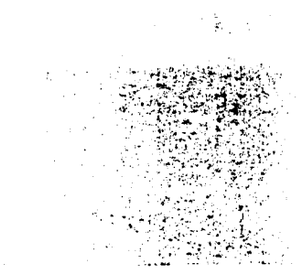
The statistical test of significance proceeds as follows:

HO: r = 0

HA r> 0 or r < 0

The test statistic is T calculated = $r(r-2)^{1/2}/(1- r)^{1/2}$

The T critical for 14 degrees of freedom at $t = .05$ is 2.145, at $t = .02$ is 2.624, at $t = .01$ is 2.977.



Appendix D

Cost Accounting Framework

Cost Accounting Framework

Gross Sales	Package Plans
	+ Housekeeping Cabins
	+ Dining Room
	+ Retail Store
	+ Boat and Motor Rentals
	+ Guiding Services
	+ Aircraft Charters
	+ outpost Camps
	+ Fish Cleaning and Freezing
	+ Others
	= Gross Sales
Cost of Goods Sold	Total Direct Labour Payments (Guides + Cabin Staff + Yardman + Pilots + Maintenance Staff + Others) [V]*
	+ Aircraft Rentals (V)
	+ Automobile; repairs and gas (V)
	+ Automobile; rental (V)
	+ Building Repairs (SV)
	+ Business Tax (F)
	+ Boats and Motors; repairs (SV)
	+ Boats and Motors; gas (V)
	+ Boats and Motors; rentals (F)
	+ Camp Supplies (V)

*Items of expense are categorized as either variable [V]; semi-variable [SV]; or fixed [F].

+ Camp Fuel (V)

+ Equipment Maintenance and Repairs (SV)

+ Fish Packing (V)

+ Freight (V)

+ Groceries (V)

+ Interest and Bank Charges (F)*

+ Propane (V)

+ Transportation (guests) (V)

+ Transportation (staff) (V)

+ Miscellaneous (V)

+ Amortization Goodwill (F)

= Total Cost Goods Sold

Gross Sales - Cost of Goods Sold = Gross Profit

Selling and Administration

Total Indirect Labour Payments (Bookkeeper

+ Manager + Owner/Operator) [SV; F]

+ Accounting and Legal (F)

+ Advertising (SV)

+ Dues and Memberships (F)

+ Insurance (F)

+ Licences and Leases (F)

+ Office Expense (SV)

The survey instrument did not differentiate between financing for operating funds versus fixed asset financing. This item has been treated as a fixed expense.

	+ Rent (office) (F)
	+ Travel and Entertainment (SV)
	+ Telephone (SV)
	= Total Selling and Administration
Depreciation	Total Depreciation Allowance (F)
Net Operating Income	Gross Sales
	- Cost of Goods Sold
	- Selling and Administration
	- Depreciation
Cash Flows	Net Operating Income
	+ Fixed Asset Interest
	+ Depreciation

Appendix E

Detailed Income Statement

Detailed Income Statement

(Values in thousands of $)

	$ All Areas	$ N.W.T.
Gross Sales		
Package Plans	6,111	6,111
Housekeeping Cabins	195	195
Dining Room	0	0
Retail Store	58	58
Boat and Motor Rentals	---	---
Guiding Services	17	17
Aircraft Charters	156	156
Outpost Camps	350	350
Fish Cleaning and Freezing	0	0
Others	106	106
Total Gross Sales	6,993	6,993
Expenditures		
Costs of Goods Sold		
Total Direct Labour		
Guides	636	322
Cabin Staff	336	107
Yardman	47	31
Pilots	47	7
Maintenance Staff	47	3
Others	76	0
Aircraft Rentals	468	343

Automobile; repairs/gas	11	3
rentals	19	1
Building Repairs	115	68
Business Tax	3	0
Boats and Motors; repairs	65	16
gas	,146	97
rentals	97	22
Camp Supplies	318	168
Camp Fuel	191	145
Equipment, Maintenance and Repairs	80	40
Fish Packing	9	6
Freight	169	58
Groceries	376	122
Interest and Bank Charges	228	42
Propane	19	9
Transportation (guests)	1,207	345
Transportation (staff)	117	25
Miscellaneous	168	108
Amortization of Goodwill	49	0
Other Items	35	30
Total Cost Goods Sold	5,077	2,119
Gross Profit	1,917	

Selling and Administration		
Total Indirect Labour		
Bookkeeper	20	0
Manager	257	82
Owner/Operator	35	0
Accounting and Legal	87	25
Advertising	409	10
Dues and Memberships	5	3
Insurance	122	36
Licenses and Leases	39	17
Office Expense	105	9
Rent (office)	9	1
Travel and Entertainment	161	5
Telephone	83	15
Total Selling and Administration	1,330	203
Depreciation Allowances	580	N/A
Net Operating Income (before tax)	6	N/A
Cash Flows		
Net Operating Income (before tax)	6	N/A
Depreciation	580	N/A
Fixed Asset Interest	228	
	814	

Appendix E

Statistical Analysis of the Variability of Estimates

Statistics Canada has developed a series of indicators which are used in sample surveys to provide sensitivity to the rel i abi l i ty of estimates. This index uses sample estimates and relative standard errors* to construct" a range within which unknown census values 1 ie with a specified confidence. The ranges of these indicators of sampling variabil ity are:

Alphabetic Indicator	Range of Relative Standard Error (%)
A	0.0 to 0.5
B	0.6 to 1.0
C	1.1 to 2.5
D	2.6 to 5.0
E	5.1 to 10.0
F	10.1 to 16.5
G	16.6 to 25.0
H	25.1 to 33.0
J	33.0+

For this survey, a similar approach has been followed in presenting the sampling variability of estimates in the following table. This table emphasizes the degree of variability of estimates.

*Relative standard error of an estimate is its standard error expressed as a percent of the estimate. Standard error is estimated by dividing the standard deviation by the square root of the number of cases.

Tab' e E.1 Alphabetic Indicators of Variability of Estimates

Vari abl e/Stratum		All 30	Area 1 <30	Area 1 >30	Area 2 <30	Area 2 >30	Area 3 <30
392	Gross Sales	G	A	F	J	---	G
291	Total Cost of Goods Sold	G	A	F	J	---	G
300	Cost of Goods Sold	G	A	G	J	---	J
292	Gross Profit	G	A	G	J	---	J
293	Total Cost Selling & Administration	G	A	B	J	---	J
301	N.W.T. Cost Selling & Administration	J	A	J	H	---	H
294	Net Operating Income	J	A	J	J	---	J
295	Cash Flows	J	A	J	J	---	J
81	Total Number Guides	G	A	G	J	---	H
82	N.W.T. Number Guides	H	A	H	J	---	J
83	Total Man/Days Guides	G	A	F	J	---	H
84	N.W.T. Man/Years Guides	H	A	H	J	---	J
85	Total Number Cabin Staff	G	A	F	J	---	G
86	N.W.T. Number Cabin Staff	H	A	H	J	---	H
87	Total Man/Days Cabin Staff	G	A	E	J	---	G
88	N.W.T. Man/Days Cabin Staff	H	A	G	J	---	J