

Final Report

University Research Activity, Private Sector Collaboration and the Commercialization of Research in an Academic Environment: Memorial University of Newfoundland as a Case Study



**A Discussion Paper Prepared for
the Atlantic Canada Opportunities Agency and Industry Canada**

Prepared by

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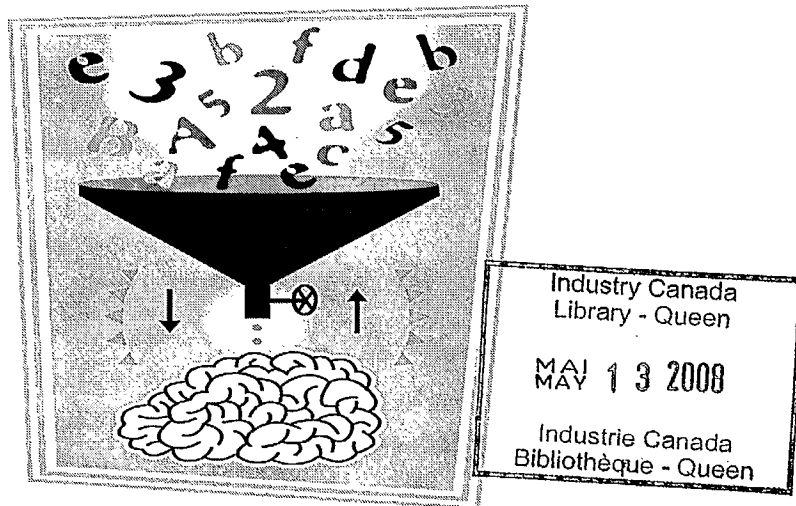
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Executive Summary

This study investigated the factors that influence, either positively or negatively, the ability of researchers at Memorial University of Newfoundland to conduct research, to access research funding from national programs, and to collaborate with the private sector in research and development activities or to commercialize their research. The analysis contained in this report contributes to the ongoing efforts of the Atlantic Canada Opportunities Agency and Industry Canada to develop and implement strategies targeted at improving university researchers' participation in national innovation programs, increasing university-private sector research alliances and enhancing the extent to which university research is commercialized.

During the months of February and March, 2002 a questionnaire was sent via internal university mail to the 1,067 academic faculty members at Memorial University, which included 123 academic staff members at the Marine Institute. The questionnaire solicited information on: the background characteristics of researchers, their research activity and funding, and their experience with public-private partnering and commercialization activity. Twenty-three percent of the faculty members completed and returned the surveys by the cutoff date of March 18, 2002.

The distribution of the respondents was representative of the true population of Memorial University researchers from which the sample was drawn. The majority of respondents had obtained the rank of full professor, had academic tenure and had acquired a substantial amount of research experience. The allocation of their time to teaching, research and administration was consistent with that outlined in the collective agreement. Most research efforts were focused on basic and applied research. Only four percent of the faculty members indicated that any significant amount of their research time was devoted to policy or social research. Less than ten percent of the faculty reported directing any time to the commercialization of their research.

The degree of association between university researchers and the private sector was found to be relatively low and, consequently, the level of research contracts between faculty members and the private sector was correspondingly low. However, once contact between the private sector and university researchers is established, respondents' replies show that more than two-thirds of those relationships evolved into research contracts. It was also determined that very little university research encompassed collaborating with the private sector, with only nine percent of faculty members reporting more than twenty percent of their research involving the private sector.

Respondents were divided on the issue whether it was even appropriate for the university to be partnering with the private sector. Those opposed to enhanced collaboration with the private sector considered that applied research detracted from basic research, the pursuit of which is the true purpose of a university. Moreover, the perceived loss of control and independence of their research agenda was seen as a threat to the legitimate role of the university. Other faculty members, however, offered proposals that, if

implemented, could further expand the partnerships and collaborations between university researchers and private sector companies.

Researchers reported that the lack of awareness of private sector partners and the lack of availability of a private sector partner were important barriers to collaborating with the private sector. The fact that their research had limited commercial application was offered as an explanation for not partnering with the private sector by 46% of researchers at Memorial University. As well, time pressure was an important factor that precluded nearly half of the faculty from entering into partnerships with the private sector. Very few researchers suggested that either high university overheads or low remuneration prevented their partnering with the private sector. It is also interesting to note that neither the lack of interest nor the inability to work on time schedules required by industry was considered to be an important barrier to partnering with the private sector. However, it is clear that those researchers wishing to collaborate further with the private sector would prefer to see the incentive structure for promotion and tenure modified to reflect the value that the university and society ostensibly attaches to this activity.

When the potential barriers to commercialization of research were considered, no barrier stood out as being especially important in preventing the commercialization of research. Yet, the level of commercialization of research at Memorial University is low. Faculty members were divided on whether the commercialization of research should be pursued within a university environment. Some saw the commercialization of university research as a disturbing pattern that should not be promoted, while others offered suggestions how to increase the level of research commercialization at Memorial University. To provide incentives for expanded emphasis on the commercialization of research, some faculty members indicated that explicit recognition of its value to the university through its inclusion in the criteria utilized for promotion and tenure at Memorial University was required.

Statistical tests and logistic regressions confirmed that the statistically significant parameters influencing whether a faculty member attempted to partner with the private sector were:

- whether the researcher had an existing affiliation with private sector firms – either locally, nationally or internationally;
- whether the respondent was a member of the Faculties of Engineering and Applied Sciences, of Science, or of Medicine or from the Marine Institute;
- whether the faculty member collaborated with colleagues in other departments or in other local educational/research institutions; and
- whether the individual had academic tenure.

An examination of the statistically significant characteristics that influenced whether the private sector attempted to engage a faculty member's expertise reveals that, with the exception of academic tenure and membership in the Faculties of Engineering and

Applied Sciences, of Science and of Medicine, the same set of factors were important. The only statistically significant variables that explained successful partnerships were those indicating whether the faculty members had an affiliation with private sector companies.

The statistically significant variables that explained whether a faculty member attempted to commercialize his/her research were:

- whether the researcher has a connection with the private sector;
- whether the respondent was a member of the Faculty of Engineering and Applied Sciences; and
- whether the faculty member collaborated with colleagues in other departments or in other local educational/research institutions.

For those researchers who attempted to partner with industry to commercialize their research, the only statistically significant characteristics were private sector affiliations and membership in the Faculty of Engineering and Applied Sciences. The only statistically significant variable that explained successful commercialization was researchers with a local private sector affiliation.

Memorial University researchers noted that the relationship between research and teaching is complex. Research and teaching interact through various avenues - some reinforce each other, while others result in a diminished effectiveness. The survey respondents suggested that research, rather than reducing teaching quality, is integral to the effective teaching of both graduate and undergraduate students. They also reported that the time allocated to teaching reduced the time for research and research productivity. However, they acknowledged that new ideas were stimulated in the process of teaching and, as such, contributed to research output. Whether one effect outweighed the other could not be determined from the information contained in the survey responses.

When asked about the internal research environment, Memorial University faculty members expressed the view that the university was a research conscious institution, but a significant portion of the faculty reported being unaware of internal incentives to seek research funding. Researchers exhibited a high degree of willingness to collaborate with academic colleagues, locally, nationally and internationally, yet, very few researchers worked with people in local institutions outside of Memorial University or with the private sector, either locally, nationally or internationally.

In terms of research track record, the vast majority of research output is in the form of refereed publications, which is consistent with the criteria for promotion and tenure utilized at Memorial University. Very few researchers credit contract reports as part of their research achievement. Further, the low response rate pertaining to the questions on research track record implies a reluctance of respondents to answer these types of questions.

Memorial University researchers reported that a number of factors were important in influencing their research activity. The most important ones were:

- external research funding grants;
- teaching loads;
- library resources;
- travel funds;
- graduate students;
- graduate/doctorate programs;
- conference participation;
- critical mass of researchers;
- technical support;
- seed funding;
- equipment;
- facilities and labs; and
- internal research funding.

There was no consensus on the role of salary, mentoring or research chairs in influencing research activity. Most researchers were neutral with respect to the role that internal recognition of research plays in enhancing research activity at Memorial University. From the perspective of the hypotheses considered in this study, it is important to note that the majority of researchers replied that private sector research collaboration and private sector contracts were not important in influencing their research activity.

With respect to the status of research drivers at Memorial University, researchers were more or less satisfied with:

- library resources;
- conference travel;
- facilities and labs;
- the graduate program; and
- external research funding.

They were dissatisfied with:

- administrative support;
- internal research funding;
- the critical mass of researchers; and
- seed funding.

There was no consensus on the level of satisfaction attached to:

- teaching loads;
- salary;
- internal recognition of research;
- graduate students;
- equipment;

- travel funds; and
- technical support.

Researchers were neutral with respect to their satisfaction with:

- mentoring;
- research chairs;
- private sector collaboration; and
- private sector contracts.

The research drivers for which their importance and satisfaction are most divergent were:

- external research funding;
- teaching loads;
- travel funds;
- critical mass of researchers;
- seed funding; and
- internal research funding.

These issues probably represent some of the more productive avenues through which research productivity could be enhanced at Memorial University.

Memorial University researchers appeared to be relatively innovative in pursuing different external research funding sources. When one adjusts for the discipline of the applicant, Memorial University researchers have a high propensity to apply to the relevant granting council for research funding. For those who actually applied for funding, they reported very high funding success rates. The proportion of Memorial University researchers that applied for research funds outside of the granting councils was low.

In terms of internal grant funding, the take-up rate on these programs was also relatively low. The lack of awareness of the actual programs or the eligibility of researchers to apply for the programs indicates that a more effective communication/information strategy by the Office of Research might be worth considering.

Summarizing the key inferences that can be drawn from the responses on what constitutes a barrier to the application process, the important barriers were:

- the lack of a match between programs and research initiatives;
- past research successes required to leverage new funds;
- lack of time to prepare a competitive bid; and
- inability to obtain matching funds.

As well, in terms of being a barrier to the application process, there was no consensus for whether:

- the lack of researchers to support initiatives;

- the lack of administration support; the availability of support staff during the application process;
- the availability of development funds; and
- the difficulty to collaborate due to geography acted as a barrier to the application process.

An examination of the barriers to external funding identified by Memorial University researchers revealed that none of the suggested barriers stood out as particularly important. In particular, the respondents were mixed in their responses to the importance of the policies of the granting agency; the match between the funding program(s) and the research proposal; and the lack of a track record as a researcher. For some researchers these were important and for others they were not important barriers. In addition, the researchers indicated that, in their opinion, no grants in the past; the lack of a competitive application; and limited ability to collaborate/network with other researchers due to geography were not important barriers to research funding. The majority of researchers chose not to answer this question.

The messages to be drawn with respect to ways to increase external research funding were:

- the most important incentives identified were:
 - provide seed funding for new researchers;
 - improve faculty renewal;
 - provide incentives for "above-normal" research; and
 - reduce teaching loads and committee work;
- other incentives considered important were:
 - explicit recognition of faculty members who seek external funding;
 - commence a mentoring program to assist with grant applications;
 - assist faculty to re-tool for research;
 - improved physical infrastructure and facilities;
 - bridge research funding for faculty between grants;
 - publicize the unique strengths of the university;
 - contribute to equipment grant applications;
 - encourage and reward collaborative research initiatives;
 - replenish Faculty Research Education Trust accounts; and
 - improve liaison activities with the granting council; and
- the initiative that seemed to garner the least support was improved liaison activities with industry.

The overall message that comes out of this research is that enhanced collaboration between university researchers and the private sector should pay dividends in increased partnerships and an improved record for the commercialization of research.

1. Introduction

"This is a time of great potential for Atlantic Canada. The very nature of the new economy makes knowledge, skills and innovation – not geography – the keys to opportunity and prosperity." Prime Minister Jean Chrétien, June 29, 2000

To succeed in today's international economy, countries and regions need to have the knowledge, skills and intellectual capacity to meet and deal effectively in an environment characterized by accelerated change and uncertainty. With increasing globalization and the transition to the knowledge-based economy, research and development activities are the predominant drivers of economic growth and well-being. However, research and development activities by themselves are not sufficient. For research and development to improve productivity and enhance economic growth, the technology that flows out of the research and development must be commercialized.

Not only is the commercialization of research and development important, but in order for it to be effective, there must be a certain minimum critical mass of funds, expertise and integration. That is, for an area to reap the productivity benefits that research and development can bring, the research and development activity must be undertaken at a certain level and for a prolonged period. As well, knowledge is cumulative, which makes it easier to develop future technological innovations that will eventually improve productivity. The ideas embodied in the current research and development initiatives spill over to other industries through the various research and development initiatives. In other words, the acquisition of knowledge facilitates and promotes the development of new knowledge, further increasing productivity in an area.

Universities have an important role to play in the generation, acquisition and dissemination of knowledge. They are also integral to the innovation process. The first step in the innovation process is a region's capacity to innovate, which, in part, is conditioned by the knowledge/scientific base resident in its educational institutions. Next is the creation of an innovation potential through investment in research and development activities, many of which are performed by university researchers. Following this is the conversion of the generated innovations into new products or processes that enhance productivity and improve the standard of living within a region. There is the potential for the university to have an enhanced role here. Finally, it is important to recognize that the innovation process helps to define and expand the knowledge base that can be drawn upon by university researchers in their future work.

