Recreational Scuba Diving in British Columbia

Survey Report

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"We are not a hobby, we are a real industry – right up there with skiing...
Let's promote our Emerald Sea to the world!"
– Anonymous BC Dive Operator

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Executive Summary

Purpose of the Study

This study, undertaken by the Dive Industry Association of British Columbia in partnership with Tourism British Columbia, Simon Fraser University, the Underwater Council of British Columbia and Scuba Schools International Canada, is an attempt to estimate the size of the recreational scuba diving industry in the province of British Columbia. The survey on which this report is based was designed to examine the products and services offered by the recreational scuba diving industry, to obtain broad demographic data about its client base and to explore the general health of the industry. In addition to these main objectives, the survey examined marketing practices, perceptions of major threats to the long-term growth of the industry and attitudes towards the creation of a province-wide dive industry association as a way to effectively address the constraints facing the industry. It was envisioned that the information collected with this survey would serve as a basis for informed marketing, business planning and product development decisions for the industry.

Methodology

This report is based on primary data from the recreational scuba diving industry collected during the months of March and April 2004. The survey questionnaire was mailed to all operators that had any clients engaging in recreational scuba diving in 2003, including operators that offered dive charters, live-aboards, recreational diving instruction, or engaged in retail, wholesale or manufacturing of scuba diving equipment. Email and telephone follow up were used to encourage participation and condensed telephone interviews were conducted with a number of the operators that did not return their survey questionnaires.

A response rate of 77% was achieved for key survey questions, which included a 50% response rate to the complete mail-out survey, and a further 53% response rate to the telephone interviews conducted with the operators who had not returned their survey questionnaires. The response rate achieved in this survey is quite high for a mail questionnaire and lends more credibility to the findings reported below, especially after statistical tests for non-response bias have been performed.

Highlights

In 2003, the dive industry in British Columbia consisted of 116 operators that offered scuba diving products and services to both tourists and local residents. Nine of these operators were equipment manufacturers, two were distributors of diving equipment, two were live-aboards and the rest were dive charters, dive shops and/or instructional centres.

Overall, gross revenues from recreational scuba diving were valued at a little over $15,000,000 with estimates varying between $15,100,000 and $15,800,000 depending on the estimation method. The contribution of equipment manufacturers to industry revenues was valued at approximately $2,950,000 ($2,400,000 – $3,500,000), and non-manufacturing operators accounted for the remaining $12,000,000 to $13,000,000. These figures reflect direct revenues from recreational scuba diving products and services and, for the most part, do not include revenues earned from accommodation or meals for the scuba divers. **Therefore, the actual economic value of the British Columbia recreational dive industry is likely to be considerably greater than estimated in this report.**

The British Columbia recreational dive industry was composed mainly of small businesses ranging from very small outfitters that provided part-time summer employment for their owners to full-fledged manufacturers with considerable revenues and over 30 employees. Just under half of all operators earned gross revenues in the range of $0 – 50,000 in 2003. Average gross revenues earned directly from scuba diving were estimated at $130,500 per operator, or in the range of $98,000 to $166,700. A conservative estimate of manufacturers' gross revenues earned in the recreational diving market valued them at $327,500 per operator or between $267,000 and $390,000. Non-manufacturing dive operators were substantially smaller with an average of $115,800 per operator or between $85,400 and $150,000 attributable to recreational scuba diving products and services.

Most dive operators had been in business for several years with an average of a little over 12 years. Only about a third of dive operators reported having started their businesses in the five years prior to 2003. On average, manufacturers had been in business for 24 years, compared to only 11 years for non-manufacturing dive operators.

Dive operators were fairly specialized with recreational scuba diving accounting for three quarters of their gross revenues on average. Just over half of dive operators (51%) earned all their revenues from recreational scuba diving products and services. Most non-manufacturing dive operators offered an integrated scuba experience with about 71% offering instruction, 77% offering dive charters, 58% engaging in equipment retail, 46% renting out equipment and 18% providing meals and/or accommodation to their clients. Other sports and activities generally offered by dive operators included various water sports (canoeing and kayaking in particular), tours to cultural sites, fishing, marine education and wildlife viewing.

In 2003 a typical dive operator employed the equivalent of three full-time workers between the months of March and October, two full-time workers for the rest of the year and one part-time worker year-round. Equipment manufacturers exhibited different hiring patterns, as they employed almost exclusively full-time workers with little seasonal variation in the number of employees. They were also substantially larger than non-manufacturing operators, averaging ten employees for every month of the year. Overall, it was estimated that recreational scuba diving operators in British Columbia provided approximately 310 full-time and 123 part-time jobs in 2003.

About 24,400 divers were estimated to have used the services of British Columbia dive charter operators in 2003 and the recreational dive charter market was valued at $2,700,000 gross revenues per year. An estimated 9,600 to 9,800 people were enrolled in recreational scuba dive courses offered by British Columbia's dive operators in 2003. The recreational diving instruction market in the province was valued at $2,450,000 per year.

Approximately 38% of dive operators had seen their revenues grow over the past 10 years or since their opening, while about 30% had experienced a decline in revenues and another 28% had remained at virtually the same revenues. Although there seemed to be a general consensus among dive operators that the industry had shrunk from its boom in the early 1990s, the majority of dive operators were optimistic about the future of their business, with well over two-thirds expecting a revenue increase over the next 5 years.

The vast majority of dive operators saw repeat guests as the main component of their client base, with marketing and advertising taking a second place as a source of clients. Although small, most dive operators (94%) used some form of marketing in 2003 to attract new clients and guests. The most popular marketing techniques involved the operator's own website, followed by brochures and posters, advertising in the yellow pages and participating in consumer and trade shows. The wide use of computers and the Internet for marketing was demonstrated also by the prominence of email promotions and advertising on other web sites, both among the top seven most frequently used marketing methods. However, only a third of dive operators were involved in some form of co-operative marketing in 2003.

The majority of dive operators' clientele came from within British Columbia (65% on average). The Northwest United States with 13%, and Alberta with 11% formed the second-biggest markets. It was estimated that approximately 70% of dive operators' clients were male and 30% female on average, although considerable variation was reported among operators. The average diver on charter was reported to be between the ages of 25 and 44 and to have traveled/gone diving as an individual, as opposed to as a member of a group of friends or a couple.

About a third (33%) of direct non-manufacturing dive industry revenues in British Columbia were attributable to tourism. The gross contribution of recreational scuba diving tourism was valued at approximately $4,300,000 in 2003.

Over two thirds of dive operators (70%) pointed to marketing difficulties as a serious constraint to the long-term growth of the industry. In addition, over half of the operators participating in the survey were worried about competition from other sports and activities (57%), travel hassles including limited air and/or ground access to visitors and travel safety concerns (56%), and price competition among dive operators (54%). Other perceived threats to dive businesses included inappropriate industry regulations, human resources concerns (including finding and retaining staff with adequate training and staff performance concerns) as well as weak local economies in British Columbia, negative media coverage and public perceptions of the industry and a general lack of interest towards the sport.

The majority of dive operators expressed their conviction that more effective marketing would be instrumental in overcoming the constraints that face their industry. They identified two main areas where marketing efforts need to be directed – increasing active divers' awareness of the British Columbia's exceptional diving environment (both in and out of the province) and expanding the client base by introducing more people to recreational scuba diving (mainly focused on the local market).

In addition, many dive operators seemed to think that they would benefit from working together as a group to pool resources and expertise to successfully market British Columbia as a dive destination. A number of operators went on to suggest particular marketing strategies, largely based on co-operative marketing, which they perceived to hold a yet untapped potential for fostering growth in the industry.

Furthermore, about half of dive operators expressed an interest in pursuing the idea of a provincial-wide dive industry association to tackle the constraints facing the industry. Some of the most frequently suggested roles for such an organization were assisting with coordinating co-operative marketing and larger-scale marketing campaigns out of province, as well as lobbying for preferential credit financing, group insurance rates and transport infrastructure improvements. However, dive operators also warned of "the competitive nature and history of [dive] shops in the province" which would make it difficult to obtain the consensus needed to confront industry problems together.

Introduction

> British Columbia is not usually the first destination that comes to mind when divers are looking to get wet. The water is cold, the currents strong and visibility moderate at best. But for those willing to endure such hardships, the reward is an array of marine sights unparalleled anywhere else in the world. Where else can you find pods of orcas, white-sided dolphins and sea lions, and a seafloor covered with brilliantly colored corals and anemones? [1]

Although not typically viewed as a prime destination for dive vacationers, the Emerald Sea, as British Columbia's waters are known, has been recognized for its exceptional diversity of marine life. For three consecutive years, the Western Canadian province has been rated as the top dive destination in North America in a readership poll conducted by the largest U.S. diver magazine in circulation, *Rodales Scuba Diving* magazine.[2] In addition, the late Jacques-Yves Cousteau is said to have ranked British Columbia among his top dive spots, second only to the Red Sea.

This study, undertaken by the Dive Industry Association of British Columbia (DIABC) in partnership with Tourism British Columbia, Simon Fraser University, the Underwater Council of British Columbia and Scuba Schools International Canada, started as an attempt to estimate the size of the recreational scuba diving industry in the province of British Columbia. It was designed to examine the products and services offered by the recreational scuba diving industry, to obtain broad demographic data about its client base and to explore the general health of the industry. In addition to these main objectives, the survey examined marketing practices, perceptions of major threats to the long-term growth of the dive industry and dive operators' attitudes towards the idea of establishing a province-wide Dive Industry Association as a way to effectively address the constraints facing the industry.

This report begins with a discussion of the methodological aspects of the survey, outlining the main problems encountered during the data collection process. A detailed examination of the survey findings follows. The overall approach of the report is descriptive, although there is some analysis focusing on specific areas that seem of particular interest to members of the industry.

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[1] Glen Ostle, "Deep in God's Pocket," *Rodales Scuba Diving*, Online, November 2001, Accessed 30 May 2004 <www.scubadiving.com/article/0,7424,1-28-224-288,00.html>.

[2] In 2003, British Columbia shared the first place with the Galapagos Islands. British Columbia was ranked first in the world in the categories top macro life, top fish life, healthiest marine environment, and top advanced diving, and first in North America for value and top underwater photography.

Methodology

Study Scope

Unlike previous recreational diving studies, which had focused predominantly on the tourism aspect of the sport, this survey set out to examine the size and relative health of the recreational scuba diving industry as a whole. Considering the industry as a whole would allow one to appreciate the complex linkages and interdependencies that exist among the different businesses that cater to the needs and wants of the recreational scuba diver.

For the purposes of this study, the British Columbia recreational diving industry was defined to include all businesses based in British Columbia that provide dive products and/or services to any clients and/or guests engaging in recreational scuba diving. Such products and services include dive charters, live-aboards, recreational diving instruction, as well as retail, wholesale and manufacturing of scuba diving equipment.

Data Collection Methods

This report is based almost exclusively on primary data from dive operators collected in the months of March and April 2004. A mail questionnaire served as the chief method of data collection, supplemented by telephone interviews with survey non-respondents. The survey questionnaire was based on the questionnaire used by the Wilderness Tourism Association and Tourism British Columbia in their 2002 *Commercial Nature-Based Tourism Survey*, and modified to fit the objectives of the project and the particularities of the recreational scuba diving industry. A copy of the survey questionnaire and its adapted short telephone version are provided in Appendix 2.

Due to the small size of the recreational scuba diving industry, all businesses identified as dive operators in British Columbia were approached. The survey questionnaire was mailed to all identified dive operators in the beginning of March 2004. Starting 14 days after the mail-out, weekly email reminders were sent to non-respondents to encourage participation.[3] Telephone contact was attempted with the few dive operators for which email addresses were not available, and reminder voicemail messages were left whenever possible for the dive operators that were not reached after seven attempts.[4] Replacement questionnaires were mailed out to those dive operators that reported not receiving or misplacing their original copy.

One month after the initial mailing it was decided to conduct telephone interviews with operators that had not returned their questionnaire to date in order to supplement the data collected from the mail questionnaire and allow for comparison between dive operators that returned their surveys and those that did not. Based on these efforts, the final mail questionnaire response was 50%. In addition, 53% of the dive operators that did not return their questionnaires participated in the condensed telephone interviews, which brought the response rate for certain key questions as high as 77%.

[3] Email was identified as a reliable and cost-efficient way of reaching the dive operators in British Columbia, a large majority of which had valid email addresses.
[4] Calls to non-respondents were made at various times of day (9am to 7:30pm) on different days of the week, including weekends, in an attempt to reach as many of the non-respondents as possible.

Although this study is the first to survey more than a small sample of dive operators in the province, previous reports on the recreational scuba diving industry of British Columbia based on secondary and limited primary data were examined in an attempt to track industry performance across time. The most recent previous study of the recreational diving industry in British Columbia identified was the 1994 *Market Potential of Wreck Diving in British Columbia* commissioned by the Tourism Division of the Ministry of Small Business, Tourism and Culture in the province. Earlier surveys include the 1991 *Marine Tourism in British Columbia: Opportunity Analysis*, prepared for Industry, Science and Technology Canada and the British Columbia Ministry of Tourism and Ministry of Regional and Economic Development, the 1989 *Tourism Potential of Wreck Diving* prepared for Ministry of Regional Development and the 1980 *An Evaluation of the Tourism Potential of the Scuba Diving Industry in British Columbia*, prepared for the provincial government of British Columbia. In 2003 the Department of Fisheries and Oceans of the Canadian government published a *Fact Sheet on Recreational Scuba Diving in Pacific Canada* as part of their *Marine Tourism Activities in Pacific Canada* series.

In addition, other secondary sources were used wherever possible to compare with the questionnaire responses. For example, data from the *BC Manufacturers' Directory* online, maintained by the central statistical agency of the province of British Columbia, BC Stats, was used to cross-reference employment and sales figures for some dive equipment manufacturers.[5]

Sampling Frame

Because the survey was intended as a census of the dive operators in British Columbia, it was crucial to compile an exhaustive list of the businesses comprising the provincial diving industry. The first step to accomplishing this task was to unambiguously define what constitutes a dive operator, so that it became possible to determine which businesses belonged to the category of interest and which did not.

For the purposes of this survey, a British Columbia dive operator was defined as any company based in the province that offered products and services to clients or guests engaging in recreational scuba diving, including dive charters, live-aboards, recreational diving instruction, retail, wholesale or manufacturing of scuba diving equipment. The reference year for the survey was 2003; therefore any operator that offered recreational diving products and services (as outlined above) during the reference year was included in the sampling frame, regardless of the size of their business. In addition, each business entity was considered a separate dive operator regardless of the number of locations from which it operated.[6] A question about the number of locations from which the business operated in 2003 was included in the questionnaire to assist in the post data-collection evaluation of duplication.[7]

It should be noted that accommodation providers and marine resorts which might have catered to scuba divers (among others) but did not provide the diving products and services themselves[8] were not

[5] Available online at <www.made-in-bc.ca/>.
[6] Thus, if a business entity operated three dive shops around the province, the three dive shops would count as one dive operator. On the other hand, if two separate business entities operated from the same location, they would count as two dive operators because they are registered as different companies.
[7] Duplication was not a serious concern in this survey as most dive operators operated from a single location.
[8] Choosing to contract them out to a different dive business, for example, or offering vacation packages in partnership with dive operators, whereby the dive operators took care of the scuba diving activities.

considered to fit the definition of dive operators for the purposes of this survey and, consequently were excluded from the sampling frame. Thus, the survey was designed to focus on the businesses directly involved with the provision of recreational scuba diving products and services and to provide an estimate of the direct economic contribution of recreational scuba diving.

Ultimately, the British Columbia dive industry as defined above was found to consist of a total of 116 different dive-related companies. This population frame was constructed on the basis of the 2004 *BCDiveguide.com* Guidebook, a pamphlet created and published annually in British Columbia by Dive Guide Publications Inc. with the objective of "enhancing the experience of diving in British Columbia, Canada."[9] The publication is an attempt to list all dive operators in the province for convenient reference to divers and, although probably not exhaustive, was considered a reasonable starting point.

The list of dive operators in the province was expanded through searches of the membership directories of various regional tourism associations online for member dive operators as well as through a general Internet search for dive operators in British Columbia. Additional sources of information included the Professional Association of Diving Instructors (PADI) *Dive Center and Resort Directory for British Columbia* online,[10] as well as different dive manufacturers' dealers lists online. When a business was identified as a potential dive operator, an effort was made to locate its web site in order to obtain more information about it in an attempt to ensure that the business fit the set criteria to be included in the population frame. Where a web site was not available, businesses were contacted by telephone to ascertain eligibility and confirm their mailing addresses.

The list of dive operators was also adjusted a posteriori. Businesses initially identified as dive operators that were subsequently found to not fit the definition used in this project were excluded from the population frame, while operators referred by survey respondents and found to fit the criteria used in the project were added to the frame.

In addition, three of the dive operators in the sampling frame could not be contacted neither by email nor by telephone and it was speculated that they had gone out of business at an indeterminate point of time before data collection began. They were kept in the sampling frame because they were likely to have been in business at some point during the reference year.

To sum up, every effort was made to compile an exhaustive sampling frame. However, it is possible that some dive operators were omitted. It is likely that larger dive companies that tended to be members of tourism associations and to market more extensively were covered more thoroughly than smaller companies, mainly because of the smaller companies' lack of exposure, which prevented them from being included in the sampling frame.[11] Nevertheless, such potential undercoverage of smaller operators is likely to be relatively minor.

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[9] *BCDiveguide.com 2004* Guidebook, Vancouver: Dive Guide Publications Inc., 2004, p. 1. The electronic version of the Guidebook is available online at <http://bcdiveguide.com/> (Accessed 30 May 2004).
[10] *PADI Dive Center and Resort Directory for British Columbia*, Online, Accessed 30 April 2004, Available from the PADI web site at <www.padi.com/english/common/search/dcnr/>.
[11] It is conceivable that operators who relied exclusively on word of mouth for advertising might have been omitted from the sampling frame because information about their existence is very difficult to obtain outside of the community where they operate.

Problems and Limitations

1. Sampling Error

The DIABC survey was intended as a census, which by definition eliminates the error usually associated with sampling from a larger population. However, the potentially incomplete sampling frame introduces some error in the findings. Because of the nature of the scuba diving industry, it is likely that any omitted businesses would be small, quite possibly part-time endeavors of qualified instructors or boat operators, and their omission is likely to have a relatively minor effect on the survey findings.

2. Response Error

The survey questionnaire included a fair number of questions that relied on memory and forced a recall period of a year, which might have been too long for some of the items. In addition, some questions were very detailed, which made them difficult to answer based solely on memory. Although respondents could complete the mail questionnaire at their own convenience, chances are that some of them did not consult their records, but rather provided rough estimates. Therefore, it is quite likely that individual responses (to some questions in particular) could be inaccurate.

The questions particularly prone to this error include those focusing on diver demographics, as well as those pertaining to the percentage of revenue earned from tourism and the share of revenues derived from recreational scuba diving, because they ask for specific figures that a business owner or manager is not likely to be keeping under close scrutiny, if collecting at all. The recall error can be expected to be higher in the telephone interviews and is likely to be more severe for larger companies where there was no single person who had direct contact with all clients. When inconsistencies in questionnaire responses were detected in the data collection stage, attempts were made to contact the appropriate respondents for clarification.

Further, response error might result from having a questionnaire completed by an employee who was not very familiar with the business (e.g. newly hired). During the telephone interview, care was taken to speak with business owners or appropriate division managers whenever possible, but there is no way of knowing who completed the mail questionnaires. Since much of the dive industry consists of owner-operated small businesses where there is less room for finding somebody not familiar with the operation to complete the questionnaire, this type of error is likely to arise mainly in larger operators if at all.

There is no discernible way to quantify the above-mentioned response errors; therefore the finding derived from the questions affected should be interpreted with caution and considered only as approximations. However, although individual responses may be inaccurate, there is no reason to believe that responses were systematically biased in either direction. Thus, averaged over the entire sample, findings should be representative of the industry as a whole.

3. Non-response Error

Although the survey was intended as a census of dive operators, the response rate achieved with the mail questionnaire was 50%. With the condensed telephone interview, the response rate to the key questions that overlapped with the mail-out survey increased to 77%, but there were still a number of dive operators that did not participate in the project for various reasons. Some operators reported being too busy to complete the survey questionnaire, while others were either not interested in the particular project or did not “do” surveys. Six dive operators were never contacted even after numerous trials on the telephone on different days of the week and times of the day. It is important to ask, then, whether there was self-selection among the respondents, in other words, whether the dive operators that answered the questionnaire did so because they differed in some relevant way from those that did not. If this were the case, the survey results would have to be interpreted with caution and attributed to the responding sub-sample only without extending them to the whole industry. If, however, questionnaire respondents proved similar to non-respondents, then the survey findings could safely be extrapolated to the whole industry.

Statistical tests were undertaken to determine whether operators that returned the questionnaire were different in size, length of operation, geographical location and type of products and services offered from the operators that completed the telephone interview (the procedure is described in detail in Appendix 1). For most variables, the statistical tests could not reject the hypotheses of no association between the examined key characteristic of a dive operator and the event of returning their questionnaire. In the few cases where evidence of such an association was found, the association turned out to be only moderate in magnitude. On the basis of these tests it was concluded that the dive operators that returned their questionnaires could be considered broadly representative of the whole non-respondent population in regards to the variables tested.[12] Since the variables tested were selected to be key characteristics of dive operators that would likely correspond to differences in behaviours and attitudes, the analysis of the questionnaire findings can be safely extended to the whole recreational scuba diving industry.

[12] Technically, the statistical tests suggested that the survey respondents were representative of the non-respondents interviewed by telephone. To extend the survey results to the whole dive industry, it is assumed that the telephone interview participants were a random sample of the non-respondents to the survey (i.e. were representative of all non-respondents).

Scuba Diving in British Columbia

An extensive search resulted in the identification of 116 businesses in British Columbia, which in 2003 specialized in the provision of scuba diving products and/or services. Of these, nine were equipment manufacturers, two were distributors of diving equipment, two were live-aboards and the rest were dive charters, dive shops and/or instructional centres.[13] However, as previously discussed, it is likely that a few businesses were missed so this should be taken as a conservative estimate of the number of businesses in the industry.

The dive operators' clientele consisted of both British Columbia resident and non-resident certified divers as well as non-divers involved in first-time certification courses. Diving packages were offered for a half-day, a whole-day or multi-day trips. Some dive operators partnered with local accommodation providers and a few provided accommodations themselves.

Product Profile

1. Geographical Distribution

Scuba diving products and services were offered throughout the British Columbia coastline, with only a few operators based in the interior of the province. Figure 1 shows the geographical division of the province in four regions, as found in the *BCDiveguide.com 2004* Guidebook.

Figure 1:
British Columbia

1 – Vancouver Area and the Sunshine Coast

2 – Southern Vancouver Island (incl. Gulf Islands)

3 – Northern Vancouver Island (incl. Queen Charlotte Islands)

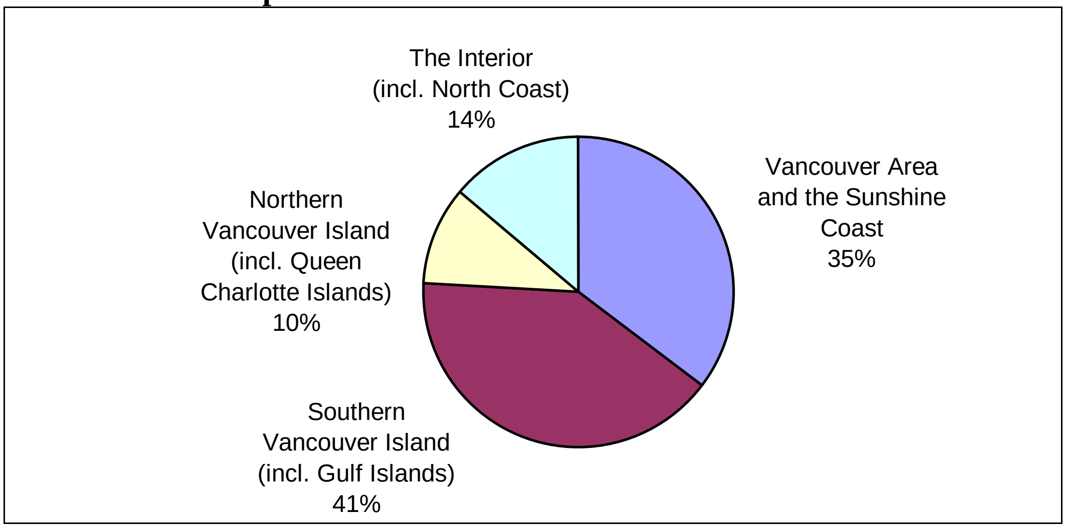
4 – Interior (incl. North Coast)

Source: *BCDiveguide.com 2004* Guidebook, Online, <http://bcdiveguide.com/>. Modified by author.

[13] It was difficult to accurately break down operators into charters, dive shops (including ones who offer instruction) and purely instructional operations because operators often provided more than one type of service. Dive shops, for example, often organized charters, and it was not uncommon for charter operators to provide instruction to their clients.

The highest concentration of dive operators in 2003 was found on Southern Vancouver Island, followed closely by the Vancouver Area and the Sunshine Coast. The Interior was slightly larger than North Vancouver Island in terms of the number of dive operators based there. However, it must be pointed out that many operators offered services outside of the location where they were based.

Figure 2:
Location of Dive Operators in British Columbia



Based on information for all 116 dive operators.

About 83% of all dive operators that responded to the questionnaire operated from a single location, while 15% operated from two locations and only 2% operated from three or more locations. Generally, the different operation locations of the dive business fell within the same geographical area, as defined above.

2. Length of Operation

Most of the scuba dive operators have been in the business for several years. The average age of operation was a little over 12 years, based on responses from 74% of all dive operators. Overall, a little over a third of dive operators had started up in the five years prior to the reference year (i.e. 1999 or later) with 13% of the operators starting in 2003. About half of all operators had been in business for longer than 10 years.

Generally, diving equipment manufacturers had been in business for longer than the rest of the dive operators. The average "age" of an equipment manufacturer in BC in 2003 was 24 years,[14] with most having been in business for well over 18 years, while non-manufacturing dive operators tended to have a shorter average length of operation of 11 years. Table 1 shows the differences in the distribution of length of operation between non-manufacturing businesses and all dive operators. Note that the number of valid responses used as a basis of the data analysis is denoted with a small *n* under every table or figure presenting a summary of survey findings throughout this report.

[14] Based on data from all nine manufacturers. Secondary data from their own websites was used to ascertain length of operation of the dive manufacturers who did not respond to the survey.

Table 1:
Length of operation

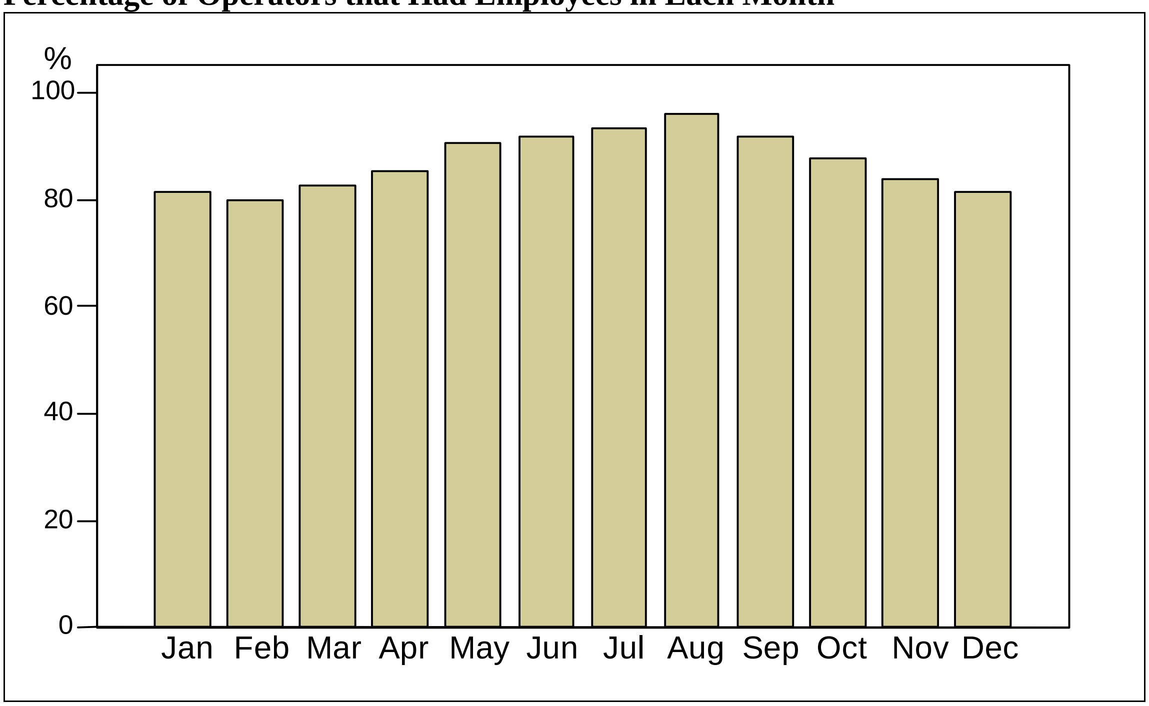
Years in business	All dive operators	Non-manufacturing dive operators
1	13%	14%
2 - 4	15%	16%
5 - 9	18%	20%
10 - 14	23%	25%
15 - 19	10%	6%
20 - 24	10%	11%
25 - 34	7%	5%
35 +	4%	3%
Total	100%	100%

Based on responses from n_1 = 87 (all dive operators), n_2 = 80 (non-manufacturing dive operators)

3. Seasonality

Most dive operators in British Columbia (78%) were open year round, while only one in ten dive operators (9%)[15] were open for four or fewer months in 2003. In addition, at least 80% of all dive operators were open in any month of the year, as indicated by them reporting to have had employees (including the owner and family members) during that month.

Figure 3:
Percentage of Operators that Had Employees in Each Month



Based on responses from n = 74 dive operators.

[15] This number excludes dive operators who started their business in the last four months of 2003 and were open during all months between their starting date and December 2003.

In 2003, more dive operators were open during the summer months than in the winter (figure 3). In fact, virtually all dive operators were in business between June and August 2003, with the exception of the ones that entered the market in the fall of that year and a few small operators that were only open in one month of the year. In general, manufacturers, equipment distributors and dive shops tended to be open year round, as did some of the bigger instructional centres and charter operations. Most businesses that were open for fewer than twelve months per year were smaller dive charter operators and instruction-focused businesses, some of which were operated as a part-time endeavor by owners with a full-time job outside of the diving industry and were open only a couple of months per year, generally in the summer. These latter businesses largely explain the variation observed in figure 3.

Summer was the busiest season for dive operators and both full-time and part-time employment in the industry peaked in the summer months, as shown in figures 4 to 7.

Figure 4:
Average number of full-time workers employed by a non-manufacturing dive operator in 2003

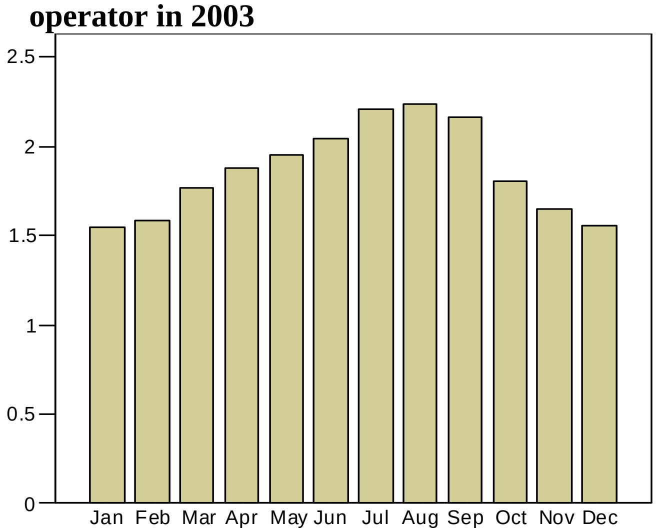


Figure 5:
Average number of full-time workers employed by a dive operator in 2003

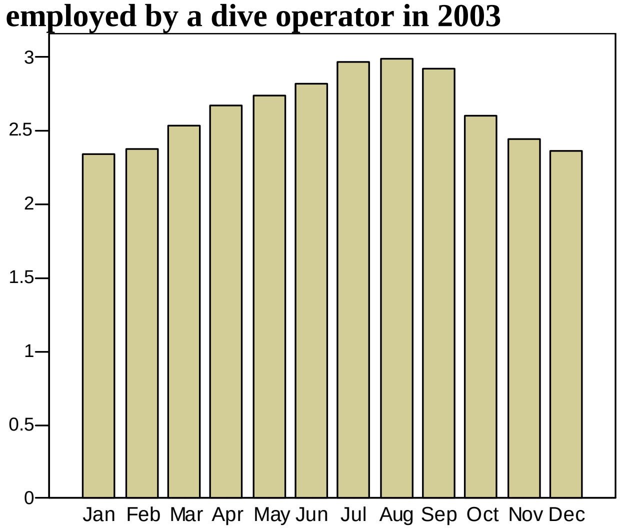


Figure 6:
Average number of part-time workers employed by a non-manufacturing dive operator in 2003

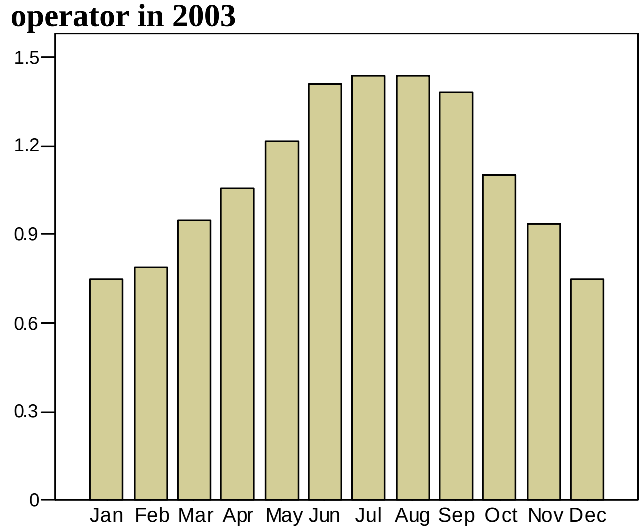
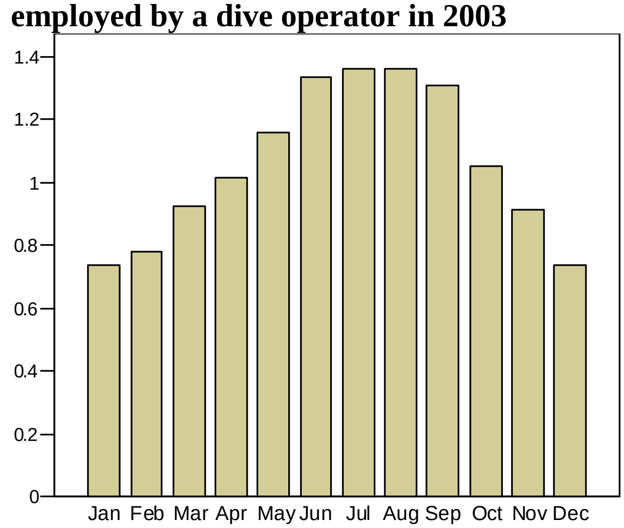


Figure 7:
Average number of part-time workers employed by a dive operator in 2003



Based on responses from n_1 = 45 (all dive operators), n_2 = 41 (non-manufacturing dive operators).

It should be noted that employment practices of manufacturers were very different from these of the non-manufacturing dive operators. There was very little seasonal variation in employment among manufacturers, which generally employed a constant number of workers year round (ten on average).

The clear seasonal pattern of employment in non-manufacturing dive operators might appear counterintuitive when it is considered that underwater visibility in British Columbia is at its best during the winter (November to March).[16] Nevertheless, the same seasonal pattern was observed in a previous study of the recreational diving in British Columbia completed in 1994.[17] It might be the case that some dive operators employed more people during the summer to assist with the non-scuba diving sports/activities that they offer, whose prime season is the summer. These extra employees could conceivably influence the average employment figures, especially if dive operators that offered other sports/activities besides diving were generally bigger than dive-only operators. However, this is unlikely to explain all of the observed seasonal variation.

It might be the case that divers are reluctant to take diving trips in British Columbia during the winter because of their lack of information about the diving conditions in the province. This is likely to be particularly true for inexperienced divers or people going for their first scuba certification courses, who generally believe that because the water in the summer is a little warmer, summer would be the best time to dive. Additional marketing could raise the profile of non-summer diving opportunities in British Columbia and help attract more divers in the currently off-peak months.

4. Specialization

Scuba dive operators were fairly specialized with recreational scuba diving products and services accounting for three-quarters of their revenues on average. Just over half of all dive operators (51%) derived their revenues exclusively from scuba diving in 2003, and close to 82% derived half or more of their revenues from the sport. There was some variation among operators, as a few operators offered recreational scuba diving on the side with a different main operation (such as a marine resort, or an operation centered on a different sport/activity) while most businesses specialized in scuba diving.

It should be noted that the term specialization here refers to the extent to which an operator was involved in the recreational scuba diving market, not to the range of products and services offered within this market. Thus, while a manufacturer may be producing exclusively scuba-diving equipment, it is not necessarily the case that all their products go to the recreational diving market.

It was found that the extent of specialization was different in manufacturers and non-manufacturing dive operators. Both groups showed considerable variation, but on average manufacturers earned a much smaller proportion of their revenues from the recreational scuba diving market, as table 2 shows. However, these findings should be interpreted with caution because of the small number of equipment manufacturers and the high variability in their responses.

[16] During the summer, blooming algae and the abundance of plankton can often considerably limit visibility.
[17] British Columbia, Ministry of Small Business Tourism and Culture, Tourism Division, *Market Potential of Wreck Diving in British Columbia*, By Economic Planning Group, 1994 (Unpublished report).

Table 2:
Percentage of revenues earned from recreational scuba diving

Percentage of revenues earned from recreational diving:	All dive operators	Dive equipment manufacturers	Non-manufacturing dive operators
On average (mean)	75%	50%	78%
By half of the dive operators in the respective group (median)[18]	100%	60%	100%
Typical range (interquartile range)[19]	60 - 100%	4 - 90%	60 - 100%
Number of valid responses	87	7	80

It is important to consider the possibility of response error in reporting the percentage of revenues earned from recreational scuba diving. While it would be trivial for operators exclusively dedicated to recreational scuba diving to accurately report 100% of their revenues coming from scuba diving, the same is not true for operators that diversify and provide a number of activities besides recreational diving. Thus, it is possible that all estimates of the proportion of revenues earned by recreational diving lower than 100% suffer to some extent from response error, as they are likely to represent best estimates and approximations rather than actual figures. Despite the potential for inaccuracies in individual responses, there is no reason to believe that responses would be systematically biased either up or down. Therefore, on average over the entire sample findings should be representative of the industry as a whole.

Overall, the findings unequivocally indicate that dive operators are highly specialized. This might be due to the high costs of entry into the industry, including expensive training and insurance premiums. The substantial initial investment required might reduce the number of operators that decide to pick up recreational scuba diving as an activity to offer on the side with a different main operation, and thus effectively limit the recreational diving market to operators that have chosen scuba diving as the main focus of the business.

5. Other Activities Offered

Even though dive operators were largely focused on recreational scuba diving, about half of all non-manufacturing dive operators (47%) offered other activities to their clients and guests.[20] The most commonly offered activities were canoeing/kayaking, other water sports and tours to cultural sites (table 3).

[18] The median is the value which is greater than or equal to half of the values in the data set and less than or equal to half the values. That is, if the values in the data set were ordered from the smallest to the largest, the median would be the middle value. For example, from table 2 it is seen that half of all dive operators earned over 100% of their revenues from recreational diving while half of equipment manufacturers earned less than 60% from recreational scuba diving. Unlike the mean (the average value) the median is not affected by outliers, which often makes it a preferred measure of the center tendency of a distribution.
[19] The lower quartile is the value which is greater than on equal to 25% of the values in the data set and less than on equal to 75% of values. The upper quartile, on the other hand, is the value which is greater than or equal to 75% of the values in the data set and less than or equal to 25% of the values. The interquartile range is the range spanning from the lower to the upper quartile. This range includes 50% of values in the data set and is often used to describe a distribution of values.
[20] Manufacturers were excluded from this calculation because their business was centered on manufacturing and wholesale of scuba diving equipment.