It has been well established that innovation activity, tied to research and development and technological progress, has accounted for most of the economic growth that has occurred in developed countries within the last 100 years. Equally well documented are the concerns that Canada is falling behind other G7 countries in terms of research and development, innovation, productivity and competitiveness, while serious regional innovation gaps exist within Canada. Atlantic Canada, and Newfoundland and Labrador in particular, trails the rest of Canada in high-knowledge activity, productivity, research

and development allocations and expenditures, business sector research and development funding, adoption of advanced technologies, patent applications and access to national innovation programs. The Atlantic Canadian economy as a whole has been characterized by a weak research infrastructure; at the post-secondary level, there is limited technology transfer, commercialization of research, and linkages among universities, governments, and the private sector. Consequently, innovation, with particular emphasis on research and development, has become a key priority of the Government of Canada.

The objective of this study is to identify the factors that influence, either positively or negatively, the ability of researchers at Memorial University of Newfoundland to conduct research, to access research funding from national programs, to collaborate with the private sector in research and development activities, and to commercialize their research. This study's findings will contribute to the ongoing efforts of the Atlantic Canada Opportunities Agency and Industry Canada to develop and implement strategies targeted at university researchers' participation in national innovation programs, increasing university-private sector research alliances and enhancing the extent to which university research is commercialized.

In addition to the introductory section, there are another 17 sections to this report and three appendices also attached. A brief description of the survey and a summary of the survey findings are provided in Section 2. Section 3 offers an analysis of the characteristics of the survey respondents. The opinions of Memorial University faculty members with respect to the relationship between teaching and research are considered in Section 4. This is followed by an evaluation of the internal research environment and activity at Memorial University. This, as well, includes an assessment of the scope and types of research collaboration that is undertaken at Memorial University. An evaluation of the research output and research track record is given in Section 6. This is followed, in Section 7, by an investigation into what constitutes research drivers at Memorial University and the degree of satisfaction expressed by researchers with respect to the status of these drivers of their research. This leads into a consideration of the source of external (Section 8) and internal (Section 9) research funds utilized by faculty members. Sections 10 and 11 respectively, evaluate the barriers associated with applying for and the receipt of external research funding. Section 12 identifies the incentives to increase external research funding suggested by Memorial University's faculty members. The experience of university researchers in partnering with the private sector is dealt with in Section 13. Section 14 discusses the barriers to university-private sector partnering. Memorial University's faculty members experience with commercializing their research and the barriers to the same are considered in Sections 15 and 16, respectively. The results of statistical tests and regression analysis are examined in Section 17. The last section is the conclusion. In addition, the survey instrument is attached as Appendix A, written comments associated with the survey are provided in Appendix B and for completeness, Appendix C contains the frequency of responses for each of the questions.

2. The Academic Survey and Summary of Survey Findings

During the months of February and March, 2002 a questionnaire was sent via internal university mail to the 1,067 academic faculty members at Memorial University, which included 123 academic staff members at the Marine Institute. The questionnaire solicited information on: the background characteristics of researchers, their research activity and funding, and their experience with public-private partnering and commercialization activity. A copy of the survey questionnaire is attached in Appendix A. Confidentiality of the respondents was by maintained by ensuring that there was no identifying information on the questionnaires or the return envelopes. The faculty members were asked to complete and return the surveys by March 18, 2002. By that cutoff date, 239 usable surveys were received. Another 12 were received after that time period, but were not included in the current analysis. Having 251 academics of a possible 1,067 return completed surveys represents a response rate of 23%.

Given the size of this report, a summary of the survey highlights is provided below. This should enable the readers to quickly scan the summary for each section and to find those sections of the report that interest them.

Section 3 - Summary of Respondents' Characteristics

It is possible to summarize the characteristics of the researchers who responded to the survey as follows:

- The sample of respondents appears to be representative of the true population of Memorial University researchers;
- In line with the actual university population, the biggest group of respondents was from the rank of full professor;
- More than three-quarters of the respondents had an earned doctorate;
- There is a relatively uniform distribution for how long the respondents have held their highest degree, though the largest group (36%) achieved their highest degree since 1990;
- The respondents are relatively experienced, with in excess of 50% of faculty members having worked at educational/research institutions for more than 20 years;
- Greater than 70% of the respondents have the security of academic tenure and 65% of those with tenure were granted it more than 10 years ago. That is, a substantial portion of the respondents have the protection of academic tenure and freedom to pursue the research issues that are of interest to them;
- The distribution of respondents by faculty or institute is in line with that which exists at Memorial University. For example, the largest group of respondents comes from the Faculty of Science, the next largest group is from the Faculty of Arts and the smallest group is from the School of Nursing;

- In line with the collective agreement, the largest group of respondents confirms that between 26 and 50 percent of their time is allocated to teaching duties and less than 25 percent of their time went to administrative duties;
- About one-third of the respondents report allocating more than 25 percent of their time on basic research;
- On the other hand, only 14% of respondents indicated that they assign more than 25 percent of their time to applied research and, when policy or social research is considered, this falls to 4% of the respondents;
- Very few respondents (8%) designate any time to commercialization activities; and
- Sixteen percent of the respondents indicate that they devote time to things other than teaching, administration, basic, applied, policy or social research and commercialization activity.

Section 4 - Summary of the Relationship Between Research and Teaching

These responses reveal that, in the opinion of Memorial University researchers, the relationship between research and teaching can be characterized as:

- being complex: they interact through a variety of avenues, some of which reinforce each other, while others result in diminished effectiveness;
- research, rather than reducing teaching quality, is integral to the effective teaching of both graduate and undergraduate students; and
- time allocated to teaching reduces time for research and research productivity, but new ideas are stimulated in the process of teaching and, as such, contribute to research output. Whether one effect outweighs the other cannot be determined from the information contained in the survey responses.

Section 5 - Summary of the Internal Research Environment and Activity

In summarizing the opinions of Memorial University researchers with respect to the internal research environment and activity, the following observations can be made:

- Three-quarters of researchers felt Memorial University is a research conscious institution;
- Faculty members were divided in terms of their awareness of internal incentives to seek research funding. Forty-three percent reported that they are unaware of internal incentives and an awareness campaign might pay dividends here;
- Researchers exhibited a high degree of willingness to work with academic colleagues, locally, nationally and internationally;
- Very few researchers cooperated in joint research projects with people in local institutions outside of Memorial University;
- Memorial University researchers had a low level of collaboration with the private sector, either locally, nationally or internationally; and

- Less than 20% of respondents sit on adjudication committees for the granting councils, but 35% revealed that they were part of grant adjudication committees for other agencies.

Section 6 - Summary of Research Track Record

The record of research for Memorial University researchers can be summarized as follows:

- Sixty-five percent of researchers reported more than two published, refereed articles in the last five years and nearly 40% published more than one per year. This is consistent with distribution of faculties from which the respondents were drawn and the incentives implicit in promotion and tenure decisions at Memorial University;
- Nearly two-thirds of respondents indicated having less than three non-refereed publications. An important factor in the tenure and promotion decisions at Memorial University is the number of refereed publications on a person's CV. Therefore, it is not surprising that researchers place more emphasis on refereed journal publications than on the non-refereed papers;
- Less than 10% of researchers suggested having more than two monographs;
- Nearly one-quarter of Memorial University faculty members had more than two book chapters;
- Only 15% of researchers wrote more than two contract reports;
- Eighty-eight percent of the respondents completed less than three book reviews;
- One-third of the researchers disseminated their research output in the form of conference proceedings;
- Very little output had shown up as either magazine and newspaper articles or as artistic works;
- The majority of respondents had more than three working papers;
- Almost 10% of the faculty members published more than two books;
- There was some reluctance of researchers to answer these questions, as illustrated by the large number of "no responses"; and
- Much of the research effort of researchers was in the form of refereed publications, which is consistent with the criteria utilized for promotion and tenure in an academic environment.

Section 7 – Summary of the Importance of and Satisfaction with Research Drivers

The importance of drivers to the research activity of Memorial University researchers can be summarized as follows:

- The drivers that researchers credited with being important in influencing their research activity were:
 - external research funding grants;

- teaching loads;
- library resources;
- travel funds;
- graduate students;
- graduate/doctorate programs;
- conference participation;
- critical mass of researchers;
- technical support;
- seed funding;
- equipment, facilities and labs; and
- internal research funding;
- The was no consensus on the role of salary, mentoring or research chairs in influencing research activity;
- Most researchers were neutral or had no opinion with respect to the role that internal recognition of research plays in enhancing research activity at Memorial University; and
- The majority of researchers implied that private sector research collaboration and private sector contracts were not important in influencing their research activity.

In terms of the satisfaction that researchers attach to the levels of these drivers at Memorial University, the key findings can be summarized as follows:

- With respect to the status of research drivers at Memorial University, researchers appeared to be more or less satisfied with:
 - library resources;
 - conference travel;
 - facilities and labs;
 - the graduate program; and
 - external research funding;
- Researchers appeared to be dissatisfied with:
 - administrative support;
 - internal research funding;
 - the critical mass of researchers; and
 - seed funding;
- There was no consensus on the level of satisfaction attached to the following research drivers:
 - teaching loads;
 - salary;
 - internal recognition of research;
 - graduate students;
 - equipment;
 - travel funds; and
 - technical support; and

- There was no opinion or researchers were neutral on their satisfaction with:
 - mentoring;
 - research chairs;
 - private sector collaboration; and
 - private sector contracts.

The research drivers for which their importance and satisfaction were most out of line are:

- external research funding;
- teaching loads;
- travel funds;
- critical mass of researchers;
- seed funding; and
- internal research funding.

These represent some of the more productive areas where research productivity might be enhanced at Memorial University.

Section 8 - Summary of Research Funding

In summary, the key findings concerning external research funding at Memorial University are:

- Memorial University researchers appeared to be relatively innovative in going after various external research funding sources;
- Taking into account the discipline of the applicant, Memorial University researchers reported a high propensity to apply to the relevant granting council for research funding. For example, 76% of the respondents from the Faculty of Arts applied to SSHRC, 60% of the Faculty of Business researchers applied to SSHRC, 43% from the School of Nursing applied to SSHRC and 29% applied to CIHR, 77% of the Faculty of Engineering and Applied Sciences applied to NSERC, 79% from the Faculty of Science applied to NSERC, and 64% of researchers from the Faculty of Medicine applied to CIHR/MRC;
- Very high success rates were reported for those who actually applied for funding. For example, the success rates associated with researchers who responded to the survey were:
 - SSHRC - 67%;
 - NSERC - 79%;
 - CIHR - 90%;
 - CFI - 56%;
 - NCE - 55%;
 - Tri-Council - 69%;
 - Canada Council - 58%;
 - ACOA - 77%;

- foundations - 68%; and
 - non-profit associations - 76%; and
- Given the information available for the Office of Research, it appears that the participation rates and success factors associated with the granting council programs reported by the respondents appear to be high.
- The proportion of Memorial University researchers that applied for research funds from sources other than the granting councils was low.

Section 9 - Summary of Internal Research Funding

The key findings to be drawn from the questions on internal grant funding are:

- the take-up rates on internal grant programs were relatively low and
- the lack of awareness of the actual programs or the eligibility of researchers to apply for the programs suggests that a more effective communication/information strategy by the Office of Research might be worth considering.

Section 10 – Summary of Barriers to Application Process

Summarizing the key inferences that can be drawn from the responses on what constitutes a barrier to the application process, one can conclude that:

- The important barriers were:
 - the lack of match between programs and research initiatives;
 - past research successes required to leverage new funds;
 - lack of time to prepare a competitive bid;
 - inability to obtain matching funds; and
- In terms of whether they were a barrier, there was no consensus on:
 - the lack of researchers to support initiatives;
 - the lack of administration support; the availability of support staff during the application process;
 - the availability of development funds; and
 - the difficulty to collaborate due to geography acted as a barrier to the application process.

Section 11 – Summary of Barriers to Receipt of External Research Funding

In summary, the key points with respect to the barriers to receipt of external funding identified by Memorial University researchers are:

- None of the suggested barriers stood out as particularly important;

- The respondents were mixed on their responses to the importance of: (1) policies of the granting agency; (2) match between the funding program(s) and the research proposal; and (3) the lack of a track record as a researcher. For some researchers these were important and for others they were not important barriers;
- The researchers indicated that, in their opinion, “no grants in the past”, the lack of a competitive application and limited ability to collaborate/network with other researchers due to geography were not important barriers to research funding; and
- The majority of researchers chose not to answer this question.

Section 12 - Summary of External Research Funding

The messages to be drawn from the responses on ways to increase external research funding can be summarized as:

- A number of issues have been identified by Memorial University faculty members as being important means through which external funding of research can be increased. With the numbers in the parenthesis representing the percentage of the respondents who indicated that the initiative was important or very important in stimulating external research funding, the favourably received incentives included:
 - explicit recognition of faculty members who seek external funding (63%);
 - commence a mentoring program to assist with grant applications (65%);
 - assist faculty to re-tool for research (55%);
 - provide incentives for “above-normal” research (70%);
 - improve faculty renewal (77%);
 - improve physical infrastructure and facilities (64%);
 - bridge research funding for faculty members between grants (59%);
 - seed or start-up grants for new researchers (82%);
 - publicize the unique strengths of the university (59%);
 - contribute to equipment grant applications (61%);
 - encourage and reward collaborative research initiatives (61%);
 - replenish Faculty Research Education Trust Accounts (46%);
 - reduce teaching loads and committee work (69%); and
 - improve liaison activities with the granting councils (60%); and
 - the initiative that seemed to garner least support, in terms of its mean response, was improved liaison activities with industry (49%).

Section 13 – Summary of University-Private Sector Partnerships

In summary, it is possible to draw the following inferences from this information:

- contact between university researchers and the private sector is relatively low and, consequently, the level of contracts between university researchers and the private sector is correspondingly low;

- once contact has been established between the private sector and university researchers more than two-thirds of those contacts result in contracts; and
- a very low level of university research is tied up with the private sector. Only 9% of faculty members report that more than 20 percent of their research involves the private sector.