Table 3:
Activities offered in addition to recreational scuba diving

Percentage of revenues earned from recreational diving:	Respondents which offer activity %
Canoeing/kayaking	27
Other water sports	25
Tours to cultural sites	15
Fishing	13
Hiking	10
Whale watching	10
Marine education	6
Sightseeing charters	6
Ecotours (e.g. bird and bear watching)	4
Water taxi	4

Based on responses from n = 48 dive operators (45% of all applicable dive operators).

It is interesting to note that some respondents justified offering other sports/activities with their perception that scuba diving was not popular enough in the province to serve as the sole basis of a successful business. However, the survey findings indicate that about half of all dive operators relied exclusively on recreational scuba diving as a source of revenue for their business and many of these businesses were successful, as shown by an increase in their revenue over the past ten years (see below, Economic Profile section). On the other hand, diversifying and reaching beyond the recreational scuba diving market should not only be considered as a last-resort measure; in fact it could even be beneficial for the recreational diving side of the business as diversification could increase the exposure to diving among non-diving outdoor enthusiasts. It is possible that people who initially came to kayak or practice other water sports would come in contact with scuba divers and develop an interest in the sport.

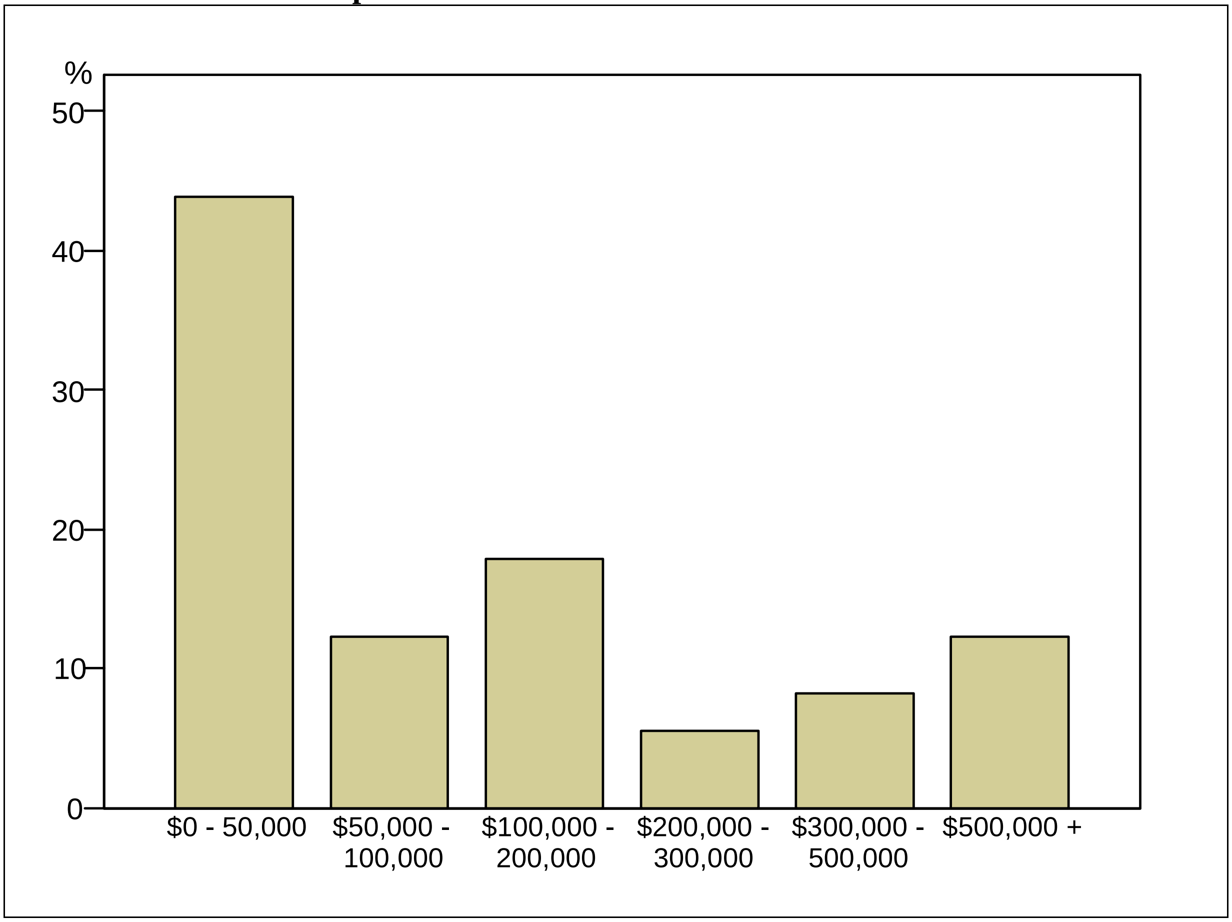
Economic Profile

1. Revenues

Revenue earned was a sensitive topic and about one in ten of the dive operators that participated in the survey refused to disclose this information. The analysis that follows is based on the responses of the 73 dive operators that provided revenue data for the survey.

Dive operators' revenues were characterized by large variability: there were a number of small operators that only provided part-time summer employment for their owners and/or family members along with large manufacturers with considerable revenues and over 30 employees. The distribution of dive operators' revenues in 2003 shows that the industry was comprised mainly of small businesses, as a little less than half of the respondents (44%) had revenues in the range of $0 - 50,000 and only 21% of dive operators earned gross revenues in excess of $300,000 (figure 8).

Figure 8:
Total Revenues of Dive Operators in 2003



Based on responses from n = 73 dive operators.

It should be noted that these figures include revenues earned from all activities offered and thus overestimate the revenues attributable to recreational scuba diving. The survey questionnaire design allowed for calculating dive industry revenues in two separate ways in order to check the consistency of the revenues estimates. Dive operators were asked to report the percentage of revenues earned from scuba diving activities and, later on, to provide percentage breakdowns of their gross revenues by source. These revenue breakdowns were used as an alternative calculation of dive industry revenues.

Firstly, to estimate the gross revenues earned directly from scuba diving, the reported percentage of company revenues attributable to recreational scuba diving were multiplied by the reported total revenues. The mid-points of the six revenue categories (as seen in figure 8) were used to obtain an approximation of the average gross revenues earned by dive operators. In addition, lower and upper estimates of dive revenues were computed using the lower and the upper end of the six revenue categories. These estimates are provided in brackets after the corresponding mid-point estimate. Note that $10,000 was arbitrarily selected for the lower bound of the $0 - 50,000 revenues category, although $25,000 was used as the mid-point estimate.[21] In addition, $700,000 was chosen as a conservative upper bound of the $500,000+ category, bringing the mid-point estimate of this category

[21] As no dive operator actually earned gross revenues of $0, the choice of a lower bound higher than zero was made in order to calculate a reasonable lower bound of the revenue estimates.

to $600,000. The upper estimate selected is likely to underestimate the actual revenue of the largest dive operators, as some of the manufacturers are reported to have annual sales well over $1 million.[22]

Using this method, it was found that the average dive operator in 2003 earned gross revenues of about $130,500 ($98,000 - $166,700) from recreational scuba diving alone. However, many of the operators were small and half of all operators earned less than $27,500 ($19,000 - $50,000). The manufacturers which participated in the survey (over half of the manufacturers in the province) exhibited a large variation in revenues earned, but were, on average, the highest revenue generators in the industry. Their average gross revenue of $327,500 per operator was more than twice as high as the industry average and close to three times higher than the average revenues of non-manufacturing dive operators. Table 4 reveals the differences between manufacturers' and non-manufacturing dive operators' revenues.

Table 4:
Dive industry gross revenues

	All dive operators	Dive equipment manufacturers	Non-manufacturing dive operators
Average revenues (mean)*	$130,500 ($98,000 - $166,700)	$327,500 ($267,000 - $390,000)	$115,800 ($85,400 - $150,000)
Revenues earned by half of the operators in the respective group (median)*	$27,500 ($19,000 - $50,000)	$360,000 ($300,000 - $420,000)	$25,000 ($15,000 - $50,000)
Number of valid responses	72	5	67
Industry gross revenues estimate*	**$15,100,000 ($11,400,000 - $19,300,000)**	**$15,300,000 ($11,500,000 - $19,600,000)**	

*The ranges of the revenue estimates calculated using the upper and the lower bounds of the six revenue intervals are included in brackets.

Assuming that the operators that reported their revenues are representative of the whole industry, the gross revenues of the recreational dive industry can be estimated at about $15,100,000[23] or in the range of $11,400,000 to $19,300,000. It should be noted that neither the estimate nor the range of the industry gross revenues change significantly when the dive operators are split into manufacturers and non-manufacturing businesses and the revenues of the two groups are calculated separately (table 4). The industry gross revenues can be broken down into the contribution of manufacturers of about $2,950,000 ($2,400,000 – $3,500,000) and the contribution of non-manufacturing dive operators $12,400,000 ($9,100,000 – $16,100,000).

In an alternative method for calculating dive industry revenues, the percentages of revenues earned from dive-related activities (dive charters, instruction, dive sales and equipment retail or rentals) were multiplied by the mid-point value of the respective total revenues for all dive operators that provided both their revenues and the detailed revenues breakdown. Revenues earned from meals and accommodation were excluded from the calculation in order to obtain an estimate of gross revenues earned directly from providing scuba diving products and/or services. When the revenues in the

[22] Secondary data from BC Stats' 2004 *BC Manufacturer's Directory* online was used to obtain annual sales figures of participating dive equipment manufacturers.
[23] This number does not equal (average revenue*116) due to rounding. The same holds for all industry revenue estimates in this section.

category *other sources* were specifically attributed to scuba diving (e.g. equipment repairs), their contribution was added to the total revenues calculation; it was omitted in all other cases. Thus computed, the average non-manufacturing dive operator's revenue amounted to $124,800 ($89,100 – $160,400) and the gross non-manufacturing dive industry revenues were estimated at $13,350,000 ($9,500,000 – $17,200,000).[24]

It should be noted that both methods of calculating non-manufacturing dive operators' revenues produced similar results. The fact that the estimate of dive industry revenues does not vary substantially with the estimation method suggests that the estimates of dive industry revenues obtained here are likely to be relatively accurate.

To take all available data into account when computing an estimate of dive industry revenues, the average of the non-manufacturing dive operators' revenues calculated in the two different ways outlined above was used. Thus, non-manufacturing dive revenues were estimated at $12,900,000 ($9,300,000 – $16,600,000) resulting in total dive industry revenues of $15,800,000 ($11,700,000 – $20,100,000). These can be considered conservative estimates, as they tend to underestimate the contributions of the biggest twelve percent of the operators that generate over $500,000 in revenue from scuba diving and contribute most to the total revenues of the industry. The effects of this underestimation are likely to be substantial in estimating equipment manufacturers contributions to the dive industry, and more modest in the calculation of non-manufacturers revenues.

It should also be noted that these figures represent direct revenue from scuba diving activities and for the most part do not include revenues earned from accommodation or meals for the scuba divers. Since many diving trips last longer than a day (as will be explained in this report) accommodation and meals comprise an important part of divers' expenditures. **Therefore, the actual economic value of the BC dive industry is likely to be considerably greater than estimated in this report.**

Overall, tracing the development of the dive industry over time is very difficult because of the lack of consistent documentation on the industry. The few sporadic studies of recreational scuba diving conducted since the early 1980s were primarily interested in dive tourism and, consequently, considered almost exclusively charter operators and dive resorts. Therefore, the only comparisons that could be made across time would involve estimates of the economic impact of scuba diving tourism, which are discussed in the section on tourism later in the report.

2. Revenues Breakdown

Dive operators' revenues come from a variety of different sources – diving instruction, dive charters, equipment rentals, equipment sales, meals, accommodation and other sports and activities. There is considerable variation among operators and a certain level of specialization was observed especially in smaller operators, which tended to focus on instruction or dive charters exclusively.

When examining the exact breakdown of revenues, the responses of the 51 operators that provided their revenue breakdowns were considered. Most manufacturers derived all of their recreational diving revenues from the wholesale of their scuba dive products, with a few exceptions of manufacturers

[24] Only non-manufacturing dive revenues could be calculated using this method because of the small number of manufacturers that reported both their gross revenues and their revenues breakdown. Non-manufacturing dive revenues are based on data provided by 42 dive operators that reported both their total revenues and their revenues breakdown.

engaging in the retail of equipment. That is why, the responses of non-manufacturing dive operators are provided separately in table 5 to be compared with the industry aggregates.

Table 5:
Percentage of dive operators that earned revenue from each activity in 2003

	All dive operators	Dive equipment manufacturers	Non-manufacturing dive operators
Diving instruction*	67%	0	71%
Dive charters	72%	0	77%
Equipment rentals	51%	0	54%
Equipment sales (retail)	57%	33%	58%
Meals and accommodation	18%	0	18%
Other sports/activities	35%	0	37%
Other (incl. equipment wholesale)	18%	100%	14%
Number of valid responses	51	3	48

About a third (29%) of mail questionnaire respondents reported not deriving any revenues from instruction. This is consistent with the combined data from the survey and the telephone interviews, which suggest that about 69% of the non-manufacturing dive operators offered instruction. Thus, it can be safely concluded that about 70% of non-manufacturing dive operators in British Columbia offered instruction. Although a few dive instruction centres earned all of their revenues from recreational diving instruction, overall, instruction was not a large source of revenues for most operators. Half of the operators that offered instruction derived less than 25% of their total revenues from it and only about a third (32%) derived half or more of their revenues from instruction (table 6). Generally, instruction was offered on the side with equipment retail or charters.

Table 6:
Percentage of individual dive operators' revenues earned from each activity in 2003

	All dive operators*	Non-manufacturing dive operators*
Diving instruction	33% (25%)	33% (25%)
Dive charters	32% (20%)	32% (20%)
Equipment rentals	10% (10%)	10% (10%)
Equipment sales (retail)	43% (36%)	42% (36%)
Meals and accommodation	32% (30%)	32% (30%)
Other sports/activities	32% (17%)	32% (17%)
Other (incl. equipment wholesale)	38% (40%)	32% (35%)
Number of valid responses	51	48

*The estimates in column two and three represent the average percentage of individual dive operators' revenues earned from each activity among the operators that offered the activity. The median is included in brackets.

Scuba diving charters were a source of revenue for about 77% of non-manufacturing dive operators that returned their surveys, which is consistent with the 80% obtained from combining the mail survey and the telephone interviews.[25] The consistency of the estimates demonstrates that the conclusions are not sensitive to the particular estimation method of choice and thus lends credibility to the findings. As with instruction, the extent to which individual businesses relied on charters as a source of revenue varied from a few companies deriving all their revenue from charters to about half of all operators deriving less than 20% of their revenue from dive charters. Of the operators that offered diving charters, only about 24% derived more than half of their revenues from guided scuba diving activities.

About half of all operators (51%) offered equipment rentals as a source of revenue and no operator derived more than a third of their revenues from rentals. In fact, of those that rented out equipment, 81% derived one tenth or less of their revenues from the rentals.

Equipment sales were offered by a little over half of dive operators (57%). No operator reported deriving all revenues from equipment retail sales, but about half of those that engaged in equipment retail derived more than a third of their revenues from it.

Just over a third of dive operators (35%) reported deriving revenues from sports and activities different from scuba diving. This number is smaller than the number of operators that reported offering other sports and activities to their clients. The difference might be due to the fact that some of the operators that derived revenues from other sports chose to not provide their revenue breakdown, or perhaps the revenue from the other activities was so small that it was rounded down to zero. In addition, several of the operators reported offering various non-diving activities to their scuba diving clients, including the costs in the price of the diving package. Of the ones that derived revenues from other sports and activities, about half earned less than 17% of their total revenues from them.

Only about 18% of dive operators reported deriving revenues from accommodation and/or meals, and half of them earned less than a third (30%) of their revenues from providing these services. Of the other sources of revenue, manufacturing and wholesale of scuba diving equipment were the most prominent. Also featured were scuba equipment repairs and other sports equipment retail sales.

Table 6 shows the revenue breakdown for individual dive operators that engage in the respective activities, but it does not reveal much about the composition of the revenues for the whole dive industry. To obtain an approximate breakdown of aggregate industry revenues, the dollar contribution of each of the listed sources of revenues was calculated, using the mid-point of each reported revenue interval to approximate every operator's revenues (as above, when calculating the average dive operator's revenues). A breakdown of the dive industry revenues was obtained by dividing the dollar contribution of each source of revenue by the dollar value of the total industry revenue. Data from the 42 non-manufacturing operators that reported both the size of their revenue and its breakdown were used in the calculation. First, the contribution of each source of revenues to the total dive operators' revenues was calculated. Then, in order to estimate the breakdown of dive industry revenues only revenues earned directly from scuba diving were included, excluding revenues earned from accommodation, meals, other sports and other non scuba-diving activities. The results are presented in table 7. Note that only the breakdowns of non-manufacturing dive operators' revenues were calculated because of the small number of equipment manufacturers that provided the required data.

[25] Based on 75% response rate of non-manufacturers from both the questionnaire and phone interviews.

Table 7:
Breakdown of non-manufacturers dive operators' revenues (2003)

Source	Share of non-manufacturing dive operators' revenues %	Share of non-manufacturing dive industry revenues %	Economic value* $
Equipment sales (retail)	40	51	$6,600,000 ($4,700,000 - $8,500,000)
Dive charters (guided activities)	17	21	$2,700,000 ($1,950,000 - $3,500,000)
Diving instruction	16	19	$2,450,000 ($1,800,000 - $3,150,000)
Meals and accommodation	8	-	-
Equipment rentals	7	9	$1,200,000 ($800,000 - $1,500,000)
Other sports/activities	6	-	-
Other (incl. manufacturing, wholesale)	7	0.2	$26,000 ($19,000 - $33,000)
Total (n = 43)	101	100.2	$12,980,000 ($9,300,000 - $16,680,000)

*Based on the estimate of non-manufacturers' dive revenues obtained earlier of $12,900,000 ($9,300,000 – $16,600,000). Percentages may not sum up to 100 due to rounding. Rounding is also the reason for the slight discrepancy between the total economic contributions calculated in the last column and the total non-manufacturing dive industry revenues.

Equipment retail sales were the largest contributor to non-manufacturing dive industry revenues, accounting for about half of gross revenues or about $6,600,000 in 2003. The next largest sources of revenues for the industry were guided dive charters and diving instruction, both of which accounted for about a fifth of industry revenues each and were valued at $2,700,000 and $2,450,000[26] respectively in 2003. Equipment rentals contributed 9% of industry revenues, amounting to a little over 1 million dollars, while other dive-related products and/or services only earned 0.2% of the industry revenues.

The primary sources of revenue for manufacturers were manufacturing and wholesale sales, both included under the category *Other* in tables 6 and 7. On the whole, manufacturers' revenue breakdown was very different from the revenue breakdown of non-manufacturing dive operators, but their small number relative to non-manufacturing dive operators explains their minor effect on the overall breakdown pattern, seen in table 7.

3. Employment

Most dive operators (78%) hired employees throughout the year, although more operators were open during the summer months (figure 2, p.13). Table 8 shows the proportion of dive operators that

[26] It should be noted that in its *Fact Sheet on Recreational Scuba Diving in Pacific Canada*, the Department of Fisheries and Oceans estimates that on average about $5,000,000 per year was spent on basic scuba training courses in British Columbia between 1996 and 2000. It seems unlikely that the expenditure on instruction would have decreased so substantially between 2000 and 2003, which suggests that either their estimate was overly optimistic or this report underestimated the value of diving instruction to the province.

employed workers for a different number of months in 2003. Most of the dive operators were quite small, employing on average three full-time workers between the months of March and October and two full-time workers during the rest of the year. In addition to their full-time employees, dive operators had one part-time employee on average throughout the year.

Table 8:
Number of months dive operators had employees in 2003

	Percentage of dive operators that had employees
1 – 4	12
5 – 8	7
9 – 11	3
12	78
Total	100

Based on responses from n = 74 dive operators.

Assuming that the dive operators that reported employment numbers are similar to dive operators that did not report them, it can be calculated that the recreational scuba diving operators provided approximately 310 full-time and 123 part-time jobs in 2003. This is likely to be an overestimate of the employment generated by the industry because it includes some employees not working on scuba diving, but hired by employers who derive some of their revenues from recreational scuba diving. In comparison, the Department of Fisheries and Oceans estimates that 141 jobs were created by commercial dive operators in British Columbia in 2001.[27]

It should be noted that close to 15% of the operators that participated in the study did not provide employment data. It is important to consider whether any association exists between reported total revenues and reporting employment figures.

Table 9:
Relationship between reporting employment figures and size of total revenues

		Total revenues		**All respondents**
		$ 0 - 50,000	$ 50,000 +	
Reported employment	Yes	72%	95%	85%
	No	28%	5%	15%
Total		100%	100%	100%

Based on responses from n = 73 dive operators.

Table 9 suggests that there is an association between the size of reported revenues and the likelihood of disclosing employment data, with smaller operators more likely not to report employment figures (only 72% of small operators reported their employment figures compared to 95% of larger operators). The observed association is statistically significant, as the low probability value of the Chi-square test indicates ($p = 0.006$), but it is only moderate in strength (Phi = -0.322, $p = 0.006$).

[27] Govt. of Canada, Department of Fisheries and Oceans, *Fact Sheet on Recreational Scuba Diving in Pacific Canada*, Online, 2003, Accessed 30 May 2004, p. 1

The tendency of small operators to not provide employment figures might be explained by the fact that these businesses tend to be family owned and operated and they might have skipped the question deciding that as they did not hire staff outside their family, they did not have employees. Although the question explicitly asked for the owner and persons of the owner's family to be included in employment figures, a few of the operators returned questionnaires reporting that they did not have any employees whatsoever because their company was "a family business" or "owner-operated, no staff." It might be the case that employment in owner-operated businesses, which only provided limited part-time or full-time employment, was underreported and, thus, the above cited employment averages might represent an overestimate of average industry employment. On the other hand, it is possible that some of the larger dive operators misunderstood the question as well and did not include family members working for their operation in the employment figures reported, thus leading to an underestimate of employment generated by the dive industry. Further research is needed to obtain reliable figures of industry employment.

Equipment manufacturers were the largest dive operators not only in terms of revenues but in terms of employment as well. Although there was considerable variation among manufacturers, they averaged ten full-time employees per month – almost four times as many as were hired by the average non-manufacturing operator. In addition, manufacturers differed from non-manufacturing operators in that the former tended to rely almost exclusively on full-time workers. The average non-manufacturing dive operator had one part-time and two full-time employees throughout the year.

4. Other Measures of Size of Operation

A. Number of Divers on Charter

A little over 70% of all diver operators offered diving charters to their clients or guests and those that did took on average 285 divers on charter in 2003. However, the variation in the number of divers among operators was substantial. Along with operators having well over a thousand divers in 2003 there were small charter businesses with fewer than 15 divers for the whole year. Half of the dive operators that offered charters took out less than 150 divers in 2003 and about two thirds took out less than 250, so the relatively large average number of divers can be explained by the few companies that took out a very large number of divers.

Assuming that the percentage of dive operators that offer charters in the sample of survey participants (73.6%) is representative of all the dive industry, the total number of divers on charters in 2003 is estimated to be approximately 24,400. How good an approximation is this to the actual number of annual diver-days in British Columbia? A recent study of the recreational diving fatality rates or rates of decompression illness estimated the number of diver-days in the province to be between 120,000 and 150,000 yearly, using information from air fill stations throughout the province.[28] The reason why this survey's estimate is much smaller is that it excludes all self-guided diving trips and focuses on divers that utilize commercial operators for transport (charter).

[28] Garry Ladd, Victor Stephan and Linda Stevens, "The Abacus Project: Establishing the risk of recreational death and decompression illness," *South Pacific Underwater Medicine Society Journal* 32 (2002).

B. Number of People Enrolled in Diving Courses

Almost two thirds of all operators reported offering recreational diving instruction in 2003. Not all operators provided data on their first-time-certification students and advanced certification students separately, but those that did[29] reported an average number of 86 students enrolled in first time certification courses and 44 in advanced certification courses. There was considerable variation in the number of certifications issued among different operators; some were large instructional centres exclusively devoted to teaching, while others only took on a few divers on the side. About half of all operators that offered diving instruction in 2003 taught classes for less than 32 first-time divers and less than 20 continuing education divers.

Many operators reported the total number of students enrolled in their recreational diving classes without providing a breakdown by certification level. These values are likely to be less prone to response error due to inaccurate recall than the separated first-time and advanced diver students. Using these numbers, we obtain an average of 133 diving students per operator, which is approximately equal to the average of 130 students obtained above by using the data from the breakdown by type of certification.

Extrapolating these results to the whole industry it is estimated that 6,300 people were enrolled in first-time scuba certification courses and 3,300 divers took advanced recreational diving courses in British Columbia in 2003 for a total of about 9,600 people enrolled in diving courses. When using only the aggregated diving student information provided, a somewhat larger estimate of 9,800 students is obtained. In comparison, the Department of Fisheries and Oceans estimates on average 19,000 scuba diving certifications per year between 1996 and 2000. It should be noted that further research is necessary in order to obtain an accurate estimate of the number of people enrolled in scuba diving courses in British Columbia. Data from the three certifying organizations active in British Columbia[30] could be used to cross-reference the estimates obtained by dive operators. Data obtained from certification agencies would reveal any trend in the number of first-time certifications issued in British Columbia over the past few years, a reflection of the level of public interest in the sport, as well as in the number of advanced certifications pursued, a reflection of scuba divers' retention rate.

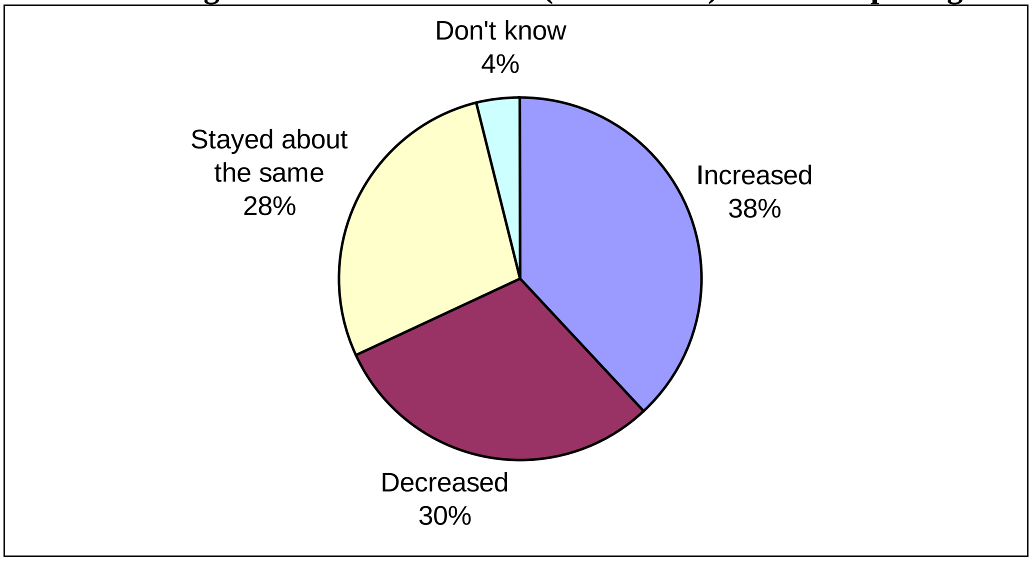
5. Business Growth: Past Experience and Future Expectations

A. Revenue Change over the Past Ten Years

Dive operators that had started their business before the reference year were asked about their revenue change over the past ten years or since opening (if operating for less than ten years). Over a third of dive operators (38%) reported an increase in revenues in the past 10 years (or since opening), while 30% reported a decrease in revenues and about 28% observed no revenue changes. Despite the widespread consensus in the dive industry circles that business had decreased over the past ten years from a peak in the early 1990s, a fair proportion of operators reported that their own business had increased during the same period

[29] Almost exclusively survey questionnaire respondents.
[30] The three scuba diving certifying organizations are the Professional Association of Dive Instructors (PADI), Scuba Schools International (SSI) and the National Association of Underwater Instructors (NAUI).

Figure 9:
Revenue Change in the Past Ten Years (1994 - 2003) or Since Opening



Based on responses from n = 47 dive operators.

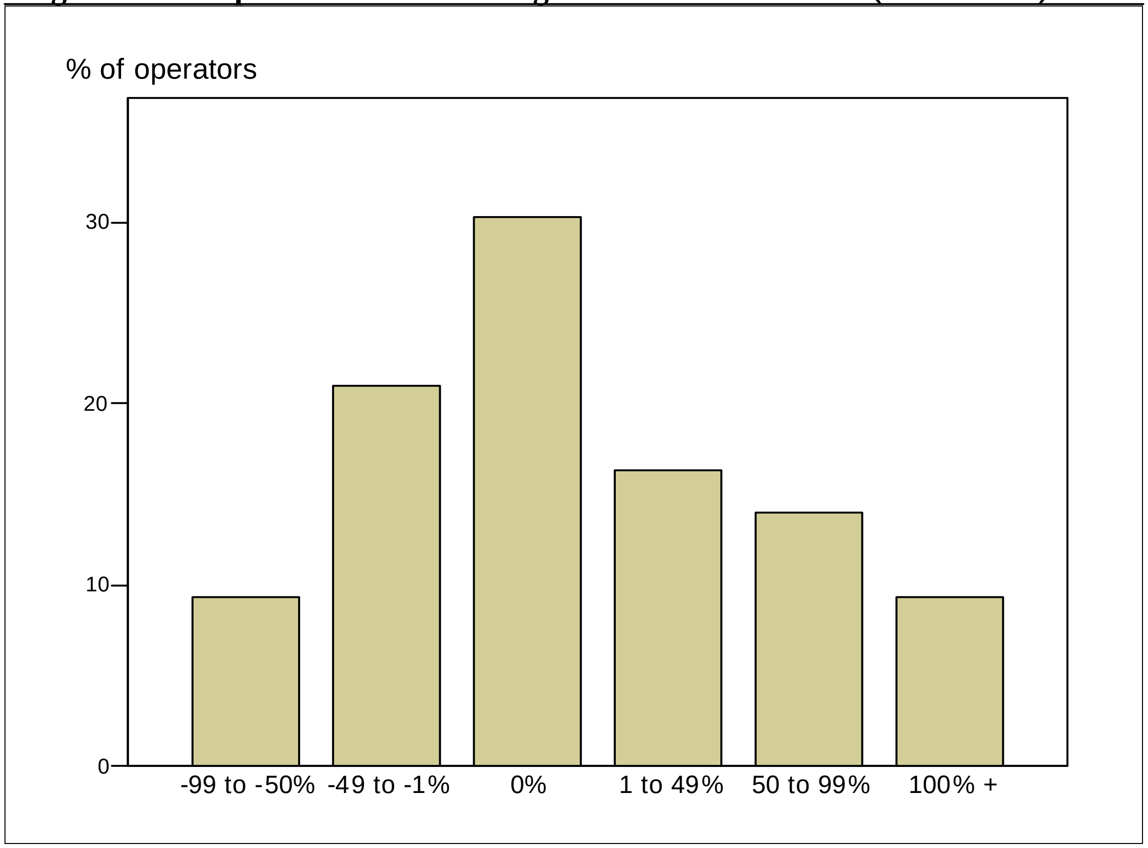
Non-manufacturing dive operators exhibited the same past revenue pattern as the industry as a whole. About 42% of non-manufacturing operators reported an increase in their revenues over the past ten years, about a quarter (23%) experienced a decrease and 30% reported that their revenues remained relatively unchanged. The dive equipment manufacturers exhibited considerable variation, which, considering their small number in the sample, makes it impossible to generalize from their responses.

When asked about the magnitude of the change in their business, not all operators were willing to provide the information. However, no association could be established between the direction of change of revenues and the likelihood to report the magnitude of change.[31] Therefore, there is no reason to believe that the reported figures were not representative of the dive industry.

The variation in individual business performance was very large as some businesses' revenues declined to closure levels[32] while others experienced five-fold or higher increases in their revenues (figure 10). An average revenue increase of 32% was reported overall, but this is not necessarily indicative of the rate of expansion of the industry and, if anything, represents an over-estimate of the quantitative change in industry over the ten years previous to 2003. In fact, many of the dive operators themselves would talk about a contraction of the industry following its boom in the early 1990s. The seeming contradiction between industry experts and the reported revenues change stems from the fact that the revenue changes reported here are biased towards the more successful operators that had remained in business, regardless of whether the industry as a whole expanded or contracted. It is possible that operators that experienced declining revenues had left the business in the ten year period prior to 2003, and thus their negative experiences could not be recorded in a study such as this one, although they do represent a contraction of the industry.

[31] As indicated by a high probability value of the Chi-square test, p = 0.854
[32] Some businesses did close down in the course of the reference year.

Figure 10:
Magnitude of Reported Revenue Change in the Past Ten Years (1994 - 2003) or Since Opening



Based on responses from n = 38 dive operators.

In fact, a true picture of the development of the industry over time could only be obtained through a comparison between industry revenues over time, number of companies operating or number of diving clients and guests. Unfortunately, such data is unavailable at this point, but this report could serve as a foundation to building an industry monitoring mechanism through repeated surveys of dive operators.

B. Change in the number of divers

Another indicator of industry growth or decline is the change in the number of clients over time. Table 10 shows the change in the number of divers on charters between 2002 and 2003, as perceived by dive operators that offered dive charters. When interpreting these results it should be noted that they are based on responses from dive operators that offered charters and had opened their business before 2003, which comprised about 70% of survey respondents.

Table 10:
Change in the number of divers since 2002

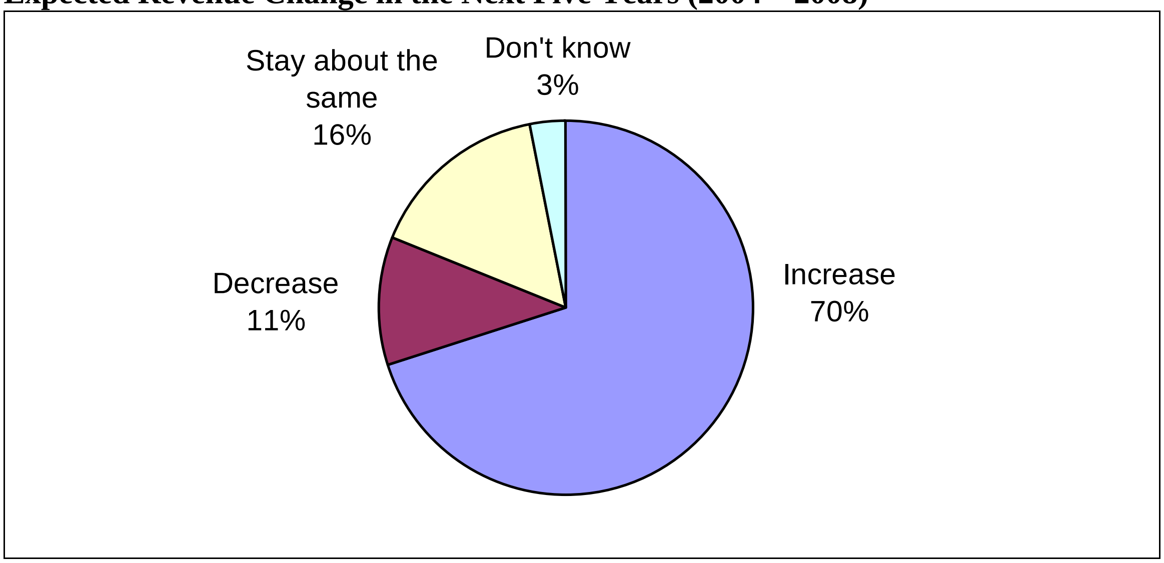
	Percentage of operators
Increased	48 %
Decreased	25 %
Stayed about the same	27 %
Total (n = 40 dive operators)	100 %

Almost half of dive operators (48%) that provided charters to their diving clients reported an increase in their clientele over the past year, while only a quarter had observed a decrease in the number of their divers. There was considerable variation among the dive operators that reported a change in the number of divers they had, and the numbers varied from a two-fold decrease to a five-fold increase, with the majority lying between a 30% decrease and a 60% increase.

C. Future growth expectations

The majority of dive operators that participated in the survey were optimistic about the future of their business. Well over two thirds of the operators expected an increase in their revenues over the five years following 2003, with non-manufacturing operators being somewhat more optimistic about the growth of their business (73% expected growth compared to 70% of all operators). Only 11% of all dive operators expected a decrease, compared to 10% of non-manufacturers (figure 11). About 16% believed that their business revenues would remain relatively unchanged (14% for non-manufacturers) and 3% were uncertain (4% among non-manufacturers). The degree of optimism varied among dive operators, with over a third of all operators (39%) expecting a revenue increase of 50% or more in the following five years.

Figure 11:
Expected Revenue Change in the Next Five Years (2004 – 2008)



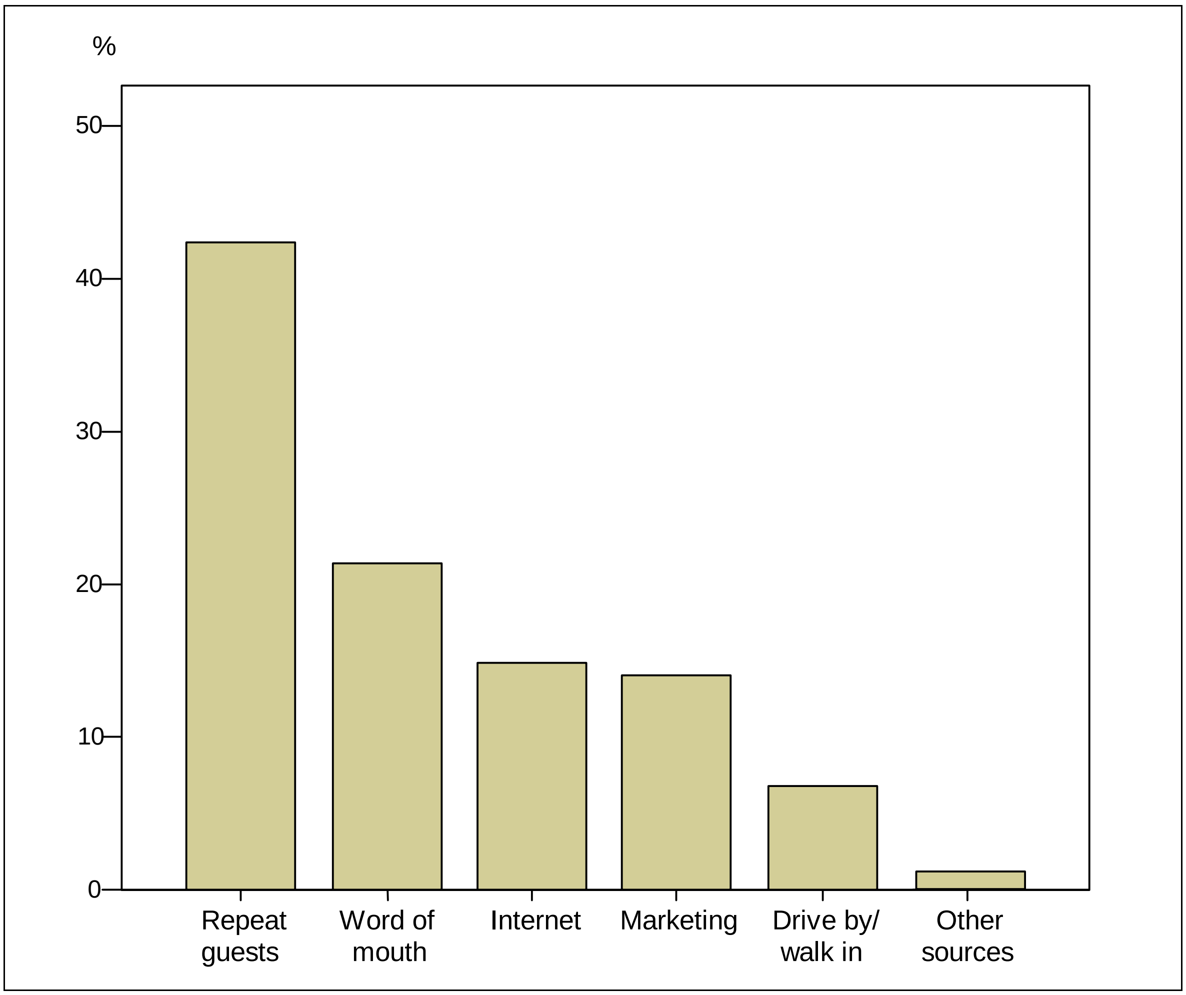
Based on responses from n = 56 dive operators

Marketing Practices

It is important to consider the dive operators' perception of the role of marketing for their business. When asked about the sources of their bookings and/or sales, dive operators pointed at repeat guests as the largest source of their business. Marketing and advertising took a fourth place on average as a source of business preceded by repeat guests, word of mouth and Internet. It should be noted that, as suggested during the pre-testing of the survey questionnaire, the category *Internet* was included in addition to *Marketing* because it was feared that some of the operators might not recognize using the Internet to attract clients as a form of marketing. If the two sources of clients, Internet and marketing were combined, they would still account for less than a third of all clients and guests in 2003 (29%) and would remain second to repeat guests as a source of business.