Section 14 - Summary of Barriers to University-Private Sector Partnering

The highlights to be emphasized concerning the barriers to university-private sector partnering are:

- lack of awareness of private sector partners or lack of availability of a private sector partner was an important barrier to partnering with the private sector for 44% and 39% of respondents, respectively. The close correspondence between these two responses is not surprising since they are dealing with essentially the same issue;
- their research having limited commercial application was offered as an explanation for not partnering with the private sector by 46% of researchers at Memorial University;
- twenty percent of researchers considered high university overheads as a reason for not partnering with the private sector;
- only 10% of faculty thought that the low remuneration acted as a barrier to partnering with the private sector;
- time pressure was an important factor that precluded 48% of faculty from entering into partnerships with the private sector;
- for 22% of researchers, the short time frame associated with private sector collaborations acted as a barrier to partnering with the private sector; and
- twenty-two percent of researchers were just not interested in partnering with the private sector.

Section 15 – Commercialization of Research

The experience of Memorial University faculty members with attempting to commercialize their research can be summarized as follows:

- 16% of the faculty had attempted to commercialize their research and only 6% was successful; and
- 11% of the faculty members attempted to partner with the industry to commercialize their research, 5% attempted to partner with the private sector and 4% replied that they were successful in their commercialization attempts.

Section 16 - Summary of Barriers to Commercialization of Research

The key points to highlight from these responses were:

- faculty members were divided on whether the commercialization of research is a legitimate function for the university;
- there was no consensus on the whether researchers “not having thought of it” was an explanation for the lack of commercialization of research at Memorial University. About 30% did not see it as important and approximately 30% thought it might be important;
- as well, there was no consensus on whether the lack of interest on the part of Memorial University researchers in commercializing their research explained the low level of commercialization. Thirty percent considered it did and 25% did not think so;
- about half of the researchers responded that the lack of commercial application of their research acted as a barrier to commercialization;
- one-third of faculty suggested not knowing how to commercialize their research as an important barrier. This was counterbalanced by 22% who did not see “not knowing” as an important barrier;
- only 10% of respondents ascribed the risk associated with the commercialization process as a barrier;
- slightly more than 15% of faculty members reported the cost of commercialization as an important barrier;
- the availability of financing was referred to as an important barrier by almost 30% of respondents;
- prior time commitments prevented the commercialization of research was considered important for 36% of the faculty;
- less than 20% of the respondents listed the lack of administrative support as an important barrier to the commercialization of research;
- intellectual property issues were raised as a barrier by only 20% of the respondents;
- for one-third of the respondents the absence of private sector partners or their lack of interest acted as a barrier to commercialization; and
- no barrier stood out as being especially important in preventing the commercialization of research.

Section 17 - Summary of Regression Analysis

The key points from the regression analysis are:

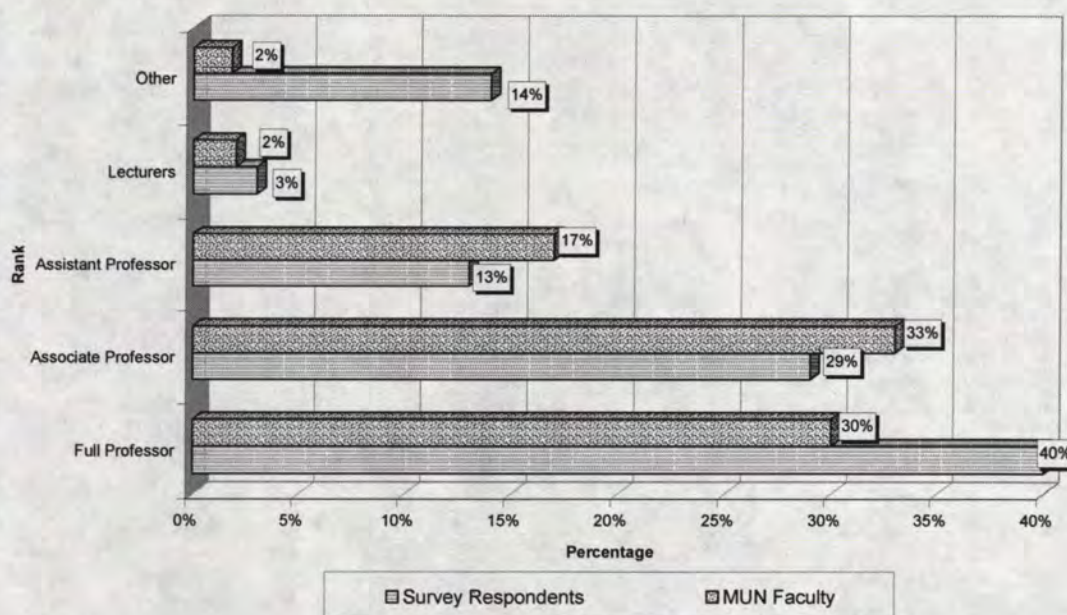
- an affiliation with the private sector is important in establishing partnership with the private sector and for facilitating the commercialization of research;
- researchers from the Faculty of Engineering and Applied Sciences appear to be more willing to engage in partnerships with the private sector and to attempt to commercialize their research; and
- collaboration also appears to be important in promoting partnerships with the private sector and for researchers who try to commercialize their research.

3. Characteristics of Survey Respondents

3.1 Distribution of survey respondents by rank

Figure 1 below illustrates that 40% of respondents had achieved the rank of full professor; associate professors constituted 29% of the respondents; 13% of the researchers were assistant professors; 3% reported their rank as lecturer; 3% were session employees; and 11% did not characterize themselves as belonging to either of these categories. Based on data obtained from Memorial University's Division of Faculty Relations, it is possible to derive the comparable distribution for the faculty members of Memorial University and the Marine Institute from which this sample was drawn. The actual distribution of Memorial University faculty members is: 30% full professors, 33% associate professors, 17% assistant professors, 2% lecturers and 18% other, which would include librarians. While the proportion of the sample that is drawn from those who are full professors is slightly above the true population parameter and associate and assistant professors are slightly under-represented, the distribution of respondents corresponds well with the actual distribution of researchers from which the sample was taken. In other words, the survey respondents seem to be representative of the true population, at least in this regard.

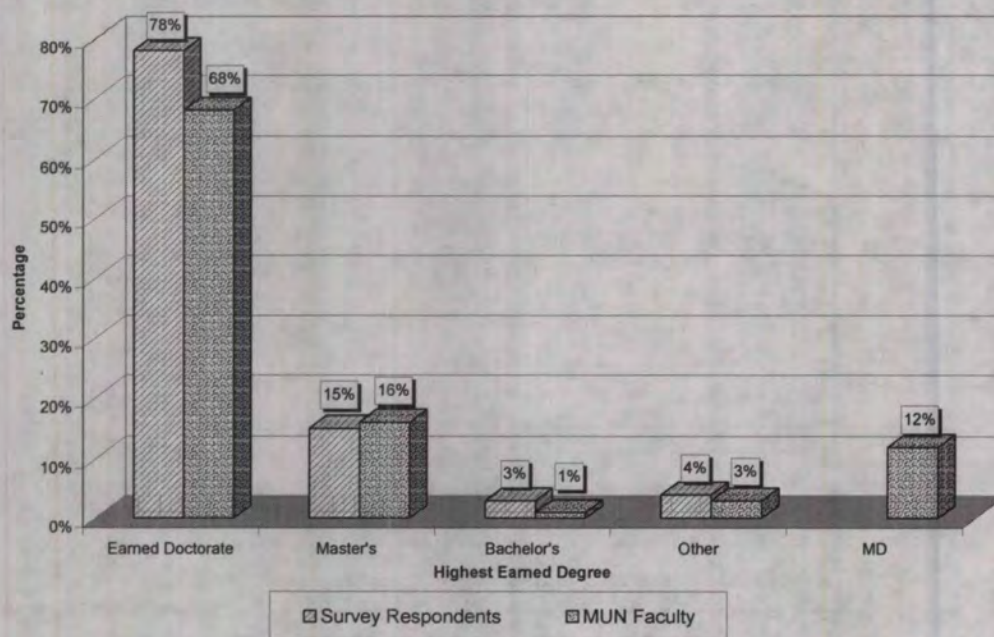
Figure 1: Distribution of survey respondents and Memorial University faculty by type of position held at Memorial University



3.2 Distribution of survey respondents by highest earned degree

The distribution of the respondents by their highest earned degree is provided in Figure 2. The highest degree earned by the overwhelming majority of the respondents (78%) is a doctorate. Another 15% confirmed that a master's level was their highest degree, while 3% of faculty members had achieved only a bachelor's degree and 4% did not fall in either of these categories or did not answer this question. An examination of the distribution of Memorial University faculty members by their highest earned degree reveals that 68% have an earned doctorate, 16% of researchers possess a master's level degree, 12% designate MD as their highest degree, 1% of respondents hold bachelor degrees and 3% of faculty members indicate that something else is their highest degree. Again, the true distribution and that associated with those responding to the survey do not appear to be consistent in terms of educational levels.

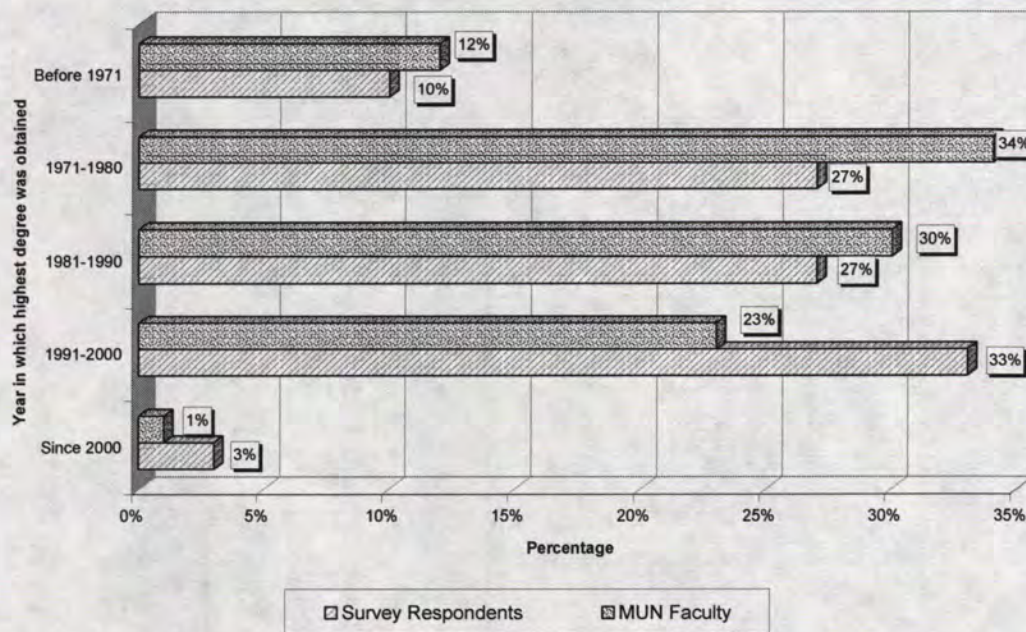
Figure 2: Distribution of survey respondents and Memorial University faculty by highest level of education



3.3 Distribution of survey respondents by when highest degree was earned

The faculty members who responded to the survey were relatively evenly distributed in terms of when they received their highest degree. Only 3% of respondents had earned their highest degree since 2000 and 10% had qualified for their highest degree more than 30 years ago. One third of the researchers stated that their degrees were received within the last 10 to 12 years, 60% within the last 20 years (i.e., 27% percent received their degree between 1981 and 1990) and the remaining 27% of faculty members were awarded their highest degree in the 1970s. There were 8 people who did not indicate the year in which they earned their highest degree. The corresponding distribution for Memorial University faculty is: 1% since 2000; 12% before 1970; 34% in the 1970s; 30% in the 1980s and 23% in the 1990s. Again, the true distribution and that of the respondents are very similar in terms of when faculty members were awarded their highest degrees.