These findings suggest that dive operators in general did not seem convinced that marketing directly results in increasing their business, or were not engaging in enough marketing to attract new clients so that they would see it as the main source of business, both of which imply that dive operators might not be using marketing to their full advantage. It is likely that marketing strategies could be improved, especially for smaller operators which do not generally rely extensively on marketing, and such improvement would have the added benefit of increasing exposure to the industry as a whole and would potentially lead to more business. A dive industry association might consider getting involved to assist individual operators with their marketing needs, perhaps offer workshops on effective marketing or make educational materials available to members or the industry as a whole.

Figure 12:
Perceived Sources of Bookings and/or Sales (averages)



Based on responses from n = 53 dive operators

Although small, most dive operators (94%) used some form of marketing to attract new clients or guests in 2003. In this survey it is not possible to estimate the marketing budget of individual dive operators or the industry as a whole. However, the relative frequency of use of the different marketing methods can be ascertained. The most popular marketing technique for dive operators in 2003 involved their own website, used by 77% of businesses. The widespread use of computers and the Internet for marketing is demonstrated also by the prominence of email promotions and advertising on other web sites, both among the top seven most frequently used marketing methods. It should be mentioned that advertising on other web sites is likely to be largely underestimated due to the vast amounts of free advertising that happens with links to operators' web sites from recreational or personal web sites.

The figures also point to areas of marketing that might be underused, such as film shows and slide shows, advertising in commercial travel guides, radio and television ads, and co-operative marketing with wholesale operators and travel agents.

Table 11:
Marketing Methods Used by Dive Operators

Marketing method	Dive operators that used the marketing method in 2003 %
Own web site	77
Brochures, posters	68
Yellow pages	59
Consumer and trade shows	49
Magazine ads	36
Other web sites	36
Email promotions	34
Direct mail to past customers	30
Provincial/territorial travel guides	30
Newspaper ads	28
Public relations (e.g. feature articles)	28
Direct mail to future prospects	25
Film shows, slide shows	15
Commercial travel guide	9
Radio or television ads	9
Wholesale operators	9
Travel agents	6
Other	6
None	6

Based on responses from n = 53 dive operators

It should be noted that the few dive operators that did not advertise at all (instead solely relied on word of mouth as a source of their clientele) were very small businesses whose owners described them as part-time endeavors that were not intended as a primary source of income, but as a hobby "in [their] time away from [their] real job." While for such operators with no intention of expanding their business it would not make sense to engage in formal marketing beyond a newspaper ad or a listing in the yellow pages, larger operators could certainly benefit from planned and well-executed advertising.

Although co-operative marketing is often regarded as an important part of a successful marketing campaign, only about a third of dive operators (34%) reported being involved in co-operative marketing. For those that did, the marketing partners of choice frequently were local tourism associations, business associations, accommodation providers, diving equipment manufacturers and other dive operators. The data suggest that there is room for expanding co-operative marketing efforts, which could result in business growth for both individual operators and the industry as a whole.

Diver Demographics

The demographic data in this report are based on the responses of dive operators that offered charters or instruction in 2003 and exclude the experience of operators that did not have direct contact with divers, such as equipment manufacturers and distributors. In addition, it should be kept in mind that dive operators were asked to provide data about their clients or guests over a period of a year, which implies that their responses might suffer from recall error. Nevertheless, there is no reason to believe that the estimates were consistently biased in one way or another, which suggests that the demographic data provides a reasonably accurate picture of the industry as a whole.

1. Geographic Markets

The majority of dive operators' clientele came from within British Columbia. On average a little less than two thirds of all divers were reported to come from BC (65%), about 13% from the Northwest United States, 11% from Alberta, a little over 2% each from Other Canada, Other United States, and Europe (excluding the UK and Germany). A little over 1 % of divers came from Ontario, California and the UK and less than 1% came from Germany, Asia and the other continents, mainly Australia (table 12).

Table 12:
Geographic markets

Origin	Average %	Typical range* %
British Columbia	65	50 - 90
Alberta	11	0 - 20
Ontario	1	0 - 1
Other Canada	2	0 - 5
Northwest United States	13	0 - 10
California	1	0
Other United States	2	0 - 1
United Kingdom	1	0 - 2
Germany	1	0
Other Europe	2	0 - 1
Asia	1	0
Other	0.1	0
Total	100.1	-

*The interquartile range is used. A typical range of 0 implies that both the 25th and the 75th percentiles equaled 0.
Based on responses from n = 44 dive operators. Numbers do not sum up to 100% due to rounding.

It should be noted that all operators that provided estimates of the geographical origin of their clients were weighted equally so that the estimates of small operators with fewer than 20 divers per year contributed to the total as much as those that had several hundred clients. This would only pose a problem if there were a systematic relationship between the size of the dive operators and the origins of their clients, which does not seem to be the case.

The geographical markets for charter operators in the province do not seem to have changed much over the past decade, as similar distribution of the places of origin of divers is found in the 1994 assessment of recreational scuba diving prepared for the Ministry of Small Business, Tourism and Culture.[33] In addition, the researchers there observed large variations in the percentage of divers coming from an area similar to what was observed in this study. Their explanation for this variation was the tendency of some dive operators to target a specific market for most of their advertising and, as a result, draw a greater share of its business from that area. This sounds quite plausible at the present time as well, although further research is necessary to verify this claim.

2. Gender

The majority of dive operators reported that approximately 70% of their divers were male and 30% female on average, although there was considerable range of variation in the gender split of divers among different operators. The average gender breakdown estimated here is consistent with the PADI certified diver gender breakdown in Canada and the United States (roughly 66% male and 33% female). [34]

Table 13:
Gender distribution of dive charters' clientele

Gender	Average* %	Typical range** %
Female	30	20 - 40
Male	70	60 - 80
Total	100	-

*The average was equal to the median. Based on responses from n = 47 dive operators

** The interquartile range was used as a typical range.

Some dive operators that catered to younger age groups (children, youth and university students) reported almost equal gender distributions where females were better represented than the average, which suggests that an interest for the sport exists in females and perhaps better marketing targeted at females might be able to capture these client group past the instruction phase.

3. Age

The majority of divers who use the products and services of dive operators in British Columbia seem to be between the ages of 25 and 44.

[33] British Columbia, Ministry of Small Business Tourism and Culture, Tourism Division, *Market Potential of Wreck Diving in British Columbia*, By Economic Planning Group, 1994 (Unpublished report), p. 16.
[34] Estimate provided by Mr. Randy Giles, PADI Canada Regional Manager, Personal Communications, Feb. 3, 2004.

Table 14:
Age distribution of dive charters' clientele

Age group	Average %	Typical range* %
19 or younger	8	0 - 5
20 – 24	16	1 - 21
25 – 34	26	16 - 30
35 – 44	31	16 - 40
45 – 54	14	1 - 20
55 – 64	3	0 - 5
65 and older	1	0 - 2
Total	99	-

*The interquartile range was used as a typical range. Numbers do not sum up to 100% due to rounding. Based on responses from n = 44 dive operators.

These findings are hardly surprising, when one considers that diving is a physically demanding sport, which appeals to relatively fit people with an active lifestyle, who generally tend to be younger. In addition, as with most adventure sports, scuba diving requires a sizeable initial investment in training and equipment, as well as the availability of disposable income to dedicate to dive travel. People between the ages of 25 and 44 often have the disposable income to take dive vacations, and at the same time are relatively fit and willing to explore new boundaries.

Several of the dive operators were specialized in offering services (generally instruction) to children and families. They are largely accountable for the under-19 age category.

Dive operators that offered dive charters and had been in the business longer than a year in 2003 were asked if they had noticed any changes in the age makeup of their divers/clients over the past 10 years or since opening. Of them, 40% reported noticing no change while only 27% indicated they had observed an age change (the rest were unsure). Of those that reported a change, slightly more than half had noticed more older/fewer younger divers, while the rest reported the opposite change of fewer older/more younger divers. In general, dive operators attributed the "aging" of their clientele with the fact that older people have more available financial resources to devote to the sport than younger people do, especially with the current poor local economies in British Columbia. However, as only a minority of operators reported any change in the age make-up of their clients and their observations were contradictory, there is not enough evidence to support a conclusion.

4. Party Composition

Divers using the services of commercial dive operators were most frequently reported to travel/go diving on their own, followed by going together with friends and with their significant other. Family diving outings were not very common, which is probably due to the nature of the sport, which requires a minimum age for certification and thus restricts the opportunities for family trips when there are young children involved. A few dive operators in 2003 catered specifically to youth and families but their number was small enough that removing them from the sample did not affect the party composition distribution.

Table 15:
Party composition of dive charters' clientele

	Average %	Typical range* %
Individuals	40	10 - 60
Friends	23	5 - 39
Couples	22	10 - 30
Families	8	0 - 10
Tour groups	7	0
Total	100	-

*The interquartile range was used as a typical range. A typical range of 0 implies that both the 25th and the 75th percentiles equaled 0. Based on responses from n = 44 dive operators.

What is striking in these findings is the small number of divers coming in organized tour groups. Only a fifth of dive operators (23%) reported having served divers who came in tour groups. This might be due to the small size of most operators, which could not handle but a small tour group, but it might also be pointing to insufficient marketing, especially marketing in coordination with travel agencies and tour operators. This is an area in which much could be done to increase the client base of the dive operators in British Columbia.

Tourism

1. Length of Diving Activities Offered

Dive operators offered half-day, whole-day and multi-day diving charters to their clients. Full-day activities on average represented the highest proportion of the activities offered by dive charter operators (44%). Multi-day activities followed with 31% of clients and half-day activities were the least common, with a little over a quarter of divers engaging in them (table 16).

Table 16:
Length of diving activities

	Average percentage of divers	Typical range* %
Half day	26	0 - 33
Full day	44	5 - 79
Longer than a day	31	0 - 50
Total	101	-

* The interquartile range was used as a typical range. Based on responses from n = 48 dive operators. Numbers do not sum up to 100% due to rounding.

Bearing in mind that tourists are defined as travelers who are outside of their usual environment on an overnight trip lasting at least one night, it seems reasonable to conclude that most (if not all) of the divers engaging in activities for longer than a day were tourists, as well as some of those participating in full-day activities. Thus, a large proportion of the clients of dive operators that run charters or organize dives could be classified as tourists.

2. Percentage of Revenue from Tourism

On average, dive operators reported about 40% of their revenues coming from tourists. However, there was quite a large variation among different dive operators, with about half reporting under 20% revenues from tourism and about 16% of operators reporting virtually all of their revenues from tourists. Only 9% of dive operators reported having had no tourism revenues in 2003. It is possible that these findings underestimate the share of tourism in the market because some of the British Columbia tourists (as defined by overnight travelers) might not have been counted as such.

The recreational diving market in British Columbia appears to be segmented, with some operators catering mostly to local divers, while other operators marketing almost exclusively to tourists. To produce a reliable estimate of the proportion of industry revenues generated by tourism, only non-manufacturing dive operators are considered (as manufacturers usually do not sell directly to final consumers) and each operator's reported percentage of revenue generated by tourists was weighted by their total reported revenues from scuba diving. Thus calculated, about 33% of non-manufacturing industry revenue is attributable to tourism.[35] Using the non-manufacturing industry revenues estimate of $12,900,000 ($9,300,000 - $16,600,000) as calculated earlier in the report, the gross contribution of commercial scuba diving tourism can be valued to approximately $4,300,000 or a number in the range of $3,100,000 and $5,500,000.

These estimates include only tourism revenues derived from guided scuba-diving activities, instruction and retail/rental of equipment to tourist divers. Revenues derived from accommodation and meals, which usually comprise a significant amount of the spending of any tourist, are not included in the calculation for the most part. A small number of dive operators (18%) reported offering these services to their guests and some of the revenues from them might be included in their estimates of tourist revenues. However, these accommodation and meal revenues are likely to account for a small minority of tourist divers' expenditures. Thus, the contribution of tourism to the dive industry is likely to be substantial.

It is interesting to note that the most recent economic assessment of the dive industry in British Columbia, the 1994 *Market Potential of Wreck Diving in British Columbia*, prepared for the Tourism Division of the Ministry of Small Business, Tourism and Culture, estimated that direct revenues from the dive charter business were $3 million in 1993. After correcting for omitted tourism expenditures on transportation, meals, accommodation and retail, the researchers valued dive tourism in the province at $4 million. At first sight, it would appear that if dive tourism was worth $4.3 million in 2003, the industry had not progressed much over the ten-year period, especially when inflation is taken into account. However, it should be noted that the 2003 dive tourism estimate presented here is closer in definition to the 1993 dive charters revenues estimate, as they both measure only direct revenues accruing to dive operators. Thus, it can be concluded that direct revenues from dive tourism have risen from $3 million in 1993 to $4.3 million in 2003.

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[35] Based on the responses of 38 non-manufacturing dive operators that reported both their total revenues and the percentage of their revenues attributable to tourism in the mail survey. Participants in the telephone interviews were asked not what percentage of their revenue comes from tourists, but rather, what percentage of their clients or guests are tourists. They reported an average of 48% of their guests being tourists, with half of all respondents having had more than 50% of their clients to be tourists. Again, the variation was quite high with some operators catering entirely to locals, while others were entirely tourism-based. The difference in the share of tourists in industry revenues between telephone interviewees and survey questionnaire respondents might be partially attributable to the different phrasing of the question. That is why, when calculating the contribution of tourist revenues to the industry, only the data provided by survey respondents was used.

When indirect tourism revenues are included, the Department of Fisheries and Oceans estimates that the dive industry generated about $8 million in 2001.[36] The contribution of dive tourism to the British Columbia economy in 2003 is likely to be even larger.

Perceived Constraints to Growth

When asked about serious constraints to their long-term business growth, over two thirds of dive operators (70%) expressed concerns about marketing difficulties. More than half of operators also worried about competition from other sports and activities, travel hassles, price competition from other dive operators, weather constraints, difficulty in accessing capital dollars for expansion and inappropriate industry regulation (table 17).

Table 17:
Perceived Constraints to Growth

Constraint	Percent of dive operators that reported the constraint
Marketing difficulties (incl. high marketing costs, lack of market research and lack of coordinated marketing)	70
Competition from other sports and activities	57
Travel hassles (incl. limited air and/or ground access to visitors and travel safety concerns)	56
Price competition	54
Weather constraints	50
Difficulty in accessing capital dollars for expansion	48
Inappropriate industry regulations	46
Human resources concerns (incl. finding and retaining staff with adequate training and staff performance concerns)	41
Difficult to secure insurance	28
Inadequate accommodation facilities	17
Other constraints (various)	19

Based on responses from n = 54 dive operators

The relative position of the constraints indicated as serious did not change much when the ranking of the top five was introduced. Marketing difficulties, price competition and competition from other sports and activities remained the leading causes of concern, while difficulties in securing insurance and worries about inadequate accommodation facilities maintained their place at the bottom of the list. The noticeable exceptions included weather, which was recognized as a constraint, but was not often ranked among the top five; concerns over inappropriate industry regulation, and human resource problems, which were more likely to be ranked among the top constraints facing the industry than to be cited as a problem (table 18).

[36] Govt. of Canada, Department of Fisheries and Oceans, *Fact Sheet on Recreational Scuba Diving in Pacific Canada*, Online, 2003, Accessed 30 May 2004, p. 1

Table 18:
Perceived Constraints to Growth Most Frequently Ranked Among the Top Five

Constraint	Percentage of dive operators that ranked the constraint among the top five
Marketing difficulties (incl. high marketing costs, lack of market research and lack of coordinated marketing)	66
Price competition	49
Competition from other sports and activities	47
Inappropriate industry regulations	36
Travel hassles (incl. limited air and/or ground access to visitors and travel safety concerns)	34
Human resources concerns (incl. finding and retaining staff with adequate training and staff performance concerns)	34
Difficulty in accessing capital dollars for expansion	28
Weather constraints	28
Difficult to secure insurance	19
Inadequate accommodation facilities	4
Other constraints (various)	17

Based on responses from n = 47 dive operators

Marketing difficulties appeared to be among the primary concerns of dive operators, with about two thirds of dive operators placing them among the top five, close to 17% more than those concerned with price competition, the second most serious constraint. Competition from other sports and activities received approximately as much attention as price competition within the diving industry, but considerably more than inappropriate industry regulation, travel hassles and human resource concerns. The *Other constraints* mentioned included local and global economy problems, environmental issues, lack of interest to the industry as well as lack of effective marketing, lack of convenience services for divers, and “fly-by-night” operators that create a bad reputation for the industry.

If the constraints were ordered by the ranking they received, calculated as an overall score where the most serious constraints ranked five times higher than the least serious one,[37] the ranking of the most serious constraints appears almost identical to the ranking of most frequently mentioned constraints in table 17.

It should be noted from the outlined findings that dive operators felt threatened by competition from other businesses in the industry about as often as from competition from other sports, which is indicative of what some operators described as a “history of fierce competition between diving companies.” Such attitudes have been recognized by dive operators as having “a negative effect on the industry as a whole” and some of the comments included in the open-ended questions of the survey indicated a desire to move past them and increase the cooperation among dive operators.

[37] This estimation method assumes that the difference between constraint categories are identical, i.e. the difference between the most serious and the second most serious constraint is equal to the difference between the third most serious and the fourth most serious constraint, etc..

Table 19:
Ranking of the constraints to business growth

Constraint	Most serious	Second	Third	Fourth	Fifth	Overall score*
Marketing difficulties (incl. high marketing costs, lack of market research and lack of coordinated marketing)	9	4	9	6	3	103
Competition from other sports and activities	7	8	3	2	2	82
Price competition	5	6	8	2	2	79
Inappropriate industry regulations	6	2	6	2	1	61
Human resources concerns (incl. finding and retaining staff with adequate training and staff performance concerns)	7	2	2	4	1	58
Travel hassles (incl. limited air and/or ground access to visitors and travel safety concerns)	3	7	3	3	0	58
Difficulty in accessing capital dollars for expansion	1	6	2	1	3	40
Weather constraints	1	1	4	3	4	31
Difficult to secure insurance	0	2	3	3	1	24
Inadequate accommodation facilities	0	0	0	1	1	3

* The overall score of a constraint is calculated as the weighted sum of the number of times it was ranked at each position, with the weights equal to $w_i = 6 – i$, where i is the number of the position considered (e.g., the most serious is position i =1, while the fifth most serious is position i = 5). Based on responses from n = 47 dive operators.

When asked to specify the top three threats to their business in an open-ended question (without being provided a set of options from which to choose) dive operators mentioned many of the constraints suggested in the closed question discussed above, such as the marketing problems and the excessive or inappropriate government regulations imposed on the industry. However, respondents also introduced some different concerns, such as the weak and/or unstable local economies, which were of particularly important because the majority of the industry’s clientele comes from within the province. The increasing costs of operation (partly attributed to insurance premium increases and partly to increased safety regulation) as well as negative media/public perceptions and lack of interest in the sport in general were also identified among the top threats to operators. Environmental concerns such as overfishing and pollution also took a prominent role, which is hardly surprising in an industry which depends on a natural resource base – the marine life. Global issues such as Mad Cow disease and SARS were also included as dive operators shared that those were among the reasons for cancellations of bookings from prospective visitors.

It was interesting to note that dive operators mentioned competition from other dive operators more frequently than competition from other sports and activities when providing their own answers compared to when they selected answers from a set of alternatives. Some dive operators noted that certain constraints they faced were due to “[their] business being new and undeveloped” and expected to overcome them as the business “establishes itself.” Table 20 shows the relative frequency with which each type of threat to dive operators’ business was mentioned in the survey responses.

Table 20:
Perceived threats to own business

Threat	Percentage of dive operators that ranked the threat among the top three
Competition from other dive operators	31
Unstable local economy	31
Government regulations and taxes	29
Lack of interest in the sport	20
Increasing insurance costs	18
Environmental concerns	16
Global issues (leading to decline in tourism)	16
Marketing difficulties	15
Competition from other sports	13
Transportation hassles	11
Lack of (artificial) reef in the area	7
Difficult to secure credit	7
Local politics (incl. native issues, access to dive sites)	6

Based on responses from n = 55 dive operators.

Among the other constraints facing the dive operators were the potential for accidents with divers or mechanical failure, Internet commerce displacing dive shops as a source of retail diving equipment and the aging population, which with time would decrease the fit and active client base of the sport.

Table 21:
Ranking of the top three threats to dive operators' business

Constraint	Most serious	Second	Third	Overall score*
Local economy	10	5	2	42
Government regulations and taxes	10	4	2	40
Competition from other dive operators	6	6	5	35
Global issues (leading to decline in tourism)	6	3	0	24
Insurance costs	4	4	2	22
Lack of interest in the sport	3	2	6	19
Other sports	4	3	0	18
Marketing difficulties	1	4	3	14
Environmental concerns	1	2	6	13
Transportation hassles	2	1	3	11
Difficult to secure credit	1	2	1	8
Local politics	1	2	0	7
Lack of reef	0	2	2	6

Based on responses from n = 55 dive operators.

While nothing can be done to change the weather, most of the other frequently reported constraints, especially the leading concern with marketing difficulties, could effectively be addressed by a united industry, which could evaluate the importance of each constraint and develop a business plan to successfully tackle the different problems facing dive operators in the province.

Suggestions for Resolving the Constraints Facing the Dive Industry

Dive operators identified two important issues to focus on in order to combat the constraints facing their long-term growth – expanding the client base by introducing more people to the recreational pursuit of diving and “putting British Columbia on the divers’ map,” both in the province and internationally. In addition, many operators recognized what one described as the “fierce competition between diving companies, which has a negative effect on the industry as a whole” and advocated for more cooperation within the industry.

Many of the dive operators felt that they would benefit from working as a group to pool resources and expertise in order to market the province as a world-class dive destination. They suggested targeted television advertising, as well as marketing out of the province. A number of operators pointed to the need for “stronger presence at consumer shows and at DEMA” and expanding their advertising to the large US market, for which “financial assistance and cooperation that’s focused is required” so that marketing reaches outside of British Columbia.

In addition, the idea of a “strong referral system that is built on supporting and respecting each operation for the uniqueness it has to offer” emerged, whereby dive operators would recommend each other’s businesses to their clients. Expanding co-operative marketing with accommodation providers was also seen as beneficial for the industry, as it would allow dive operators to provide packaged holidays and thus attract more clients. In addition, dive operators proposed working together with local tourism associations to ensure that diving is represented by tourism associations as one of the attractions of British Columbia.

While business diversification into non-diving activities was identified as one way to expand the small consumer base (small because of the small proportion of active divers in the population of British Columbia), a few dive operators advocated for focusing collective efforts on trying to expand the popularity of diving. They suggested working together with local tourism associations as well as promoting the airing of television programs which show diving as a recreational pursuit, not only commercial or discovery.

Some dive operators recommended establishing an industry association as a vehicle to bring the industry together. Among the suggested functions for such an association were lobbying for government loans and/or grants for small businesses for business expansion and education/certification upgrades, and lobbying for increased industry self-regulation as well as for group insurance rates for their members. There were also a lot of calls for lobbying for transportation improvements, especially to North Vancouver Island and to the Southern Gulf Islands. Other dive operators addressed particular technical issues and emphasized the need for solid planning and caution in sinking artificial reefs as the depth and current at the chosen location determine the skill level required to dive the artificial reef.

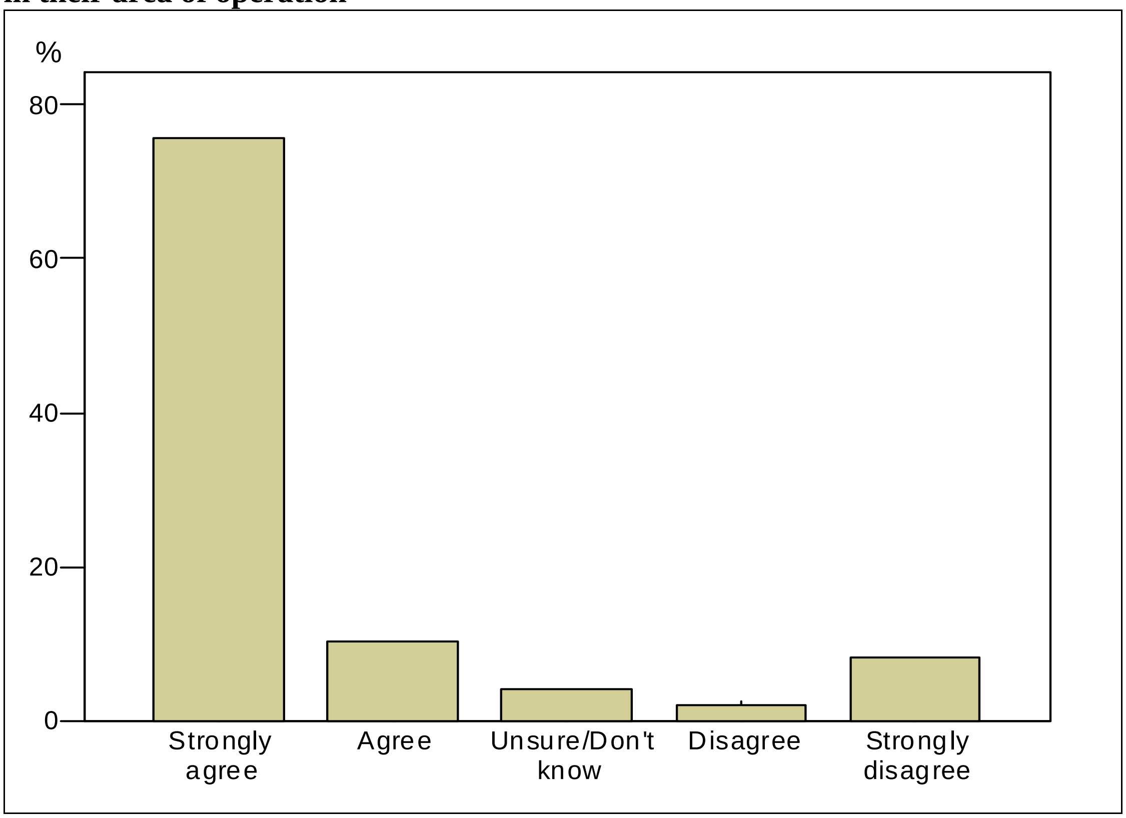
While most of the dive operators seemed to find government safety regulations too extensive, there were calls for more regulation for smaller boats to make it more difficult for fly-by-night operators to start up an unsafe charter boat and thus create negative publicity for the industry.

Attitudes Towards Artificial Reefs

The majority of dive operators expressed the belief that placing an artificial reef in the area where they operate would be a good idea (86% agreed or strongly agreed with the statement). In fact, about three quarters of the dive operators (76%) strongly agreed that placing a reef near their area of operation would be a good idea, while less than one in ten strongly disagreed (8%). Figure 13 shows the distribution of the opinions expressed.[38]

In addition, the vast majority of operators (88%) agreed or strongly agreed that an artificial reef placed near their area of operation would increase their business. Only 12% of dive operators reported being unsure or expressed their beliefs that an artificial reef placed near their area of operation would not increase their business.

Figure 13:
Dive operators' attitudes towards the claim that it would be a good idea to place an artificial reef in their area of operation



Based on responses from n = 49 dive operators.

Many of the dive operators expressed their willingness to contribute to a project bringing an artificial reef to their area of operation. About a third of all dive operators (32%) expressed willingness to assist financially with a potential artificial reef installation, while 30% were unsure and a little over a third (38%) were not prepared to donate money for the placement of an artificial reef. Many more operators, however, seemed willing to offer non-financial support to such a project. About three quarters of dive

[38] Note that this question was only asked to dive operators who ran diving charters or organized dives in 2003. Manufacturers and some dive shops that did not organize dive were excluded.

operators (76%) reported being willing to assist with fundraising for an artificial reef placement, while only 20% of dive operators were not prepared to do that. Even more operators (85%) were willing to assist with support work for an artificial reef installation while only 9% did not want to be involved at all.

It seems that most dive operators supported the idea of artificial reefs at least in theory. However, the positive reaction might have been a result of response bias if the respondent felt that it would be more socially desirable (in the spirit of the earlier-proposed cooperation) that they show support for such a project, which might have led to providing answers that did not necessarily correspond to their actual attitudes.

The dive operators that offered diving charters to their clients were asked about the types of dive sites accessible from their area of operation. Of those that answered, almost all reported having access to a dive site abundant with marine life which attracted divers. In addition, about 80% had access to a site with wrecks and about two thirds (67%) had access to an artificial reef.

In most cases, dive operators utilized all types of dive sites available to them. Dive sites known for the presence of certain marine animals were by far the most popular type of site, indicated as such by two thirds of the operators who had access to all three types of sites. The remaining one third of dive operators were almost equally split between preferring artificial reef sites and wreck sites. It should be considered that the popularity ratings of the dive sites were computed from the answers of a relatively small number of dive operators (n = 21) that had access to all three types of dive sites and therefore might not be entirely representative of the industry.

Attitudes Towards a Provincial Dive Industry Association

Just over half of all dive operators expressed an interest in pursuing the idea of a provincial-wide dive industry association as a way to deal with long-term constraints to industry growth. Only 9% reported not being interested at all and the rest 38% of dive operators reported being unsure and requiring more information about the said association (table 22).

Table 22:
Interested in joining a dive association to address long-term constraints to their business

	All dive operators %	Non-manufacturing dive operators %
Yes	53	53
Need more information	29	31
Don’t know	9	8
No	9	8
Total	100	100
Number of valid responses	55	51

Dive operators pointed out the difficulties as well as the potential benefits of a provincial-wide dive association. Some responses epitomized the feelings of insecurity and lack of desire to cooperate, while others offered practical suggestions for counteracting some of the difficulties.

A number of operators warned of the “insecurity in the industry” as well as “the competitive nature and history of [dive] shops in the province,” which would make it difficult to obtain consensus and tackle industry problems together. They pointed out that there have been unsuccessful attempts at uniting the industry in the past, and that these failures have become a burden for any new dive association.

Dive operators’ willingness to share information during the survey, as well as their reported interest in discussing the possibility of a provincial-wide organization, suggests that an association such as the Dive Industry Association of British Columbia stands a chance to unite the industry. Care should be taken to provide more information to dive operators across the province about the mission and goals of the association. There emerges a shared belief that provincial-wide dive association could be successful, especially if it is responsive to its members’ concerns and “utilize[s] the efforts of successful groups already operating in the industry [such] as Nanaimo Dive Association and Comox Valley Dive Association” and provides fair representation of all dive operators regardless of the location of their operation – Vancouver Island, the Sunshine Coast and Vancouver Area or the Interior.

The survey findings suggest that dive operators see a potential for a provincial-wide dive industry association which could bring dive operators together and offer assistance with coordinated and co-operative marketing strategies, with lobbying the government for support for the industry and credit preferences among others.

Conclusions and Observations

The DIABC survey of the recreational diving industry in British Columbia identified 116 businesses that offered products and services to clients or guests engaging in recreational scuba diving, including dive charters, live-aboards, recreational diving instruction, retail, wholesale or manufacturing of scuba diving equipment.

The economic contribution of the recreational diving industry in the province was valued at some $15,000,000 in 2003 from direct gross revenues. Manufacturers were responsible for approximately $2,950,000 of these revenues, with the remaining $12,000,000 – $13,000,000 attributable to non-manufacturing dive operators. Direct revenues accruing to dive operators from scuba tourism in British Columbia were estimated at about $4,300,000 million in 2003, which marks an increase from the $3,000,000 direct dive charter business revenues estimated in 1993. Furthermore, since this estimate includes only a fraction of the expenditures on meals and accommodation (as those were not always provided directly by the dive operators) and none of the additional spending associated with tourism (e.g. transportation, extra food not included in dive packages), **the real value of dive tourism in British Columbia is likely to be considerably higher than estimated in this report.**

Based on a combination of mail and telephone surveys conducted over two months in the spring of 2004, it was found that most of the dive operators were small businesses that on average employed between two and three full-time employees and one part-time employee in 2003. Their clientele came largely from within the province, although short-haul markets such as Alberta and the Northwest United States were well represented, accounting jointly for about a quarter of dive operators' clients. It was estimated that 24,400 divers had used the services of British Columbia dive charter operators in 2003, while between 9,600 and 9,800 people were enrolled in recreational scuba dive courses during the same period

The majority of dive operators were optimistic about the future of their business, with well over two-thirds expecting a revenue increase over the next 5 years. However, over two thirds of dive operators (70%) pointed to marketing difficulties as a serious constraint to the long-term growth of the industry. In addition, over half were worried about competition from other sports and activities, travel hassles including limited air and/or ground access to visitors and travel safety concerns and price competition among dive operators.

In 1994, a study of the recreational diving industry in British Columbia commissioned by the Tourism Division of the Ministry of Small Business, Tourism and Culture found that "the dive industry is poorly documented and has trouble representing its interests."[39] Unfortunately, ten years later, this largely remains the case. Overall, the DIABC survey results paint a picture of a small and relatively fragmented industry, which in 2003 was still experiencing a decline that followed a period of growth in the early 1990s. However, there might just be light at the end of the tunnel, as the idea of pooling efforts and resources together seems to be emerging among dive operators.

The majority of dive operators that responded to the survey pointed to marketing difficulties as a major constraint facing their industry and many expressed their belief that they would benefit from coming together as a group to successfully market British Columbia as a dive destination both inside

[39] British Columbia, Ministry of Small Business Tourism and Culture, Tourism Division, *Market Potential of Wreck Diving in British Columbia*. By Economic Planning Group, 1994 (Unpublished report), p. 30.

and outside the province. A number of operators went on to suggest particular marketing strategies, largely based on co-operative marketing, which they perceived to hold a yet untapped potential for fostering growth in the industry.

Such ideas of cooperation might come as a surprise from an industry that is quick to point to “the competitive nature and history of [dive] shops in the province” as its defining characteristic. However, if the industry manages to harness this emerging impetus for cooperation and pools its efforts and resources to tackle the constraints it is facing, it stands a chance to advance its status to a major adventure sports industry.

A provincial-wide dive association could use the dive industry survey findings outlined in this report as the foundation of a detailed business plan for industry development that would address the major concerns expressed by dive operators. In addition, it could initiate regular monitoring of industry development (perhaps annual). A short survey of a sample of dive operators every year would allow the dive industry to keep track of its growth in terms of employment and gross revenues, as well as to evaluate the perceived constraints facing the industry. With a better understanding of the recreational diving industry in British Columbia its members would be in a better position to promote their interests and to work together to raise the profile of recreational scuba diving both within and outside the province.

Appendix 1: Non-Response Bias Tests

In survey research, responses provided by a segment of a group are extrapolated to generalize about the whole group of interest (or population). However, such generalizations are based on the assumption that the sample surveyed is truly representative of the target population, an assumption which, unfortunately, is seldom questioned beyond a brief mention in passing. Every time when not all of the approached respondents agree to participate in the survey, researchers should ponder whether the refusals to participate were given randomly, or whether there was an underlying relevant characteristic[40] that made some members of the group of interest more likely to participate in the survey than others. If such a difference in relevant characteristics is found, extreme caution should be used when extrapolating sample findings as they might present a distorted (biased) picture of the population.

In the case of a survey of the recreational diving industry, such as this, it is important to investigate whether the dive operators that returned their completed questionnaires were similar in certain relevant characteristics to those dive operators that did not respond. To test whether there is a significant difference between respondents and non-respondents, telephone interviews were conducted with non-respondents during the month of April 2004. In total, 31 of the total 58 non-responding dive operators were interviewed, which corresponds to a response rate of 53%. A few strategic questions from the mail survey were selected for use in the telephone interview, so that it would become possible to compare questionnaire respondents to non-respondents on the basis of key operational characteristics such as length of operation, size of business, activities offered and percentage of revenue generated from tourism. It is relatively safe to assume that if the dive operators that returned their survey questionnaires displayed similar operational characteristics to those that didn't respond then there would be no reason to believe that their responses would not be representative of all dive operators.

To check whether there were systematic differences between the respondents and the non-respondents (who were interviewed by telephone), a number of statistical tests were conducted. Nonparametric statistics were chosen for the testing, because the data violates some of the assumptions of normality or large samples necessary for parametric statistics to be valid. The two subgroups investigated were fairly small (57 and 31 respectively) and they comprised a relatively large proportion of the population (approximately 50% in each case), which makes it likely that the values that these variables take would not be normally distributed. In addition, some of the variables used to compare respondents and non-respondents were binary and thus their distribution is likely to have been hypergeometric, not normal.

Non-parametric tests of association were used to check whether particular responses to relevant operational questions occurred with significantly different frequencies among respondents or non-respondents. The null hypotheses of no association between response mode (mail survey or telephone) and the variable in question was tested against the alternative hypotheses of association. The Chi-square test was used because it is independent of the distribution of the variables. A statistically significant chi-square statistic was accepted as evidence against the null hypotheses of no association, and thus as evidence for non-response bias. Cramer's V and Eta were used to gauge the magnitude of

[40] A relevant characteristic can be any characteristic of members of the population of interest that is suspected to be related to the main variables studied in the survey process. For example, the location of dive operators or the size of their gross revenues would qualify as relevant variables to investigate in the DIABC survey project because they more or less determine marketing behaviour, perceptions of constraints in front of the industry and future growth expectations.

an association between response and a particular variable, if such was found. The results of all tests are reported below, together with the relevant statistics.

1. Percentage of Revenue from Diving

Were operators that earned a greater proportion of their revenues from scuba diving more likely to return their questionnaires than those that earned a smaller share of their revenues from the sport? To test whether association existed between the percentage of revenues earned from recreational diving and the likelihood of returning the questionnaire, dive operators were separated into three groups based on the proportion of their revenues that came from recreational scuba diving. Table 1 shows the distribution of respondents and non-respondents across the different shares of revenue earned from recreational scuba diving.

Table 1:
Percentage of revenue from recreational scuba diving * Responding to the questionnaire

			Response		Total
			Respondents	Non-respondents	
Percentage of revenue from recreational scuba diving	1 - 49%	Count	11	5	16
		%	69%	31%	100%
	50 - 99%	Count	20	7	27
		%	74%	26%	100%
	100%	Count	26	18	44
		%	59%	41%	100%
Total		Count	57	30	87
		%	66%	34%	100%

Interpretation of the table should be pretty straightforward. Of the 16 dive operators that earned between 1% and 49% of their revenue from recreational diving 11 or 69% responded to the questionnaire. A similar percentage of the 27 dive operators that earned between 50% and 99% of their revenue from recreational diving (74%) responded to the questionnaire, while only 59% of the 44 operators that earned all their revenues from diving responded.

A brief look at the column figures in table 1 does not show a large difference in response rates among the three levels of specialization of dive operators as a majority of 59 – 74% from each specialization group returned their questionnaire. A Chi-square test confirms this observation with its high p-value (p = 0.416)[41]. We cannot reject the hypothesis of no association between proportion of revenue obtained from diving and response rate at the 5% significance level. Consequently, there is no strong evidence against the hypothesis that the dive operators that responded to the survey were representative of the dive industry.

[41] The p-value is the probability of obtaining a value this far away or further from that of the null hypothesis, given that the null hypothesis is true. Thus, a p-value of 0.416 implies that, provided that there was no association between the two variables (share of revenues earned from diving and responding to the questionnaire), 41.6 out of 100 times the observed differences between samples of respondents and non-respondents will show the same level of variation as was observed in this sample. A very low p-value, say 0.05, would lead one to reject the null hypothesis as it implies that the probability of obtaining the observed result by chance is very small if the null hypothesis were true.

2. Length of Operation

Dive operators were separated into four categories based on their length of operation in order to test whether a significant association exists between a company's length of operation and responding to the questionnaire. Care was taken to ensure that the categories were of similar size so that comparisons could be easily made (table 2).