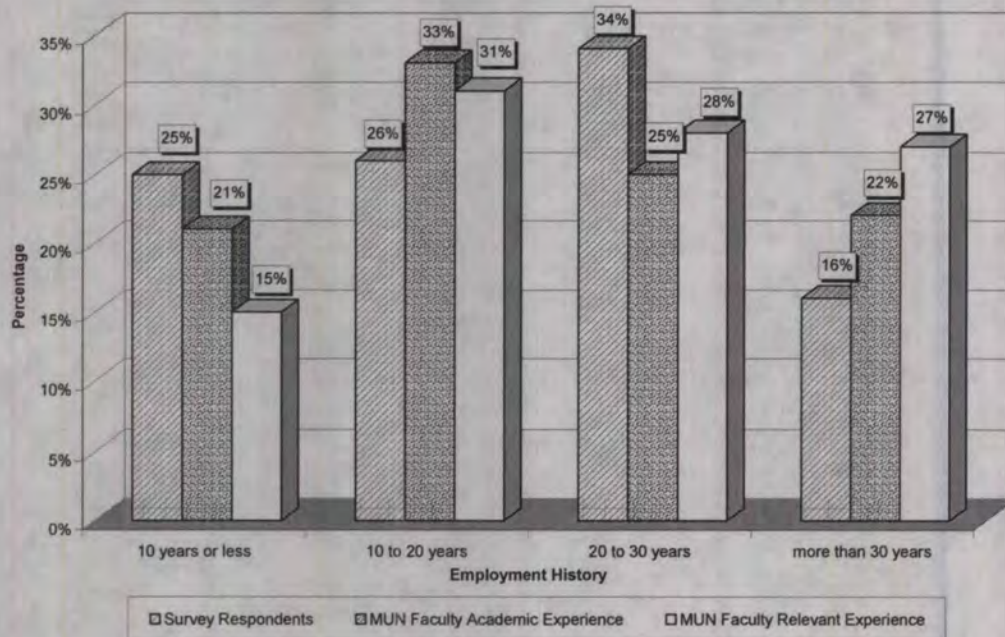
Figure 3: Distribution of survey respondents and Memorial University faculty by year in which highest degree was obtained



3.4 Distribution of survey respondents by employment history

An analysis of the employment history of the survey respondents (see Figure 4) establishes that nearly 50% of the respondents have been working at research or educational institutions for more than 20 years – 16% have been employed for more than 30 years and 34% of researchers have been employed for between 20 and 30 years. About 25% of the respondents were employed at Memorial University or other institutes for less than 10 years and the other 26% of faculty members' employment experiences ranges between 10 and 20 years. A review of Memorial University data for employment at educational institutions confirms that: 21% have 10 years or less employment experience; 33% were employed for between 10 and 20 years; 25% had employment experience of 20 to 30 years; and 22% reported more than 30 years employment experience. For this category, Memorial University also records the number of years of previous relevant experience. This could include economists employed by government, engineers working with industry or educators in the school system. Adding this estimate to their academic employment history, one obtains the following distribution: 15% have less than 10 years relevant experience, 31% are credited with 10 to 20 years experience, 28% report 20 to 30 years relevant experience and 27% have more than 30 years experience. Again, the distribution of survey responses is comparable with the true distribution measured either way, though the proportion of respondents coming from the over-30-years category appears to be under-represented.

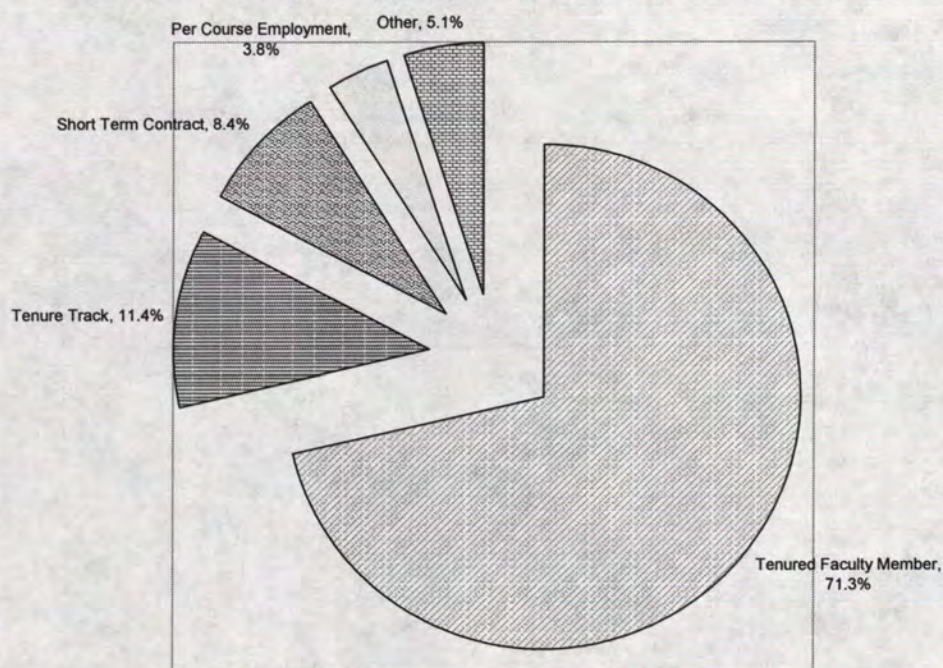
Figure 4: Distribution of survey respondents and Memorial University faculty by employment history



3.5 Distribution of survey respondents by employment status

Figure 5 profiles the distribution of respondents by their employment status at Memorial University. Eighty-three percent of respondents are tenured or on a tenure track contract - 71% of respondents have academic tenure and 11% are on tenure track appointments. Another 8% of employees are on short-term employment contracts, 4% are employed on a per course basis and 5% did not fit in either of these categories. As well, two respondents failed to answer this question. According to Memorial University records, 93.5% of faculty members are on regular employment contracts (tenured or on tenure track) and 6.5% are hired on a contractual basis.

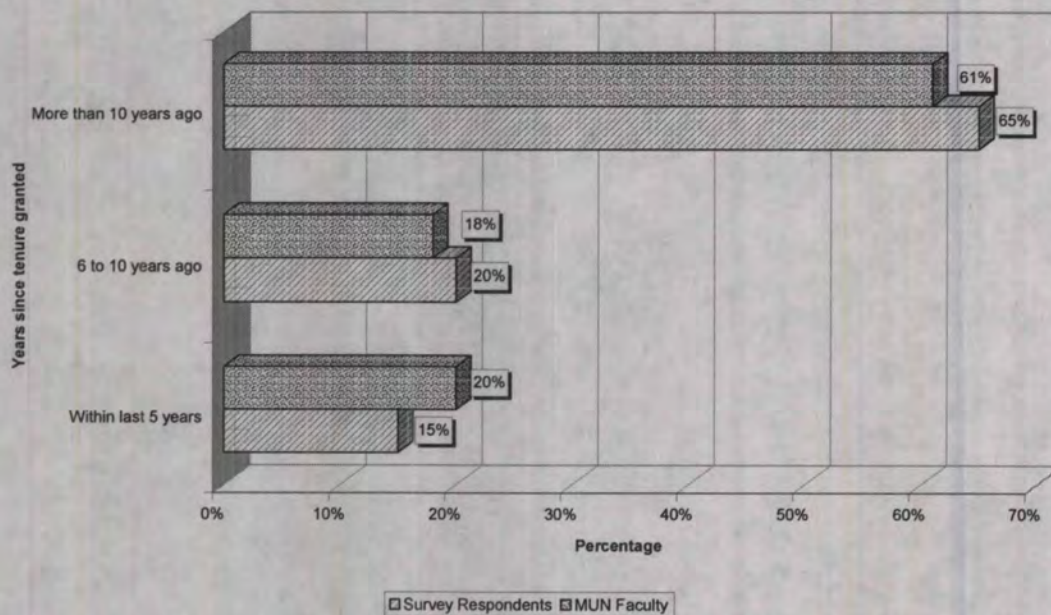
Figure 5: Distribution of respondents by employment status at Memorial University



3.6 Distribution of survey respondents by period when academic tenure was awarded

As exhibited in Figure 6, 65% of those faculty members with academic tenure were granted it more than 10 years ago, 15% have received tenure within the last 5 years and the other 20% had been granted tenure between 6 and 10 years ago. That is, most of the people responding to the survey have, for some years now, had the security of academic tenure and academic freedom to pursue the areas of research that they deem to be appropriate and interesting. The analogous distribution for Memorial University faculty members is: 61% of the faculty was granted tenure more than 10 years ago, which compares to the 65% from the survey; 18% of respondents were granted tenure between 6 and 10 years ago, which compares to 20% for the survey and 20% of Memorial University researchers were granted tenure within the last 5 years, which compares to the 15% estimate obtained from the survey. Again, there is a high degree of correspondence between the true and sample distributions in terms of the period of time over which tenure was received.

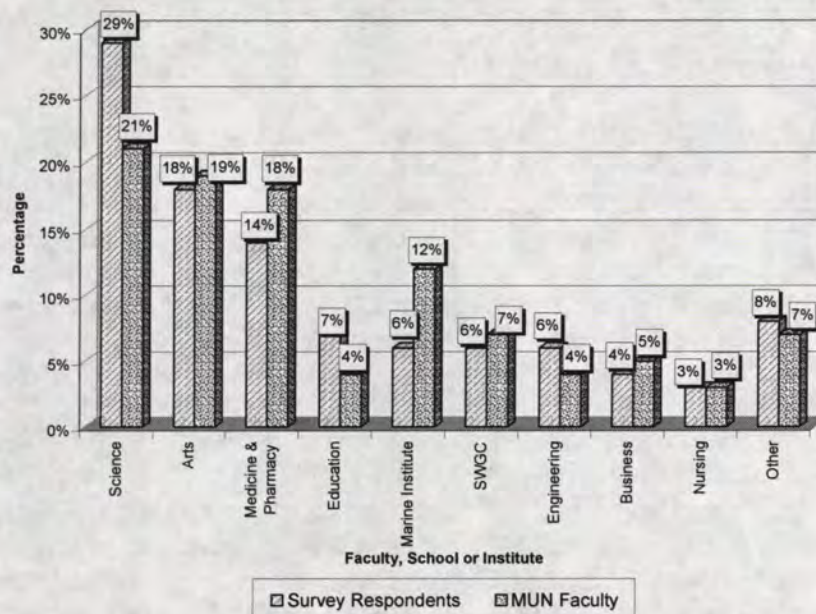
Figure 6: Distribution of survey respondents and Memorial University faculty by number of years since tenure was granted



3.7 Distribution of survey respondents by faculty, school or institutional affiliation

The distribution of the survey respondents by faculty, school or institutional affiliation within Memorial University is provided in Figure 7. The Faculty of Science, with 29%, represented the largest portion of the respondents. The Faculty of Arts was second with 18% of the responses. The Faculty of Medicine, which includes respondents from the School of Pharmacy, represented 14%, the Faculty of Education 7%, the Marine Institute, Sir Wilfred Grenfell College and the Faculty of Engineering and Applied Sciences each accounted for 6% of the responses received, the Faculty of Business Administration had more than 4% of the responses, the School of Nursing was 3% and 8% of the respondents did not fit into either of these categories. Comparing this to the actual distribution of the faculty at Memorial University, the allocation of respondents across faculties corresponds to the actual distribution within the university. For example, the actual distribution of academic staff members across faculties, schools and institutes is: 21% for the Faculty of Science, 19% for the Faculty of Arts, 18% for the Faculty of Medicine, 12% for the Marine Institute, Sir Wilfred Grenfell College 7%, the Faculty of Business Administration 5%, the Faculty of Engineering and Applied Sciences 4%, the Faculty of Education 4%, the School of Nursing 3% and other groups makes up 7%. The Science and Engineering faculties are over-represented. However, this is understandable given that a significant part of the survey is related to the commercialization of university research and public-private partnering, issues that may be more important to people performing research in the hard sciences and engineering. It is less clear why the Faculty of Education is over-represented and why the Faculty of Medicine and the School of Pharmacy are under-represented.

Figure 7: Distribution of survey respondents and Memorial University faculty by faculty, school or institutional affiliation



3.8 Distribution of survey respondents by time allocated to various functions

In addition to the above background information, Memorial University faculty members were asked to respond to a number of questions in other areas. One such question related to how their time was allocated to teaching duties, undertaking applied, basic or policy/social research, attempting to commercialize their research, administrative duties or some other activity not encompassed by these categories. The responses to the time allocation question are provided in Table 1.

Table 1: Reported Time Allocation by Respondents to Various Activities

Activity		Percentage and Number of Respondents by Category					
		0%	1-25%	26-50%	51-75%	76-100%	No Response
Teaching	%	1%	24%	38%	23%	9%	6%
	Number	2	57	90	54	22	14
Basic Research	%	5%	28%	23%	10%	2%	32%
	Number	11	66	56	24	5	77
Applied Research	%	7%	30%	11%	2%	2%	49%
	Number	17	71	25	4	4	118
Policy/Social Research	%	13%	7%	3%	0.4%	0.4%	76%
	Number	31	17	7	1	1	182
Commercialization of Research	%	13%	6%	1%	0%	1%	79%
	Number	31	15	2	0	2	189
Administration	%	4%	46%	11%	3%	3%	33%
	Number	10	111	27	7	6	78
Other	%	3%	10%	4%	2%	1%	81%
	Number	6	24	9	4	2	194

3.8.a Time Allocation - Teaching

Consistent with the MUNFA/University collective agreement, the largest group of respondents (38%) devotes 26 to 50 percent of their time to teaching duties. Another 23% of the respondents allocate between 51 and 75 percent of their time to teaching and 24% of faculty members spend 1 to 25 percent on teaching. Given the requirements of the collective agreement, Memorial University faculty members allocate approximately 40 percent of their time to teaching - some teach a little more and some teach a little less. Surprisingly, 9.2% of the respondents state that more than 75 percent of their time was taken up with teaching.

3.8.b Time Allocation - Basic Research

Nearly two-thirds of the respondents spend less than 25 percent of their time engaged in basic research. In fact, approximately 37% of the respondents either did not reply to the question or indicated that they spent no time on basic research. Only 12% of those surveyed indicated that more than 50 percent of their time was spent on basic research.

About 23% of those who responded to the survey devoted between 26 to 50 percent of their time on basic research. This is reflective of the teaching and administrative responsibilities of faculty members and the mix of different disciplines responding to the survey – some of whom focus on applied or policy research.

3.8.c Time Allocation – Applied Research

A similar kind of pattern emerges when one examines the distribution of respondents by the proportion of their time spent on applied research. Only 3.4% of the respondents designate more than 50 percent of their time to applied research. This does not necessarily imply that very little applied research is being undertaken at Memorial University; rather, it may be indicative of the fact that people engaged in applied research have other responsibilities and interests that consume significant blocks of their time.

3.8.d Time Allocation – Policy or Social Research

When one examines the amount of time consumed by policy or social research, 89% of the faculty did not respond to this question or replied that none of their time was directed at policy or social research. It is interesting that more respondents assign significantly larger blocks of their research time to applied research than to policy or social research. This is particularly surprising given that Memorial University is the only university within Newfoundland and Labrador, a province also characterized by relatively more severe social and economic problems than other provinces. One would think that, given this context, more intellectual capital at Memorial University would be targeted through policy or social research at these problems.