Table 2:
Length of operation * Responding to the questionnaire

			Response		Total
			Respondents	Non-respondents	
Length of operation	1 - 3 years	Count	16	6	22
		%	73%	27%	100%
	4 -10 years	Count	17	9	26
		%	65%	35%	100%
	11 - 19 years	Count	13	8	21
		%	62%	38%	100%
	20+ years	Count	10	8	18
		%	56%	44%	100%
Total		Count	56	31	87
		%	64%	36%	100%

It seems that the number of years an operator has been in business was negatively associated with its likelihood to return the questionnaire. This might lead one to suspect that younger companies were better represented in the sample at the expense of older companies. However, the large p-value of the Chi-square test (p = 0.718) indicates that the observed relationship is most likely due to chance alone and cannot be considered statistically significant (which requires a much smaller p-value).[42] Therefore, it is concluded that no significant difference existed between respondents and non-respondents in terms of length of operation.

3. Offering Dive Charters

Table 3 shows that most of the operators that responded to the questionnaire offered dive charters (84%), compared to only about half of the operators that did not respond (55%). Could this result be due to statistical chance, or does it show that the operators that did not offer charters were in fact less likely to respond to the questionnaire?

[42] A p-value equal to 0.05 is often used as a cut-off point for statistical signifance, but it should be understood that this particular choice is rather arbitrary. There is noting inherent in the number 5 to explain why if a results occurs by chance 4 times out of 100 it does not constitute strong evidence against the null hypotheses, but if it occurs 6 out of 100 times it does.

Table 3:
Offered charters * Responding to the questionnaire

			Response		Total
			Respondents	Non-respondents	
Offered charters	Yes	Count	47	17	64
		%	73%	37%	100%
	No	Count	9	14	23
		%	39%	61%	100%
Total		Count	56	31	87
		%	64%	36%	100%

The low p-value of the Chi-square statistic (p = 0.003) constitutes strong evidence against the hypothesis of no association and provides the basis to conclude that statistically significant association exists between offering dive charters and the returning the survey questionnaire. However, only because an association turns out to be statistically significant does not imply that it plays an important role in the issues investigated. It is crucial to examine the magnitude of any statistically significant association in order to ascertain its effects. The association between offering charters and responding to the questionnaire seems to be only moderate, as the magnitude of Cramer's V indicates (Cramer's V = 0.316, p = 0.003). Therefore, although there is evidence that charter operators were slightly overrepresented among questionnaire respondents, it is likely that the moderate association does not have a large effect on the findings.

4. Offering Recreational Dive Instruction

The rates of questionnaire return among dive operators were similar regardless of whether they offered instruction to their clients or not (table 4).

Table 4:
Offered instruction * Responding to the questionnaire

			Response		Total
			Respondents	Non-respondents	
Offered instruction	Yes	Count	36	18	54
		%	67%	33%	100%
	No	Count	19	12	31
		%	61%	39%	100%
Total		Count	55	30	85
		%	65%	35%	100%

Statistical testing confirms the initial hypothesis of no association as the high probability value of the Chi-square test (p = 0.618) indicates that any observed differences are likely due to chance and there does not exist a statistically significant association between offering instruction and responding to the questionnaire. Therefore, we conclude that the questionnaire respondents were representative of the dive industry with respect to offering instruction

5. Size of Operation

Perhaps one of the most important issues to be investigated in the context of non-response error is whether the likelihood of responding to the survey questionnaire was related to the size of the dive operators. If that were the case, then using the data from the sample of respondents in order to describe the dive industry would bias some of the key findings of the study related to estimating the size of the industry. In addition it is likely that differences exist among large and small operators in business strategies, marketing practices and other critical areas of business operation covered in this survey.

In the DIABC survey, the size of dive operators was examined using several different variables including total gross revenues, number of full-time and part-time employees, number of student enrolled in dive instruction classes and number of divers on charter. The use of different variables allowed for cross-referencing and internal consistency checks (e.g. operators that had more employees should also have reported higher revenues) and thus made it possible to estimate the size of the dive industry more accurately.

Each of the variables used as a proxy for size of operation was tested separately for association with the likelihood of responding to the questionnaire. The results of these tests are reported below.

A. Total Gross Revenues

Dive operators were separated into three categories, according to the size of their reported revenue in order to check whether operators with higher revenues were more or less likely to respond to the questionnaire.

Table 5:
Total revenues for 2003 * Responding to the questionnaire

			Response		Total
			Respondents	Non-respondents	
Total revenues for 2003	$0 - 50,000	Count	19	13	32
		%	59%	41%	100%
	$50,000 - 200,000	Count	15	7	22
		%	68%	32%	100%
	$200,000+	Count	14	5	19
		%	74%	26%	100%
Total		Count	48	25	73
		%	66%	34%	100%

The raw data in table 5 suggests that a higher proportion of the operators with higher revenues may have returned their questionnaire than of the operators with lower revenue (i.e. a positive relationship exists between the size of the total revenues earned and responding to the questionnaire). However, the high p-value of the Chi-square test ($p = 0.558$) does not provide sufficient evidence against the hypotheses that dive operator’s revenues were not related (in a statistically significant way) to the likelihood to respond to the questionnaire. Thus, the dive operators that responded to the questionnaire can be regarded as representative of the dive industry in terms of revenue distribution.

B. Number of Employees

Most of the dive operators participating in the survey and the telephone interviews (78%) were open year round, as indicated by their reporting at least one employee for each month. The high probability value of the Chi-square test (p = 0.865) suggests that there is no statistically significant relationship between being open year round and returning the survey questionnaire.

In order to compare dive operators in terms of the number of employees they had, the number of full-time employees in 2003 is calculated for each operator by dividing the sum of full-time workers the operator employed throughout the year by 12 (months in a year). It is reasonable to assume that larger companies would have higher full-time employment than smaller companies. For easier interpretation, the dive operators are separated into four categories according to the number of full-time workers they employed in 2003 (table 6).

Table 6:
Yearly full-time positions * Responding to the questionnaire

			Response		Total
			Respondents	Non-respondents	
Yearly full-time positions	No full-time employees (part-time only)	Count	5	9	14
		%	36%	64%	100%
	Less than one full-time position per year	Count	11	7	18
		%	61%	39%	100%
	1.01 - 5.99 full-time positions per year	Count	27	10	37
		%	73%	27%	100%
	6+ full-time positions per year	Count	1	5	6
		%	17%	83%	100%
Total		Count	44	31	75
		%	59%	41%	100%

A brief look at the data shows that the smallest and the largest dive operators (i.e. the ones employing only part-time workers and the ones with 6 or more full-time positions) had a considerably lower rate of returning their questionnaires than the medium-sized dive operators. The Chi-square test confirms this observation with a low p-value of the Chi-square statistic (p = 0.014), which is less than 0.05, the standard cut-off for statistical significance The only caveat here is that the Chi-square statistic may not be reliable, as there are 2 cells in the table (25% of cells) with expected values lower than 5, and Chi-square test is known to be most reliable only when there are fewer than 20% of cells with expected value lower than 5. Nevertheless, the departure from the required value is not very large (25% instead of 20%) thus it is likely that the Chi-square test results are still valid. Therefore, there is some evidence against the hypothesis of no association between the number of workers and the likelihood of returning the questionnaire. However, the value of Cramer’s V (Cramer’s V = 0.375, p = 0.014) suggests that the association between the two variables examined is only moderate in magnitude.

On the other hand, one should consider that when the cut-off values between the last two categories are changed so that the last category includes more observations (which would make the Chi-square value reliable), the p-value of the Chi-square statistic increases past the significance cut-off of 5%. Thus, it can be concluded that while there is evidence that the smallest as well as the largest dive operators were underrepresented in the survey, this evidence is not very strong.

Further, the data in table 6 exclude many part-time positions, which might affect the results. In order to aggregate full-time and part-time employment, it was assumed that every two part-time positions in the industry were equivalent to one full time position. While this is a rather simplified conversion method and is not necessarily correct for every individual operator, on the average it is likely to provide a reasonable estimate of employment. This estimate, here called the full-time employment equivalent, is obtained by adding the yearly full-time positions offered by the particular dive operator to half of the yearly part-time positions offered by them. As usual, dive operators were split into different groups according to their full-time employment equivalent in order to examine test for a potential relationship between the number of full-time equivalent positions offered and returning the survey questionnaire.

Table 7:
Yearly full-time employment equivalent * Responding to the questionnaire

			Response		Total
			Respondents	**Non-respondents**	
Yearly full-time employment equivalent	Less than one yearly full-time equivalent	Count	8	8	16
		%	50%	50%	100%
	Between 1 and 2 full-time equivalents	Count	11	9	20
		%	55%	45%	100%
	Between 2 and 6 full-time equivalents	Count	20	8	28
		%	71%	29%	100%
	More than 6 full-time equivalents	Count	5	6	11
		%	46%	54%	100%
Total		Count	44	31	75
		%	59%	41%	100%

Now that after part-time employment has been accounted for, the pattern observed in table 6 is still discernible (the smallest and the largest dive operators seem to have responded to the survey at lower rates than the middle two categories) but the differences are not as big as they were earlier. The Chi-square test with its high p-value ($p = 0.351$) indicates that even if such a relationship existed, it is not statistically significant.[43]

This phenomenon might be easily explained. It is highly likely that some of the smallest dive operators did not return their questionnaire because they did not feel their business was large enough to warrant the interest of the researchers. In fact, some of the operators expressed such a concern when contacted about the phone interview, but later agreed to participate when it was explained to them that their responses would be valuable for the project. On the other hand, some of the large dive operators might have not seen a direct benefit from the project, as their businesses were already developing well on their own, which might have motivated their decision to not return their surveys. Nevertheless, when contacted for the telephone interview some did agree to participate.

To sum up, there seems to be some evidence that the survey respondents were more representative of the medium-sized dive operators than they were of the smallest or the largest in the industry. However, this evidence is not statistically significant in most of the cases examined. In addition, the two outlier

[43] This time there is only one cell (12.5% of all cells) with expected value less than 5, so the Chi-square statistic is reliable.

groups represent a relatively small proportion of the industry[44] and thus any effects on the survey results should be relatively minor.

Furthermore, in the questions that overlapped between the survey and the telephone interview, a reasonable proportion of both outlier operators was covered, which should ensure that these data are representative of the whole industry. In addition, as any underrepresentation of the smallest operators would likely bias the estimates of the industry size upwards while underrepresentation of large operators would bias the estimates downwards, any effects on the overall estimates of industry size are likely to cancel each other out and not affect the survey findings considerably.

C. Number of Diving Students

Dive operators were divided in three groups of similar size according to the reported number of people enrolled in their dive recreational courses.

Table 8:
Total number of people enrolled in recreational dive courses * Responding to the questionnaire

			Response		Total
			Respondents	Non-respondents	
Total number of people enrolled in recreational dive courses	1 - 39	Count	13	5	18
		%	72%	28%	100%
	40 - 139	Count	7	10	17
		%	41%	59%	100%
	140+	Count	14	3	17
		%	82%	18%	100%
Total		Count	34	18	52
		%	65%	35%	100%

Table 8 shows that dive operators with 40 to 139 diving students had a much lower response rate on average than those with more and those with fewer students. The Chi-square test confirms that there is indeed strong evidence against the hypothesis of no association between the number of diving students in 2003 and responding to the questionnaire, as the probability value of the test statistic is less than the cut-off value of 5% ($p = 0.031$). To determine the magnitude of the relationship the Cramer's V statistics is calculated. As a result, only a moderate association is found between the number of people enrolled in dive courses and responding to the questionnaire (Cramer's V = 0.365, $p = 0.031$).

However, one must consider the fact that only 52 dive operators reported the number of their diving students, which corresponds to 59% of the dive operators sampled. Therefore, although the dive operators that offered instruction to 40 – 139 students in 2003 might be somewhat underrepresented in the sample of survey respondents, it is not likely that this would lead to substantial changes in the results.

[44] 27% in the case of the full-time positions breakdown and 36% in the case of the full-time employment equivalent breakdown

D. Number of Divers on Charter

Dive operators that offered charters were asked about the number of divers they took out in 2003, which could serve as a reasonable proxy for the size of their operation. Dive operators that took more divers on charter can be assumed to be larger, to employ more workers and to generate higher revenues. To test whether there was a systematic relationship between the number of divers taken on charter and responding to the questionnaire, dive operators were split into four groups of similar size according to the number of divers they took out on charter.

Table 9:
Number of divers on charter in 2003 * Responding to the questionnaire

			Response		Total
			Respondents	Non-respondents	
Number of divers on charter in 2003	1 - 50 divers	Count	15	4	19
		%	79%	21%	100%
	51 - 150 divers	Count	10	4	14
		%	71%	29%	100%
	151 - 300 divers	Count	11	5	16
		%	69%	31%	100%
	301+ divers	Count	11	4	15
		%	73%	27%	100%
Total		Count	47	17	64
		%	73%	27%	100%

Table 9 does not suggest any particular association between number of divers taken on charter and the likelihood of returning the survey questionnaire. Both smaller and larger dive operators were approximately equally represented among respondents (69 – 79%). The high p-value of the Chi-square test ($p = 0.918$) confirms these observations of the raw data and does not provide sufficient evidence to reject the hypothesis of no association between responding to the questionnaire and the number of divers taken on charter. Therefore, the dive operators that returned their survey questionnaires are likely to be representative of the whole dive industry.

6. Offering Only Scuba Diving

A look at the raw data suggests that operators that offered activities other than scuba diving might have been slightly more likely to return their questionnaires than operators that specialized exclusively in scuba diving (table 9). However, the relatively high p-value of the Chi-square statistic ($p = 0.093$) indicates that every 9 times out of 100, a difference as large as the observed or larger would occur by chance. The accepted statistically significant cut-off is 5 out of 100, thus we cannot reject the hypothesis of no association. Therefore, the dive operators that returned their questionnaire can be considered broadly representative of the industry in terms of range of activities offered.

Table 9:
Only scuba diving * Responding to the questionnaire

			Response		Total
			Respondents	Non-respondents	
Offered only scuba diving	Offered only scuba diving	Count	22	19	41
		%	54%	46%	100%
	Offered other activities beside scuba diving	Count	26	10	36
		%	72%	28%	100%
Total		Count	48	29	77
		%	62%	38%	100%

7. Earning a Higher Percentage of Revenues from Tourism

Dive operators were split into groups according to the share of their revenues coming from tourists. A few different ways to group the data were tried and the four-group breakdown in Table 10 was selected because it ensured that the Chi-square statistic was reliable (less than 20% of the cells had an expected value of 5).

Table 10:
Percentage of revenues generated by tourist divers * Responding to the questionnaire

			Response		Total
			Respondents	Non-respondents	
Percentage of revenues generated by tourist divers	0 - 9%	Count	12	6	18
		%	67%	33%	100%
	10 - 40%	Count	14	5	19
		%	74%	26%	100%
	41 - 90%	Count	8	9	17
		%	47%	53%	100%
	91 - 100%	Count	10	4	14
		%	71%	29%	100%
Total		Count	44	24	68
		%	65%	35%	100%

The table does not suggest a particular type of association between the proportion of revenue generated by tourists and responding to the questionnaire. The high p-value of the Ch-square statistic ($p = 0.348$) indicated that there is no strong evidence to reject the hypothesis of no association between the share of revenues generated by tourists and responding to the questionnaire. Thus, the survey respondents can be considered representative of the dive industry in terms of the percentage of their revenue that comes from tourists.

8. Location

It is also important to test whether dive operators from different locations within the province were equally well represented in the sample of survey respondents. Since mailing addresses were available for all 116 operators in the sample, it was possible to examine the difference between the operators that returned their questionnaire and all operators that did not (not only the ones who responded to the telephone survey). In this way it can objectively be determined whether the respondent sample was representative of the whole dive industry population.

The regional division of British Columbia into four areas was based on the division used in the 2004 *BCDiveguide.com*© Guidebook. A map of the division is provided in the text of this report, figure 1 on page 13.

Table 11:
Location * Responding to the questionnaire

			Response		Total
			Respondents	Non-respondents	
Location	Vancouver Area and the Sunshine Coast	Count	22	19	41
		%	54%	46%	100%
	Southern Vancouver Island	Count	23	24	47
		%	49%	51%	100%
	Northern Vancouver Island	Count	6	6	12
		%	50%	50%	100%
	Interior	Count	7	9	16
		%	44%	56%	100%
Total		Count	58	58	116
		%	50%	50%	100%

The data from table 11 indicates that all areas were fairly equally represented among the survey respondents, as close to half of dive operators based in every single location returned their surveys. The high p-value of the Chi-square statistic ($p = 0.921$) demonstrates that the hypotheses of no association between location and responding to the questionnaire cannot be rejected at a statistically significant level. Therefore, it can be concluded that the survey respondents were representative of the dive industry in terms of the location where their dive operation was based.

Summary

Of the various variables tested for association with responding to the survey questionnaire, only three were found to be statistically significant:

- operators that offered diving charters in 2003 were found to be moderately overrepresented among survey respondents;
- operators that hired less than one or more than six full-time employees in 2003 were moderately underrepresented among survey respondents;
- operators that offered dive instruction to 40 – 139 people in 2003 were moderately underrepresented among survey respondents.

In all cases the relationship between the variable in question and responding to the survey questionnaire was only moderate in magnitude and in the two latter cases the dive operators in question comprised a relatively small proportion of the population of all dive operators in the industry. Therefore, their effect on the overall results is likely to be fairly minor. This and the fact that no statistically significant association was found between the other variables investigated and responding to the questionnaire leads to the conclusion that the dive operators that returned their survey questionnaire can be considered reasonably representative of the dive operators that participated in the telephone survey. If the participants in the phone interview can be assumed to be a random sample of the non-respondents to the questionnaire, then the possibility of serious non-respondent bias could be ruled out.

Nevertheless, although it cannot be demonstrated with certainty that the 27 operators that did not participate in either the survey or the phone interview were not in some important way different from the participating dive operators, non-respondent bias is not likely to have seriously affected the survey findings. It should be noted that even if non-respondent bias were to be a problem, the estimates based on responses to questions featured in both the mail-out survey and the telephone interview can be expected to provide a good approximation of the whole recreational dive industry in British Columbia as they are based on the responses of about 77% of all dive operators in the province.