3.8.e Time Allocation – Commercialization of Research

It is also enlightening to analyze the amount of time taken up with attempting to commercialize research at Memorial University. As shown in Table 1, only 8% of the respondents confirmed that any of their time was allocated to commercializing their research. In fact, less than 2% of the respondents refer to spending more than 25% of their time in that activity. Obviously, if little time is utilized in the commercialization process, then one should not expect to observe large amounts of research being commercialized.

3.8.f Time Allocation – Administration and Other Activities

Most people assign less than 25% of their time on administrative activities. The same holds true for other types of activities. A significant proportion of this other activity consisted of patient care or clinical medicine. Committee work also showed up in this category for some of the respondents, rather than in the administration category.

3.9 *Summary of Respondents' Characteristics*

From this information it is possible to summarize the characteristics of the researchers who responded to the survey. Specifically, the key points that come out of these background questions are:

- The sample of respondents appears to be reasonably representative of the true population of Memorial University researchers;
- In line with the actual university population, the biggest group of respondents was from the rank of full professor;
- More than three-quarters of the respondents had an earned doctorate;
- There is a relatively uniform distribution for how long the respondents have held their highest degree, though the largest group (36%) achieved their highest degree since 1990;
- The respondents are relatively experienced, with in excess of 50% of faculty members having worked at educational/research institutions for more than 20 years;
- Greater than 70% of the respondents have the security of academic tenure and 65% of those with tenure were granted it more than 10 years ago. That is, a substantial portion of the respondents have the protection of academic tenure and freedom to pursue the research issues that are of interest to them;
- The distribution of respondents by faculty or institute is in line with that which exists at Memorial University. For example, the largest group of respondents comes from the Faculty of Science, the next largest group is from the Faculty of Arts and the smallest group is from the School of Nursing;
- In line with the collective agreement, the largest group of respondents confirms that between 26 and 50 percent of their time is allocated to teaching duties and less than 25 percent of their time went to administrative duties;
- About one-third of the respondents report allocating more than 25 percent of their time on basic research;
- On the other hand, only 14% of respondents indicated that they assign more than 25 percent of their time to applied research and, when policy or social research is considered, this falls to 4% of the respondents;
- Very few respondents (8%) designate any time to commercialization activities; and
- Sixteen percent of the respondents indicate that they devote time to things other than teaching, administration, basic, applied, policy or social research and commercialization activity.

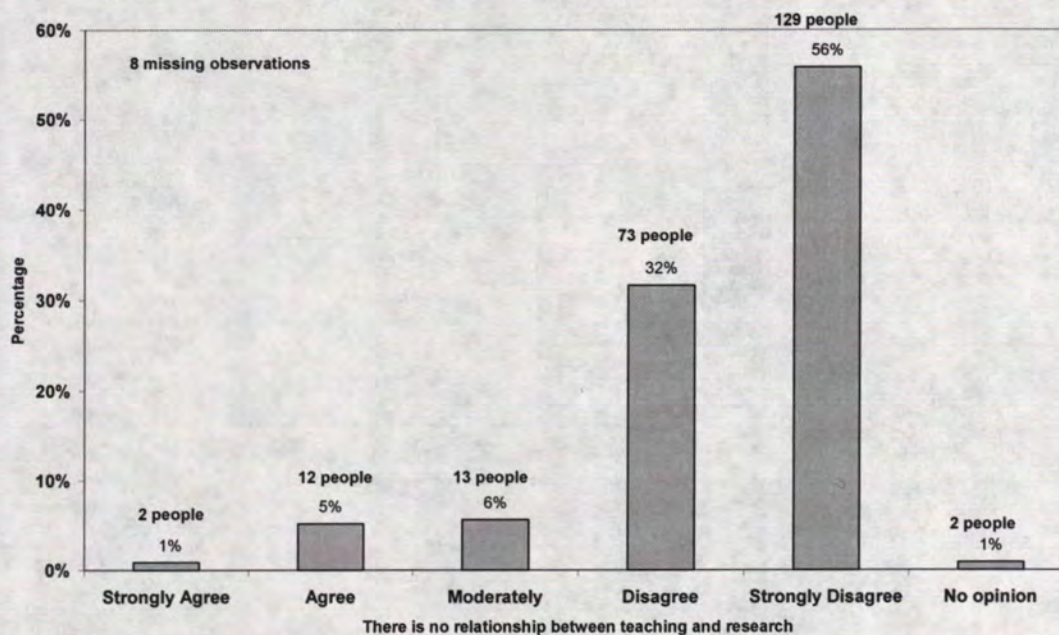
4. Relationship Between Teaching and Research

The next series of questions attempted to solicit the opinion of Memorial University faculty members with respect to the relationship between teaching and research.

4.1 No relationship between research and teaching

The respondents were asked to indicate their level of agreement with the statement: *There is no (or a limited) relationship between research and teaching*. Eight surveys were returned with no response indicating their opinion on this question. For the other 231 respondents, Figure 8 establishes that 88% (202) of respondents disagreed or strongly disagreed with this statement and 6% (13) agreed or strongly agreed. Clearly, faculty members at Memorial University feel that teaching and research are related. Of course, the relationship may be either a positive or negative one. The next series of questions were designed to determine where faculty members came down on this issue.

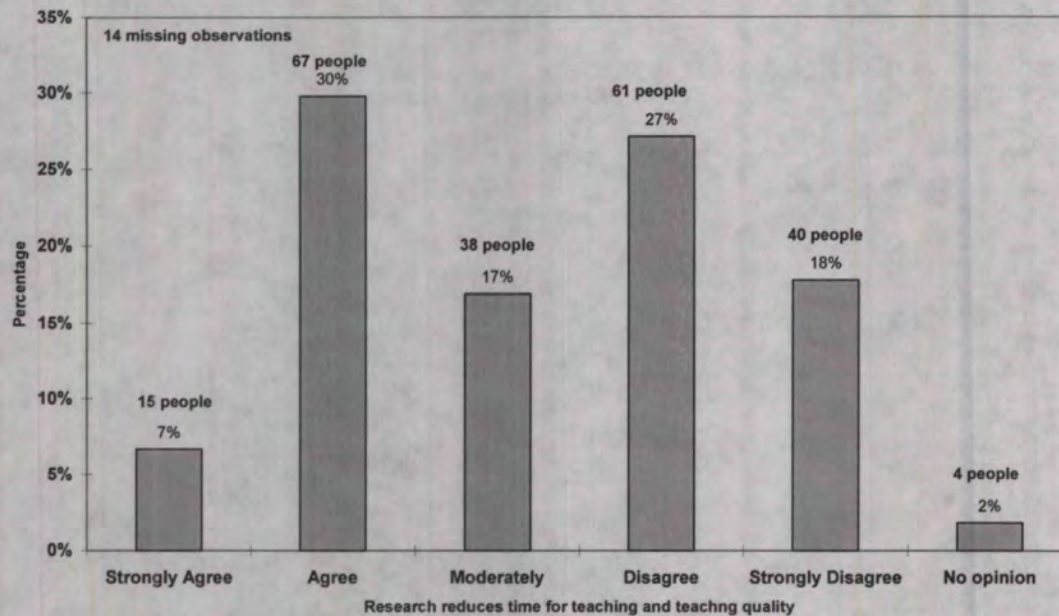
Figure 8: Distribution of respondents who indicated that there was no or a limited relationship between research and teaching



4.2 *Research reduces time for teaching and teaching quality*

When asked whether *research reduces time for teaching and teaching quality*, Figure 9 demonstrates that Memorial University faculty members were divided on this issue. The largest group of respondents (30% or 67 people) agreed with the statement, while 27% (61 respondents) disagreed and a further 40 faculty members (18%) strongly disagreed. Only 7% of respondents or 15 people strongly agreed with the statement and the other 19% (42 researchers) were either neutral on the issue or offered no opinion. With only 14 people failing to respond to this question, it is apparent that faculty members differed greatly on this issue. That is, there does not appear to be a consensus whether research reduces time for teaching and teaching quality.

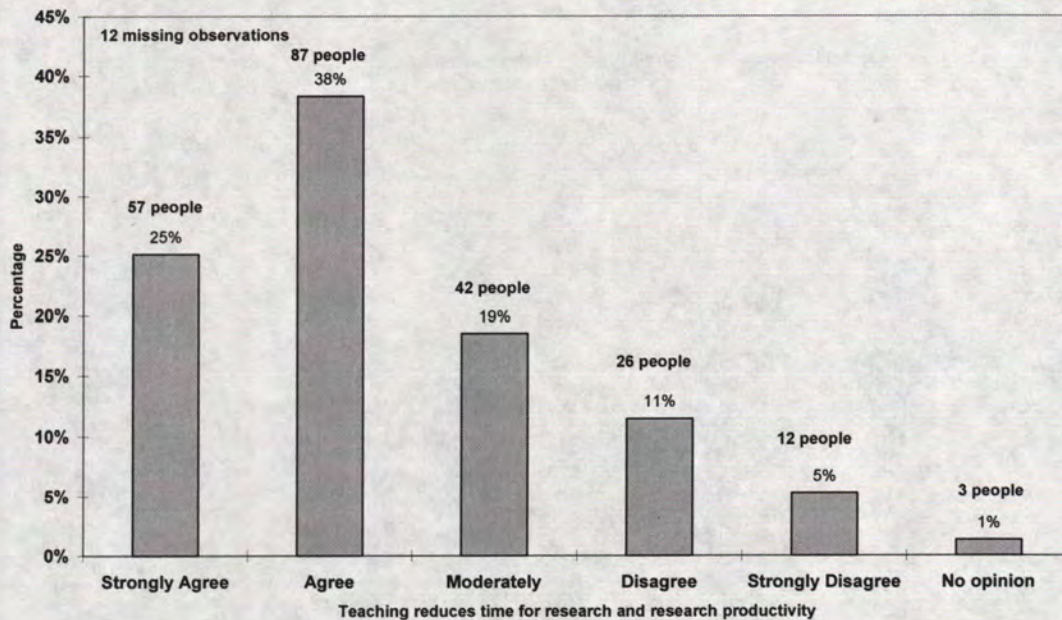
Figure 9: Distribution of respondents who indicated that research reduces time for teaching and teaching quality



4.3 Teaching reduces time for research and research productivity

Even though faculty members appear to be split on whether research reduces time for teaching, more than 63% of the respondents (144 researchers) agreed or strongly agreed that *teaching reduces time for research and research productivity* – see Figure 10. Moreover, 16% of the respondents or 38 people disagreed or strongly disagreed with this statement. When this is combined with the fact that only 12 faculty members did not reply to this question or 227 respondents did complete this question, one can reasonably conclude that Memorial University researchers feel that the opportunity cost of time allocated to teaching reduced research productivity.

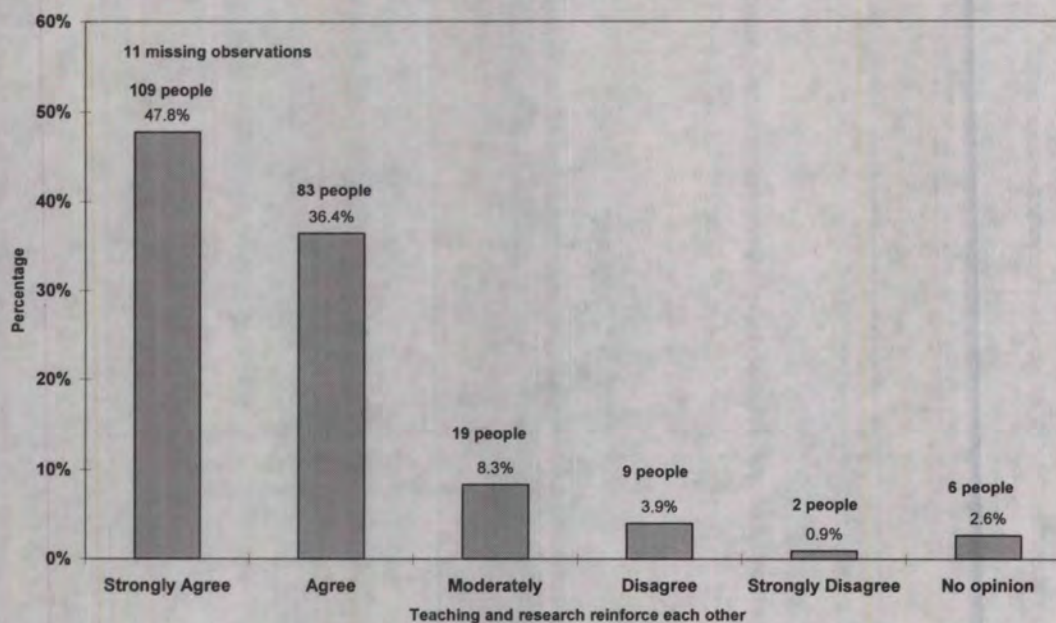
Figure 10: Distribution of respondents who indicated that teaching reduces time for research and research productivity



4.4 Teaching and research reinforce each other

Next, researchers were asked to what extent they agreed with the statement that *teaching and research reinforce each other*. As shown in Figure 11, more than 84% or 192 respondents agreed or strongly agreed with this statement and less than 5% (11 people) disagreed or strongly disagreed. This question was answered on 228 of 239 returned surveys. Clearly, Memorial University faculty members see the value in research and teaching and how they interact. Furthermore, as the responses to the previous two questions demonstrate, the majority of Memorial University researchers feel that teaching loads reduce their research productivity, but time spent in research does not represent time taken away from teaching – either in terms of course preparation or in terms of in-class delivery. It is important to acknowledge that while the majority of faculty members did not feel that research took time away from teaching, 37% of respondents suggested that it did.

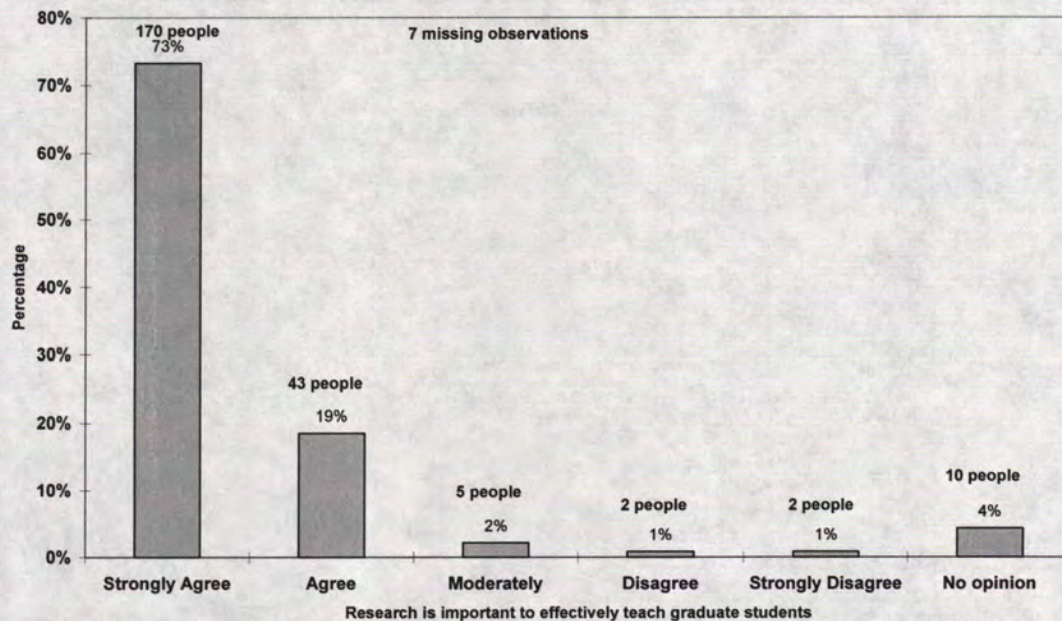
Figure 11: Distribution of respondents who indicated that teaching and research reinforce each other



4.5 Research is important for effective graduate teaching

When asked specifically about the relationship between research and the teaching of graduate students, 213 individuals or 92% of respondents agreed or strongly agreed with the statement that *research is important to effectively teach graduate students* – see Figure 12. In fact, 73% of respondents (170 people) reported that they strongly agreed with this statement and less than 2% (4 respondents) disagreed or strongly disagreed. With only 7 missing observations for this question, Memorial University researchers strongly endorse the need for elevated research capacity and activity to more effectively train and communicate with graduate students.

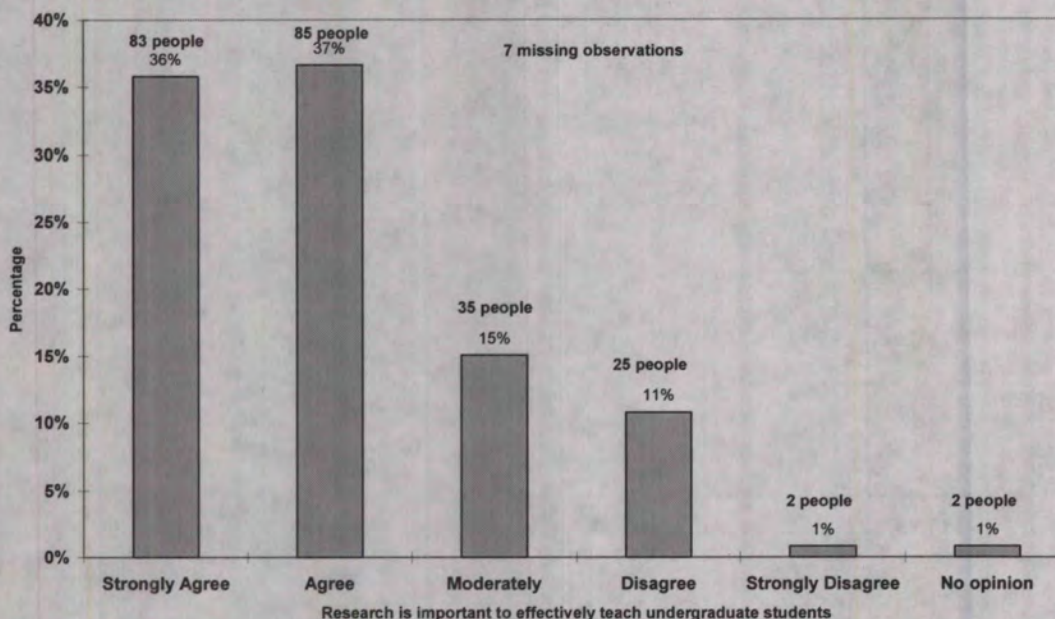
Figure 12: Distribution of respondents who indicated that research is important to effectively teach graduate students



4.6 *Research is important for effective undergraduate teaching*

Figure 13 presents the distribution of responses to the question whether *research is important to effectively teach undergraduate students*. One hundred and sixty-eight of the 232 Memorial University faculty members who responded to this question agreed or strongly agreed with this statement. Less than 30 respondents disagreed or strongly disagreed with this statement. This, when combined with the responses to the previous question, demonstrates that Memorial University researchers emphasize the importance of their research activities in reinforcing their effectiveness as teachers – at both the graduate and undergraduate levels.

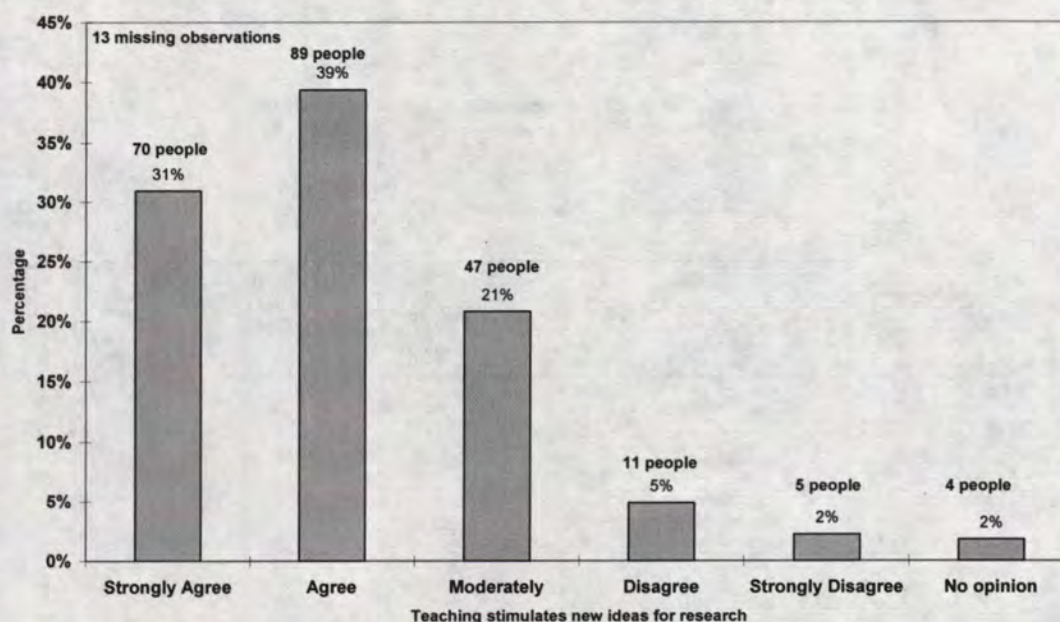
Figure 13: Distribution of respondents who indicated that research is important to effectively teach undergraduates



4.7 Teaching stimulates new ideas for research

The final question on the relationship between research and teaching asked of Memorial University faculty members was whether they agreed that *teaching stimulates new ideas for research*. More than 70% or 169 of the respondents, see Figure 14, agreed or strongly agreed that teaching was a source of new ideas for research. Again, with only 13 missing observations here, the conclusion is clear: the majority of respondents see teaching as a useful avenue through which new research ideas can be generated. Only 7% (16 people) of the faculty showed any kind of disagreement with this statement.

Figure 14: Distribution of respondents who indicated that teaching stimulates new ideas for research



4.8 Summary of the relationship between research and teaching

These responses reveal that, in the opinion of Memorial University researchers, the relationship between research and teaching can be characterized as:

- being complex: they interact through a variety of avenues, some of which reinforce each other, while others result in diminished effectiveness;
- research, rather than reducing teaching quality, is integral to the effective teaching of both graduate and undergraduate students; and
- time allocated to teaching reduces time for research and research productivity, but new ideas are stimulated in the process of teaching and, as such, contribute to research output. Whether one effect outweighs the other cannot be determined from the information contained in the survey responses.

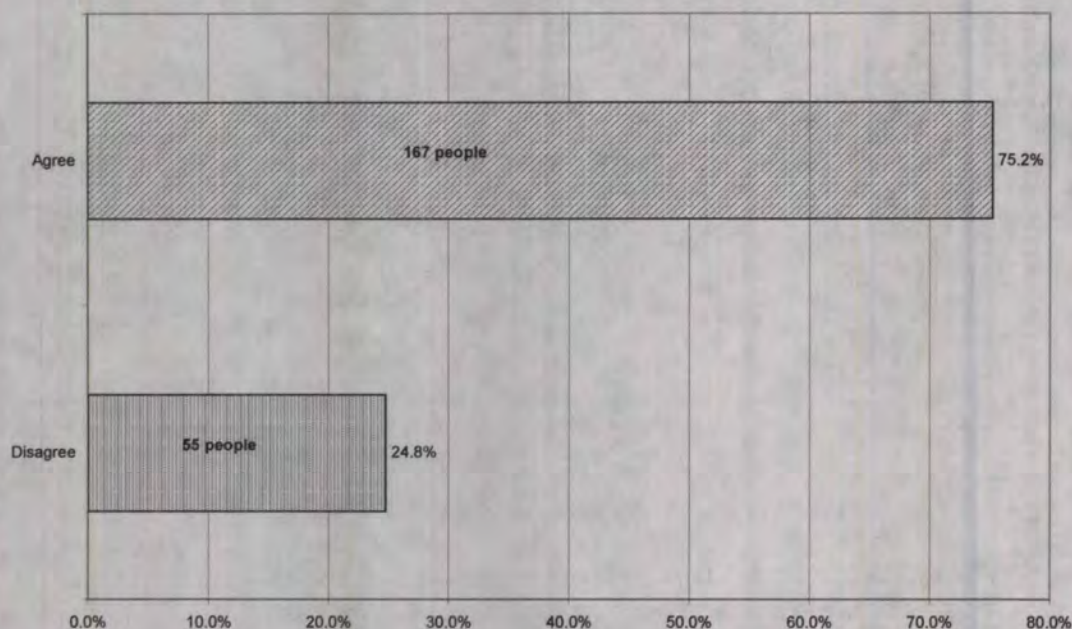
5. Internal Research Environment and Activity

5.1 Research conscious institution

One of the factors that might motivate a faculty member to engage in research is whether they feel that the institution in which they are working is “research conscious”. If faculty members think of Memorial University as being research conscious, then, ceteris paribus, they are more likely to buy into the research ethic and be more productive. Alternatively, if the academic staff perceived that research is not important or not valued at Memorial University, then this would probably translate into reduced research productivity.

As demonstrated in Figure 15, more than 75% of respondents (167 researchers) agreed that Memorial University is a research conscious institution. This is particularly a strong finding, given that only 17 faculty members did not respond to this question.

Figure 15: Distribution of respondents by whether they felt Memorial University was a research conscious university



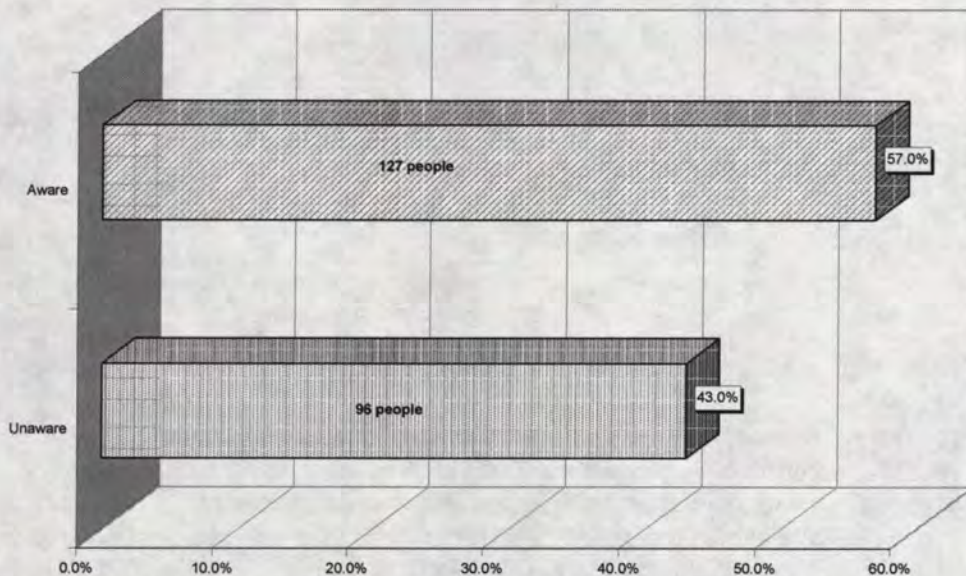
In addition to specifying whether they felt Memorial University is a research conscious institution, many respondents chose to include written comments on both this issue and the incentive to seek external funding for their research. Several of these responses related to the effectiveness of the Office of Research. In their assessment, this was manifested through the provision of information that promotes various grant programs and identifies impending deadlines. It was demonstrated also through the encouragement and support of faculty members' research.