Appendix 2: Questionnaires

1. Mail Survey Questionnaire

SECTION 1: **The first section asks questions about your business and the products or services you offer. Please provide the most accurate responses possible.**

1. Approximately what percentage of your company's revenue comes from clients or guests who are engaging in recreational scuba diving? Please include all revenue from dive charters, live-a-boards, instruction, retail or manufacturing of scuba diving equipment. *Please fill in the appropriate percentage.*

   A. _________ % OF REVENUE FROM DIVERS ⟶ *If 0%, please proceed to* ***Question 31*** *or contact Mr. Donnie Reid at 604-659-3484 to be removed from the list.*

   B. DON'T KNOW

2. In what year did your business begin offering products and/or services to clients or guests engaging in recreational scuba diving (charters, live-a-boards, instruction, retail or manufacturing of equipment)? *Please fill in the appropriate year.*

   _________YEAR

3. a) Approximately how many divers did you take scuba diving in 2003? *Please fill in the number of divers you took scuba diving in 2003. If you did not run charters or organize dives, please indicate below and skip to the appropriate question.*

   A. _________# OF DIVERS or

   B. OUR COMPANY DID NOT RUN CHARTERS OR ORGANIZE DIVES IN 2003 ⟶ *Please skip to* ***SECTION 3, Question 18****.*

   b) Approximately what percentage of the total number of divers you took out in 2003 were engaged in activities that lasted a half day (less than four hours), and what percentage of your divers engaged in activities for a full day (four hours or longer) or longer than a day? *Please fill in the percentage of divers who engaged in half day, full day and multiple days in 2003. The total should equal 100%.*

   _________% OF DIVERS ENGAGED IN ACTIVITES FOR HALF A DAY (LESS THAN 4 HRS.)

   _________% OF DIVERS ENGAGED IN ACTIVITES FOR A FULL DAY (4 HRS. OR LONGER)

   _________% OF DIVERS ENGAGED IN ACTIVITES FOR MORE THAN A FULL DAY

   = **100%**

4. Approximately how many divers were enrolled in recreational diving instruction classes offered by your company in 2003? *Please fill in the number of divers enrolled in your recreational diving classes in 2003, separating the divers in new the first-time certification classes from those enrolled in continuing education classes. If you did not offer any diving instruction in 2003, please circle choice C.*

   A. ________ # OF DIVERS ENROLLED IN FIRST-TIME CERTIFICATION CLASSES
   B. ________ # OF DIVERS ENROLLED IN CONTINUING EDUCATION SCUBA CLASSES
   C. OUR COMPANY DID NOT OFFER DIVING INSTRUCTION IN 2003

5. In 2003, what other activities or adventure sports did you offer to your clients in addition to scuba diving? *Mark all items that apply.*

	Mark Here
OUR COMPANY ONLY OFFERED SCUBA DIVING	☐
CANOEING/ KAYAKING	☐
GOLFING	☐
HIKING	☐
TOURS TO CULTURAL SITES	☐
OTHER WATER SPORTS	☐
OTHER: ___________________________	☐
OTHER: ___________________________	☐

6. Compared to 2002, did the total number of divers you took out increase, decrease or stay about the same in 2003? *Please circle the appropriate response and indicate the percentage increase or decrease for response A and B.*

   A. INCREASE → *By what percentage did your divers increase? ______%*
   B. DECREASE → *By what percentage did your divers decrease? ______%*
   C. STAY ABOUT THE SAME
   D. DON'T KNOW

7. a) What types of dive sites are accessible in your area? *Place a check mark beside all types of diving sites accessible in the area where you operate in column (a) of the following table.*

   b) In 2003, did you operate dives at the various different types of dive sites accessible in your area? *Place a check mark beside all types of diving sites at which you operated dives in 2003 in the table below under column (b).*

   c) What was the most popular dive site among your divers in 2003? *Please mark the most popular type of dive site in your area in the table below in column (c). If you Don't Know, please write DK under column (c).*

Types of dive sites	*a. Accessible* *(mark all that apply)*	*b. Operated dives* *(mark all that apply)*	*c. Most popular* *(mark only one)*
1. DIVE SITES KNOWN FOR THE PRESENCE OF CERTAIN MARINE ANIMALS (E.G. OCTOPUS, SIX GILL SHARKS, WOLF EELS, SEALS, SEA LIONS)	☐	☐	☐
2. DIVE SITES WITH WRECKS	☐	☐	☐
3. DIVE SITES WITH ARTIFICIAL REEFS	☐	☐	☐

In questions 8 and 9 please read the statement given and circle the answer choice that best describes your opinion.

8. It would be a good idea to place an artificial reef in the area where you operate. *Please circle the answer that best describes your opinion.*

   A. STRONGLY AGREE
   B. AGREE
   C. UNSURE/DON'T KNOW
   D. DISAGREE
   E. STRONGLY DISAGREE

9. The installation of a new artificial reef in your area would help to increase your business. *Please circle the answer that best describes your opinion.*

   A. STRONGLY AGREE
   B. AGREE
   C. UNSURE/DON'T KNOW
   D. DISAGREE
   E. STRONGLY DISAGREE

10. Would you be willing to assist with the fundraising and/or support work necessary for the placement of an artificial reef in your area? *Mark the appropriate reply for each of A, B and C.*

	YES	NO	DON'T KNOW
A. PROVIDE FINANCIAL ASSISTANCE	☐	☐	☐
B. ASSIST WITH FUNDRAISING	☐	☐	☐
C. ASSIST WITH SUPPORT WORK	☐	☐	☐

SECTION 2:	**The second section asks you about your clients. If you do not know the exact answer to any of the questions, please provide your best estimate.**

11. Tourists are travelers who are outside of their usual environment on an overnight trip that lasts at least one night. Though they may not have stayed overnight with you, *approximately* what percentage of your 2003 revenue was generated from tourist divers? *Please fill in the proportion of your revenue from tourist divers or circle Don't Know.*

    A. __________% of 2003 REVENUE
    B. DON'T KNOW

12. Thinking of all your recreational scuba divers what percentage of your **2003** divers came from each of the following geographic markets? Please include all divers – tourists and non-tourists (i.e. local residents and day-trip divers). *Fill in the appropriate percentage in the first column. Please mark zero percent (0%) if there were no divers from a particular market.*

    ______% BRITISH COLUMBIA
    ______% ALBERTA
    ______% ONTARIO
    ______% OTHER CANADA
    ______% NORTH WESTERN US (Washington, Oregon, Idaho, Montana, Alaska)
    ______% CALIFORNIA
    ______% OTHER US
    ______% UNITED KINGDOM
    ______% GERMANY
    ______% OTHER EUROPE
    ______% ASIA
    ______% OTHER ________________
    = 100% TOTAL DIVERS

13. Approximately what percentage of your 2003 divers were male and what percentage were female? *Please fill in the appropriate percentages.*

    _________ % MALE DIVERS
    _________ % FEMALE DIVERS
    = **100% TOTAL DIVERS**

14. Approximately what percentage of your 2003 divers were repeat guests? Repeat guests are those that have been to your establishment on at least one prior occasion to their visit in 2003. *Please fill in the appropriate percentage.*

    _________ % REPEAT GUESTS

15. Approximately what percentage of the divers you took out in 2003 fell into the following age categories? *Please mark zero percent (0%) if there were no divers in an age category.*

______ % 19 YEARS OR YOUNGER
______ % 20 TO 24 YEARS
______ % 25 TO 34 YEARS
______ % 35 TO 44 YEARS
______ % 45 TO 54 YEARS
______ % 55 TO 64 YEARS
______ % 65 YEARS AND OVER
= 100% TOTAL DIVERS

16. Has the age makeup of your clients changed in the last 10 years (or since opening, if operating for less than 10 years)? *Circle the appropriate response and if yes, please explain briefly in the space provided.*

Please explain briefly

A. YES
B. NO
C. DON'T KNOW

17. Approximately what percentage of your 2003 divers fell into the following groups? Mark zero percent (0%) if there were no divers in a particular group. *Please fill in the appropriate percentages.*

_____ % INDIVIDUAL
_____ % COUPLES
_____ % FAMILIES
_____ % FRIENDS
_____ % TOUR GROUP
_____ % OTHER ______________________
= 100% TOTAL DIVERS

SECTION 3: The third section asks questions that relate to your company's staffing.

When responding to the staffing questions please include yourself or other family members or individuals on contract when you are considering the number of people your company employs. In addition, please define full time employees as those usually working 30 hours or more per week and part time employees as those usually working less than 30 hours per week.

18. a) During what months last year (2003) did your company employ full-time, part-time or contract staff? *Place a check mark beside all months where your company had paid staff in the first column of the following table.*

    b) How many full-time people did your company employ during each month when you had employees? *Please record your responses for each month in the table below under the second column (b). Fractions are allowed to reflect staff members who may have only worked part of a month.*

    c) How many part-time people did your company employ during each month when you had employees? *Please record your responses for each month in the table below under the third column (c). Fractions are allowed to reflect staff members who may have only worked part of a month.*

An example is provided and shaded gray in the following table. In this case, the dive operator employed six full time and two part time staff in January.

a. In 2003, what months do you employ full or part time staff? **Check all appropriate months**		**b. How many full-time staff do you employ in each month?** *Fill in the appropriate number of full-time staff you had in each month. Full-time staff usually worked 30 hours or <u>more</u> per week.*	**c. How many part-time staff do you employ in each month?** *Fill in the appropriate number of part-time staff you had in each month. Part-time staff usually worked <u>less</u> than 30 hours per week.*
√	**JANUARY**	*6*	*2*
_____	JANUARY	_____	_____
_____	FEBRUARY	_____	_____
_____	MARCH	_____	_____
_____	APRIL	_____	_____
_____	MAY	_____	_____
_____	JUNE	_____	_____
_____	JULY	_____	_____
_____	AUGUST	_____	_____
_____	SEPTEMBER	_____	_____
_____	OCTOBER	_____	_____
_____	NOVEMBER	_____	_____
_____	DECEMBER	_____	_____

SECTION 4: The fourth section of this survey asks you about your advertising and marketing activities. Please provide the most accurate responses possible.

19. What percentage of your total bookings or sales came from the following sources in 2003? *Fill in the appropriate percentage.*

_____ % REPEAT GUESTS/CLIENTS
_____ % WORD OF MOUTH
_____ % DRIVE BY/WALK IN
_____ % INTERNET
_____ % MARKETING/ADVERTISING
_____ % OTHER ______________________
= 100% TOTAL CLIENTS OR SALES

20. a) What marketing methods did you use in 2003? *Please mark each method used in column (a).*

b) For each method used, please indicate the approximate **percentage of your total marketing budget** you allocated to this method in 2003. *For each marketing method selected, fill in the appropriate percentages in column (b), the total should equal 100%.*

MARKETING METHODS	a. 2003 Methods	b. % of total marketing budget
BROCHURES, POSTERS	☐	________ %
CONSUMER OR TRADE SHOWS	☐	________ %
TRAVEL AGENTS	☐	________ %
WHOLESALE OPERATORS	☐	________ %
DIRECT MAIL TO FUTURE PROSPECTS	☐	________ %
DIRECT MAIL TO PAST CUSTOMERS	☐	________ %
E-MAIL PROMOTIONS	☐	________ %
FILM SHOWS, SLIDE SHOWS	☐	________ %
NEWSPAPER ADS	☐	________ %
YOUR WEB SITE	☐	________ %
OTHER WEB SITES	☐	________ %
PROVINCIAL/TERRITORIAL TRAVEL GUIDES	☐	________ %
COMMERCIAL TRAVEL GUIDE	☐	________ %
RADIO OR TELEVISION ADS	☐	________ %
MAGAZINE ADS	☐	________ %
PUBLIC RELATIONS (E.G. FEATURE ARTICLES)	☐	________ %
YELLOW PAGES	☐	________ %
OTHER: ____________________________	☐	________ %
NONE	☐	________ %
TOTAL		**= 100 %**

21. Did you participate in any co-operative marketing programs in 2003? Co-operative marketing programs include marketing activities where a company partners with one or more associations, companies or regional organizations. *Circle the appropriate response and if YES please specify what types of companies or associations you partnered with in the space provided.*

Which companies or associations did you partner with?

A. YES
B. NO

SECTION 5: The fifth section asks questions about your revenues. Please provide the most accurate responses possible.

22. What were your total revenues in 2003? *Mark the appropriate category.*

	Mark Here
$ 0 – 50,000	☐
$ 50,000 – 100,000	☐
$ 100,000 – 200,000	☐
$ 200,000 – 300,000	☐
$ 300,000 – 500,000	☐
$ 500,000 +	☐
PREFER NOT TO ANSWER	☐

23. Of the total 2003 revenues reported in Question 22 above, what percentage was generated by each of the following categories? *Fill in the appropriate percentage. Please mark zero percent (0%) if there was no revenue in a particular category.*

______ % DIVING INSTRUCTION
______ % GUIDED SCUBA DIVING ACTIVITIES (CHARTER TRIPS)
______ % EQUIPMENT RENTALS
______ % SCUBA DIVING EQUIPMENT SALES (RETAIL)
______ % OTHER ACTIVITIES OR ADVENTURE SPORTS
______ % ACCOMMODATION
______ % MEALS (FOOD AND BEVERAGE)
______ % OTHER:________________________
= 100% TOTAL REVENUES

24. How many separate business locations did your company operate in 2003? *Please indicate the number of business locations from which your company operated in 2003. For example, if your company owned two dive shops at different addresses, this would count as two separate locations.*

A. ONE
B. TWO
C. THREE
D. FOUR OR MORE

25. Has your business revenue increased, decreased or stayed about the same in the past ten years (since 1994 or since opening, if operating less than ten years)? *Please circle the appropriate response and indicate the percentage increase or decrease for response A and B.*

A. INCREASED → *By what percentage?* _______ %
B. DECREASED → *By what percentage?* _______ %
C. STAYED ABOUT THE SAME
D. DON'T KNOW/NO OPINION

26. In the next five years, do you expect your business revenue to increase, decrease or stay about the same? *Please circle the appropriate response and indicate the expected percentage increase or decrease for response A and B.*

A. INCREASE → *By what percentage?* _______ %
B. DECREASE → *By what percentage?* _______ %
C. STAY ABOUT THE SAME
D. DON'T KNOW/NO OPINION

SECTION 6: The sixth section asks questions about your operating environment. Please provide the most accurate responses possible.

27. What are the three most serious threats to your business? *Please list the three most serious threats to your business, starting with 1 = the most serious.*

1. ______________________________
____
2. ______________________________
____
3. ______________________________
____

28. Thinking about the long-term growth of your diving business.

a) Which constraints will impact your long-term growth? Please mark all constraints to the growth of your business in column (a).
b) Of all constraints you selected in column (a), which **five constraints** will have the most serious impacts on the long-term growth of your business? Please rank the most serious five constraints from 1 to 5, where 1 = the most serious constraint.

CONSTRAINTS TO BUSINESS GROWTH	**a. All constraints** *(mark all that apply)*	**b. Most serious constraints** *(rank top 5)*
TRANSPORTATION		
LIMITED OR POOR AIR ACCESS FOR VISITORS	☐	______
LIMITED OR POOR GROUND ACCESS FOR VISITORS	☐	______
TRAVEL SAFETY CONCERNS OR HASSLES	☐	______
BUSINESS DEVELOPMENT		
HIGH MARKETING COSTS	☐	______
LACK OF MARKET RESEARCH	☐	______
DIFFICULTY IN ACCESSING CAPITAL DOLLARS FOR EXPANSION	☐	______
LACK OF COORDINATED MARKETING	☐	______
DIFFICULT TO SECURE INSURANCE	☐	______
PRICE COMPETITION	☐	______
LACK OF ACCOMMODATION FACILITIES	☐	______
POOR QUALITY ACCOMMODATION SERVICES	☐	______
COMPETITION FROM OTHER SPORTS AND ACTIVITIES	☐	______
GOVERNMENT REGULATION		
TOO MUCH INDUSTRY REGULATION	☐	______
LACK OF INDUSTRY REGULATION	☐	______
HUMAN RESOURCES		
FINDING STAFF WITH ADEQUATE TRAINING	☐	______
RETAINING STAFF WITH ADEQUATE TRAINING	☐	______
INADEQUATE STAFF PERFORMANCE	☐	______
OTHER		
WEATHER CONSTRAINTS	☐	______
OTHER: ______________________________	☐	______

29. Thinking of the constraints you ranked as the most serious in Question 28, do you have any suggestions about how to address the issues that will impact your long-term growth? *Please explain briefly.*

30. Would you be interested in joining a provincial-wide dive association created to help dive operators address these constraints? *Please circle the appropriate response and briefly explain your answer in the space provided.*

A. YES
B. NO
C. NEED MORE INFORMATION
D. DON'T KNOW/NO OPINION

SECTION 7: This section asks you to identify other diving operators in your region.

To ensure that the findings of this study are representative of the scuba diving sector, it is very important that we talk to every operator possible working in the BC scuba diving industry. We are asking all operators that we contact to tell us if there are other dive operators, retailers, manufacturers of equipment, charter operators, tour operators or land-based resorts in their sector or in their region that should be contacted. Any operators you refer will only be contacted for the purposes of this study.

31. Do you know other scuba dive operators who should be contacted? *Please circle the most appropriate response.*

A. YES → *Please proceed to* ***Question 32***
B. NO → *Please proceed to* ***Question 33***
C. DON'T KNOW → *Please proceed to* ***Question 33***

32. What is the name of the company, a contact within that company and the phone number of the additional tourism operators that you think should be contacted? *Please fill in the appropriate contact information in the table below or include a copy of contacts with your completed survey. If you don't know a contact name or their phone number, please simply provide us with the company name.*

Company Name	Contact Name	Company Phone Number

33. Is there anything else you would like to tell us about your business or this study? We would appreciate any comments you may have.

Thank you very much for your participation!

Your responses will be an important start in measuring the size of the dive industry in British Columbia and thus ensuring that its financial importance is recognized and its strong voice is heard in the province.

2. Telephone Interview Questionnaire

1. How would you describe your business?
    A. A dive shop
    B. A dive charter
    C. A dive school (primarily instruction)
    D. Equipment manufacturer
    E. Resort

2. In what year did your business begin offering products and/or services to clients or guests engaging in recreational scuba diving (including charters, live-a-boards, instruction, retail or manufacturing of equipment)?

3. Approximately how many divers did you take scuba diving in 2003?

    A. _________# OF DIVERS or
    B. OUR COMPANY DID NOT RUN CHARTERS OR ORGANIZE DIVES IN 2003

4. Approximately what percentage of your company's revenue comes from clients or guests who are engaging in recreational scuba diving? Please include all revenue from dive charters, live-a-boards, instruction, retail or manufacturing of scuba diving equipment.

    A. _________ % OF REVENUE FROM DIVERS
    B. DON'T KNOW

5. How many full-time and part-time people did your company employ during each month when you had employees? Please include yourself or other family members or individuals on contract when you are considering the number of people your company employs.

6. Did you offer diving instruction in 2003? If yes, approximately how many divers were enrolled in recreational diving instruction classes offered by your company in 2003?

7. In 2003, what other activities or adventure sports did you offer to your clients in addition to scuba diving? Please indicate all that apply.

    A. OUR COMPANY ONLY OFFERED SCUBA DIVING
    B. CANOEING/ KAYAKING
    C. GOLFING
    D. HIKING
    E. TOURS TO CULTURAL SITES
    F. OTHER WATER SPORTS
    G. OTHER: ___________________________
    H. OTHER: ___________________________

8. Tourists are travelers who are outside of their usual environment on an overnight trip that lasts at least one night. Though they might not have stayed overnight with you, approximately what percentage of your 2003 clients would you describe as tourists?

9. What were your total revenues in 2003?

   A. $0 - 50,000
   B. $50,000 - 100,000
   C. $100,000 - 200,000
   D. $200,000 - 300,000
   E. $300,000 - 500,000
   F. $500,000 +
   G. PREFER NOT TO ANSWER

References

BCDiveguide.com 2004 Guidebook. Vancouver: Dive Guide Publications Inc.. 2004. Electronic version available at <http://bcdiveguide.com/>. Accessed May 30, 2004.

BC Stats. *BC Manufacturers' Directory*. Online. Accessed 30 May 2004. <www.made-in-bc.ca/>.

British Columbia. Ministry of Small Business Tourism and Culture. Tourism Division. *Market Potential of Wreck Diving in British Columbia*. By Economic Planning Group. 1994 (Unpublished report).

Giles, Randy. PADI Canada Regional Manager. Personal Communications. 3 Feb. 2004.

Govt. of Canada. Department of Fisheries and Oceans. *Fact Sheet on Recreational Scuba Diving in Pacific Canada*. Online. 2003. Accessed 30 May 2004. < http://www.pac.dfo-mpo.gc.ca/oceans/Policy/Tourism%20Factsheets/Scuba%20Diving.pdf >.

Govt. of Canada. Province of British Columbia. *An Evaluation of the Tourism Potential of the Scuba Diving Industry in British Columbia*. By Ernst & Whinney, G.D. Hall Associates, Howard Paish & Associates Ltd..1980.

Industry, Science and Technology Canada, Ministry of Tourism and Ministry of Regional and Economic Development. *Marine Tourism in British Columbia: Opportunity Analysis*. By ARA Consulting Group. Victoria: Queen's Printer for British Columbia.1991.

Ladd, Garry, Victor Stephan and Linda Stevens. "The Abacus Project: Establishing the Risk of Recreational Death and Decompression Illness." *South Pacific Underwater Medicine Society Journal* 32 (2002): 124-128.

Ostle, Glen. "Deep in God's Pocket." *Rodales Scuba Diving Magazine*. November 2001. Online. Accessed 30 May 2004. <www.scubadiving.com/article/0,7424,1-28-224-288,00.html>.

PADI Dive Center and Resort Directory for British Columbia, Online, Accessed 30 April 2004. Available from the PADI web site at <www.padi.com/english/common/search/dcnr/>.

About the Author

Iglika Ivanova is a senior undergraduate student in the Economics Honours program at Simon Fraser University (Burnaby, BC). She conducted the survey of the dive industry in British Columbia and completed this report as a Co-op researcher employed by the Dive Industry Association of British Columbia in the spring of 2004.

The Dive Industry Association of British Columbia (DIABC) is a non-profit organization that provides a unified voice on behalf of dive industry professional entities in British Columbia. The objective of the DIABC is to promote and market the safe and sustainable growth of the scuba diving industry while protecting and enhancing the underwater environment. To this effect, the DIABC assists in the creation of programs that affect the success of the scuba diving industry in British Columbia.

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