5.2 Awareness of incentives to seek research funding

Of course, part of being a research conscious university is the responsibility to promote research activity by the academic staff. One method through which this can be achieved is through the provision of incentives for faculty members to seek research funding. An obvious prerequisite for people to react to these incentives is that they be aware of the incentives that exist within the institution.

Figure 16 profiles the extent to which Memorial University faculty members demonstrate an awareness of incentives within the institution to seek research funding. With 16 people failing to answer this question, a significant number of faculty members (43% or 96 people) reported a lack of awareness of incentives at Memorial University to seek research funding. While 57% or 127 respondents did indicate knowledge of the internal incentives, an awareness campaign on this issue may pay dividends in terms of increased research funding coming to Memorial University and enhanced research productivity overall for the institution. Certainly, it would be interesting to know why 43% of the faculty suggests being unaware of the incentives at Memorial University to pursue research funding. The answer to this question cannot be ascertained from the survey responses.

Figure 16: Distribution of respondents by whether they were aware of Memorial University incentives for faculty to seek research funding

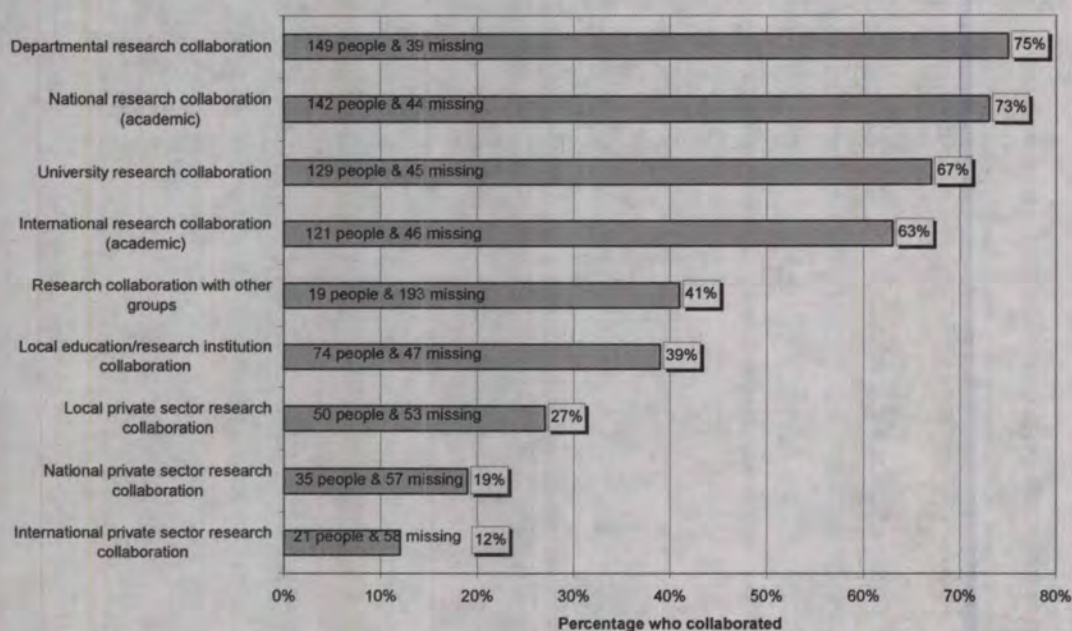


Some of the incentives that faculty members identified were: (1) limited funding available for unsuccessful applications; (2) a top-up on equipment grants; (3) the promotion and tenure procedures and criteria in place at Memorial University; (4) early promotion for successful researchers; (5) teaching relief; (6) seed funding for grant applications; (7) faculty support of research efforts; and (8) internal grants.

5.3 Research collaboration activities

Another interesting avenue to probe is how researchers at Memorial University organize their research activity. For example, do they work with colleagues within their department, with others in the university or with private sector companies? Answering these questions might be revealing in terms of types and levels of research output attained by Memorial University researchers. As well, it might be informative about whether university-private sector partnerships are likely to develop and whether university research is more likely to be commercialized. Figure 17 displays the responses received to the questions pertaining to research collaboration.

Figure 17: Proportion of respondents who indicated that they collaborated in their research activities by group with whom collaboration was undertaken



5.3.a Collaborates with departmental colleagues

Not surprisingly, the highest level of collaboration is observed between researchers within the same department. Three-quarters of Memorial University faculty members state that they work with colleagues within their respective departments. It makes sense that researchers would engage in research activities with their departmental colleagues because the similarity of interest, personal relationships and proximity should facilitate collaboration on joint projects. Only 200 of 239 faculty members responded to this part of the survey.

5.3.b Collaborates with national colleagues

The second highest response rate, 73%, is expressed by Memorial University researchers who cooperate with colleagues located at institutions outside of Newfoundland, but within Canada. With only 44 people not responding to this question, this is a strong finding that again augers well for future research productivity at Memorial University.

5.3.c Collaborates with Memorial University colleagues

When asked whether they work with colleagues at Memorial University who were outside of their department, 45 people failed to provide any response. However, two-thirds of the respondents describe that they collaborate with researchers within the university, but outside of their own department. Though this number is lower than those who work with departmental colleagues, this is understandable given the compatibility of interests within disciplines. As well, given the complex nature of many research questions being posed today and given the need, at times, to approach these questions from a multi-disciplinary focus, the demonstrated willingness of faculty members to engage in joint research outside of their department bodes well for future research productivity at Memorial University.

5.3.d Collaborates with international colleagues

Memorial University research activity has considerable international focus. Nearly two-thirds (63%) of Memorial University researchers confirm that they cooperate on joint projects with colleagues located at institutions outside of Canada. To put this in context, only 46 people failed to answer this question. The importance of Memorial University researchers working with local, national and international scholars is that their research productivity should not be constrained by failing to find the researcher or group of researchers that have the complementary set of research skills required to make projects work.

5.3.e Collaborates with other groups

Over 40% of respondents revealed that in their research efforts, they have allied themselves with groups other than the private sector or researchers at education/research institutions. Even so, this high amount of cooperation is in part an illusion because 193 people did not answer this question. In reality, there are only 19 people out of 239 who described their collaboration efforts as being with groups other than those listed. The groups considered under this category were primarily government departments and agencies, nongovernmental organizations (NGOs) and unions.

5.3.f Collaborates with other local institutions

Although Memorial University faculty members formed research alliances with departmental colleagues or with researchers elsewhere in the university, 62% of

researchers do not work with colleagues at other local educational or research institutions. While 48 people excluded this question, this is a strong finding and may be explained by the diversity of interest between Memorial University faculty members and other researchers located within the province, but outside of the university.

5.3.g Collaborates with the local private sector

Although Memorial University researchers have a demonstrated willingness to interact with colleagues at other research and educational institutions locally, nationally and internationally, it is interesting to consider whether they have been able or willing to network with private sector companies in undertaking their research. As reflected in Figure 17, 73% percent of respondents expressed that they did not collaborate with the private sector within Newfoundland. As well, 53 people did not respond to this question. However, it is highly likely that the 53 "no-responses" did not collaborate either, but this cannot be determined from the survey responses. In any event, the majority of Memorial University researchers did not work jointly with the local private sector. Given the low level of research and development undertaken by the private sector in Newfoundland and Labrador, this is one area where more cooperation between the university and private sector companies on research initiatives could pay dividends - both for the private sector in terms of enhanced productivity and for the university in terms of its ability to define its role as a more meaningful entity within society.

5.3.h Collaborates with the national public sector

The extent of university private sector collaboration falls even further when one considers the potential for university-private sector joint initiatives outside of Newfoundland. Only 35 faculty members suggested that they engage in research with the private sector in other provinces. As well, the 57 respondents who did not complete this question are unlikely to have worked with the private sector outside of Newfoundland either.

5.3.i Collaborates with the international private sector

Only 21 of Memorial University researchers were affiliated internationally with the private sector. In addition to the 88% that do not collaborate internationally with the private sector, there were 58 people who omitted this question. With 12% or less of Memorial University researchers working with international businesses and with the genesis of an international offshore oil and gas sector within Newfoundland, this might be an area where research output at Memorial University could be expanded, while simultaneously increasing university-private sector joint initiatives.

5.4 Membership on grant adjudication committees

Another interesting characteristic is whether Memorial University researchers were members of a grants selection committee for the granting councils or other organizations within the last 10 years. Figure 18 establishes that less than 19% of Memorial University

researchers have sat on adjudication committees for SSHRC, NSERC or CIHR/MRC. However, 35% of researchers (Figure 19) confirmed that they were part of adjudication committees for groups other than the granting councils. There were 42 missing observations for this question and 38 missing from the previous question.

Figure 18: Distribution of respondents who were a member of a grant selection committee for the grants councils (SSHRC, NSERC, CIHR/MRC)

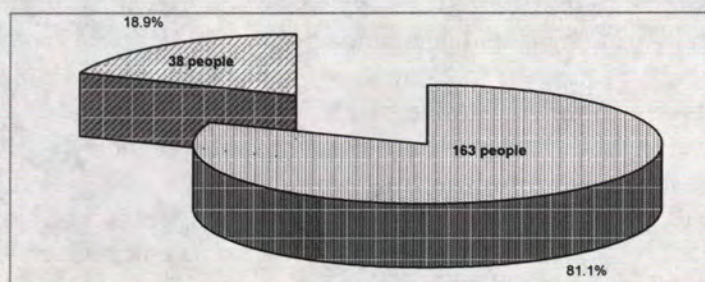
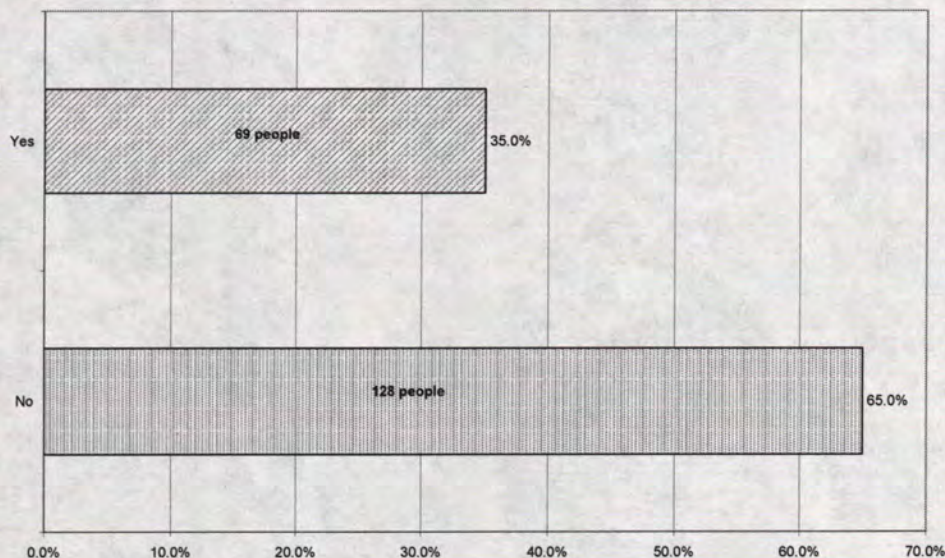


Figure 19: Distribution of respondents who were a member of a grants selection committee for other than the granting councils



5.5 *A summary of the internal research environment and activity*

In summarizing the opinions of Memorial University researchers with respect to the internal research environment and activity, the following observations can be made:

- Three-quarters of researchers felt Memorial University is a research conscious institution;
- Faculty members were divided in terms of their awareness of internal incentives to seek research funding. Forty-three percent reported that they are unaware of internal incentives and an awareness campaign might pay dividends here;
- Researchers exhibited a high degree of willingness to work with academic colleagues, locally, nationally and internationally;
- Very few researchers cooperated in joint research projects with people in local institutions outside of Memorial University;
- Memorial University researchers had a low level of collaboration with the private sector, either locally, nationally or internationally; and
- Less than 20% of respondents set on adjudication committees for the granting councils, but 35% revealed that they were part of grant adjudication committees for other agencies.

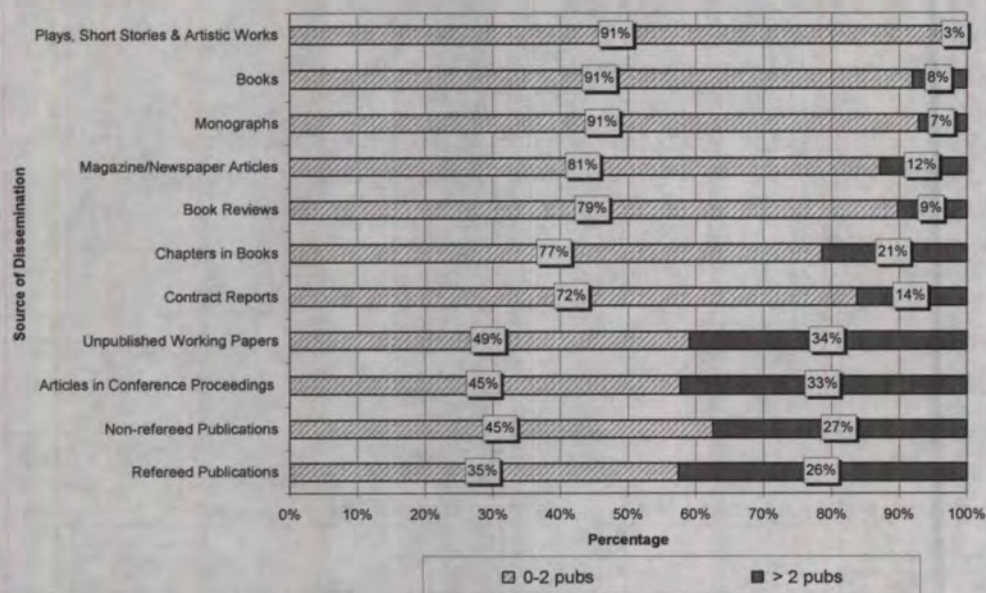
6. Research Output and Track Record

One of the more important factors in determining whether applicants receive research funding is their research track record. Within broad ranges, a series of questions were asked of Memorial University researchers to ascertain their publication record and demonstrated research productivity within the last 5 years. The responses to these questions are displayed in Table 2 and Figure 20. Unfortunately, in looking at the research productivity reflected by the number of books published, the 0-2 category is probably too broad to be meaningful. For certain disciplines achieving an output of two books in five years would be considered an exceptional level of output. Therefore caution needs to be exercised in interpreting this particular result.

Table 2: Distribution of Research Output for Memorial University Faculty Members by Source of Dissemination and Number of Publications in the Last Five Years

Dissemination Sources	Number of People Responding by Category					
	0-2 pubs	3-5 pubs	6-10 pubs	> 10 pubs	No Response	> 2 pubs
Refereed Publications	66	50	37	38	48	125
Non-refereed Publications	74	44	22	24	75	90
Articles in Conference Proceedings	71	53	23	12	80	88
Unpublished Working Papers	70	49	14	10	96	73
Contract Reports	100	20	6	12	101	38
Chapters in Books	118	32	3	1	85	36
Book Reviews	110	13	5	11	100	29
Magazine/Newspaper Articles	109	16	4	6	104	26
Monographs	120	9	2	1	107	12
Books	120	10	2	0	107	12
Plays, Short Stories & Artistic Works	109	3	1	7	119	11
Dissemination Sources	Percentage of Actual Respondents by Category					
	0-2 pubs	3-5 pubs	6-10 pubs	> 10 pubs	No Response	> 2 pubs
Refereed Publications	35%	26%	19%	20%		65%
Non-refereed Publications	45%	27%	13%	15%		55%
Articles in Conference Proceedings	45%	33%	14%	8%		55%
Unpublished Working Papers	49%	34%	10%	7%		51%
Contract Reports	72%	14%	4%	9%		28%
Chapters in Books	77%	21%	2%	1%		23%
Book Reviews	79%	9%	4%	8%		21%
Magazine/Newspaper Articles	81%	12%	3%	4%		19%
Monographs	91%	7%	2%	1%		9%
Books	91%	8%	2%	0%		9%
Plays, Short Stories & Artistic Works	91%	3%	1%	6%		9%

Figure 20: Distribution of research for Memorial University researchers by source of dissemination



6.1 Refereed publications

Approximately 35% of the respondents who answered the question on refereed publications published between zero and two refereed articles in the last five years. It is also useful to consider that 48 respondents chose not to answer this question. If these 48 people were included in the 0-2 category, and it is not certain that they should be, the percentage of respondents who report less than two articles was closer to 48%. Approximately one-quarter of the respondents who answered this question had between three and five articles in refereed publications in the last five years. A further 19% of researchers had published between 6 and 10 articles and only one-fifth of the respondents who answered this question indicated that they had published more than two articles per year on average over the last five years.

6.2 Non-refereed publications

A large proportion of Memorial University faculty members (45%) had two or less non-refereed publications. If the missing 75 observations were included with this category, then 62% of those surveyed did not credit their research track record with more than 2 non-refereed publications. While non-refereed publications may simultaneously help inform the public about the information that can be gleaned from the knowledge base available through the university and increase the accessibility of this knowledge base to the public, non-refereed publications receive almost no weight in promotion and tenure decisions. It is not surprising therefore that this mechanism of dissemination does not figure prominently in the track record of university researchers.

6.3 *Monographs*

More than 90% of those responding indicated that they had published less than 3 monographs. This number is really magnified when one considers that 107 of 239 returned surveys did not have an answer to this question. Obviously, very little of Memorial University faculty members' research output has been manifested in the form of monographs. This response rate is in line with the incentive structure at the university and the distribution of disciplines responding to the survey – for some of the disciplines, a monograph is not a viable option as an output vehicle for their research.

6.4 *Book Chapters*

The output of some Memorial University researchers is available through chapters in published books. Although there are 85 missing observations, 77% of faculty members reported having less than three book chapters. On the other hand, 21% of respondents noted that they have between 3 and 5 book chapters.

6.5 *Contract Reports*

When asked about their output as contract reports, 73% of respondents replied that their research record included less than 3 contract reports in the last five years and only 13% of those responding suggested that they had more than five. If the 101 missing observation were included in the 0-2 category, then the percentage of faculty members reporting less than 3 contract reports increased to 85% and less than 8% of researchers had more than five contract reports.

6.6 *Book Reviews*

Taking into account that 100 people provided no response to whether they have published book reviews, between 11 and 12 percent of Memorial University faculty had more than 5 book reviews in the last five years.

6.7 *Conference Proceedings*

Many faculty members distributed their research findings as conference proceedings. One-third of the respondents stated that they have between three and five articles published in conference proceedings. Another 22% had more than five in the last ten years. Forty-five percent of faculty reported having two or less articles published as conference proceeding and 80 people did not answer this question.

6.8 *Magazine and Newspaper Articles*

As Table 2 demonstrates, very little of the research energies are devoted to magazine or newspaper articles. For example, 81% of people answering this question had two or less articles and 104 people chose not to answer this question. Less than 8% of respondents

credit their record with more than five articles in the last five years. Again, for many of the disciplines responding to the survey, magazine and newspaper articles do not represent an accessible medium for releasing their research findings.

6.9 Working papers

A common practice in academia is to first develop research ideas through working papers and later refine them for publication in other forms. While there were 96 missing observations for this question, 49% of respondents replied that they had two or less working papers. Even so, one observes that 34% of Memorial University faculty members had between three and five working papers, 10% wrote between six and ten working papers and 7% of respondents indicated that they had more than ten working papers.

6.10 Books

Bearing in mind the caveat suggested above with respect to research output in the form of books, it is noteworthy that only 9% of respondents credited their research record with more than two published books. In addition, 107 people omitted this question.

6.11 Plays, short stories & artistic works

Given the distribution of disciplines responding to the survey, it is not surprising that very little of the research energies of Memorial University faculty are expressed as plays, short stories or artistic works. Specifically, 91% of faculty members report two or less items in this category and 119 people chose not to answer this question.

6.12 Summary of research track record

The record of research for Memorial University researchers can be summarized as follows:

- Sixty-five percent of researchers reported more than two published, refereed articles in the last five years and nearly 40% published more than one per year. This is consistent with distribution of faculties from which the respondents were drawn and the incentives implicit in promotion and tenure decisions at Memorial University;
- Nearly two-thirds of respondents indicated having less than three non-refereed publications. An important factor in the tenure and promotion decisions at Memorial University is the number of refereed publications on a person's CV. Therefore, it is not surprising that researchers place more emphasis on refereed journal publications than on the non-refereed papers;
- Less than 10% of researchers suggested having more than two monographs;

- Nearly one-quarter of Memorial University faculty members had more than two book chapters;
- Only 15% of researchers wrote more than two contract reports;
- Eighty-eight percent of the respondents completed less than three book reviews;
- One-third of the researchers disseminated their research output in the form of conference proceedings;
- Very little output had shown up as either magazine and newspaper articles or as artistic works;
- The majority of respondents had more than three working papers;
- Almost 10% of the faculty members published more than two books;
- There was some reluctance of researchers to answer these questions, as illustrated by the large number of "no responses"; and
- Much of the research effort of researchers was in the form of refereed publications, which is consistent with the criteria utilized for promotion and tenure in an academic environment.

7. Drivers of research and satisfaction with their status at Memorial University

Memorial University researchers were asked to rank in importance a series of factors that influence research activities and what level of satisfaction they attach to the current status of those research drivers at Memorial University. This information is presented in Tables 3 through 7 and Figure 21.

Table 3: The Importance of Various Research Drivers to Memorial University
Researchers by Number of Respondents and Category of Response

	Not Important	Somewhat Important	Moderately Important	Very Important	No Opinion	No Response
	1	2	3	4	5	0
	Number of Respondents					
External Research Funding Grants	6	7	17	53	105	46
Teaching Loads	6	14	26	67	87	38
Library Resources	11	14	26	67	80	40
Travel Funds	5	13	44	83	46	46
Graduate Students	22	11	21	59	71	43
Graduate/Doctorate Programs	24	10	22	59	69	44
Conference Participation	6	17	43	83	39	43
Critical Mass of Researchers	20	15	26	66	55	43
Technical Support	20	14	30	70	50	45
Seed Funding	19	13	37	65	48	45
Equipment	27	17	26	60	61	41
Facilities/Labs	32	14	21	51	58	51
Internal Research Funding	21	21	40	66	43	43
Administrative Support	17	28	51	60	41	41
Internal Recognition	28	36	53	49	26	43
Mentoring	44	29	25	49	31	48
Salary	55	24	36	49	33	40
Research Chairs	55	28	31	29	26	48
Private Sector Collaboration	58	25	33	28	17	46
Private Sector Research Contracts	59	27	33	26	13	46

Table 4: The Importance of Various Research Drivers to Memorial University
Researchers by Percentage of Respondents and Category of Response

	Not	Somewhat	Moderately		Very	No	Weighted
	Important	Important	Important	Important	Important	Opinion	Average
	1	2	3	4	5	0	Response
	Percent of Valid Responses						
External Research Funding Grants	3.1%	3.6%	8.8%	27.5%	54.4%	2.6%	4.3
Teaching Loads	3.0%	7.0%	12.9%	33.3%	43.3%	0.5%	4.1
Library Resources	5.5%	7.0%	13.1%	33.7%	40.2%	0.5%	4.0
Travel Funds	2.6%	6.7%	22.8%	43.0%	23.8%	1.0%	3.8
Graduate Students	11.2%	5.6%	10.7%	30.1%	36.2%	6.1%	3.8
Graduate/Doctorate Programs	12.3%	5.1%	11.3%	30.3%	35.4%	5.6%	3.8
Conference Participation	3.1%	8.7%	21.9%	42.3%	19.9%	4.1%	3.7
Critical Mass of Researchers	10.2%	7.7%	13.3%	33.7%	28.1%	7.1%	3.7
Technical Support	10.3%	7.2%	15.5%	36.1%	25.8%	5.2%	3.6
Seed Funding	9.8%	6.7%	19.1%	33.5%	24.7%	6.2%	3.6
Equipment	13.6%	8.6%	13.1%	30.3%	30.8%	3.5%	3.6
Facilities/Labs	17.0%	7.4%	11.2%	27.1%	30.9%	6.4%	3.5
Internal Research Funding	10.7%	10.7%	20.4%	33.7%	21.9%	2.6%	3.5
Administrative Support	8.6%	14.1%	25.8%	30.3%	20.7%	0.5%	3.4
Internal Recognition	14.3%	18.4%	27.0%	25.0%	13.3%	2.0%	3.0
Mentoring	23.0%	15.2%	13.1%	25.7%	16.2%	6.8%	3.0
Salary	27.6%	12.1%	18.1%	24.6%	16.6%	1.0%	2.9
Research Chairs	28.8%	14.7%	16.2%	15.2%	13.6%	11.5%	2.7
Private Sector Collaboration	30.1%	13.0%	17.1%	14.5%	8.8%	16.6%	2.5
Private Sector Research Contracts	30.6%	14.0%	17.1%	13.5%	6.7%	18.1%	2.4

Note: valid responses include only those who actually provided a response to the question. In calculating the weighted average responses, those providing no opinion or no responses were not considered in calculating the weights used. The weights employed were simply the proportion of those providing a response to one of the importance options. Each importance option was assigned a number from one to five – one was given to the “not important” category and five was allocated to the “very important” category. The weighted average response was calculated by applying the weights to these numbers and summing the products. In effect, this assumes that the frequency of response for each category is equivalent to the probability of occurrence of that response in the true population.

Table 5: The Satisfaction of Faculty Members With Various Research Drivers at Memorial University by Number of Respondents and Category of Response

	Very		Moderately		Very	No	No
	Dissatisfied	Dissatisfied	Satisfied	Satisfied	Satisfied	Opinion	Response
	1	2	3	4	5	0	
	Number of Respondents						
Library Resources	3	15	39	90	46	3	43
Conference Participation	3	22	65	71	13	21	44
External Research Funding Grants	10	38	56	54	10	25	46
Graduate/Doctorate Programs	14	28	63	52	4	31	47
Technical Support	11	37	66	44	7	28	46
Graduate Students	8	43	60	47	4	31	46
Salary	18	45	68	54	9	4	41
Teaching Loads	20	45	64	54	10	2	44
Facilities/Labs	15	31	54	43	4	40	52
Internal Recognition	21	37	60	61	2	16	42
Mentoring	12	38	45	40	4	47	53
Administrative Support	13	61	59	49	9	6	42
Equipment	17	42	70	39	4	25	42
Private Sector Research Contracts	8	33	29	18	4	95	52
Research Chairs	17	28	46	26	2	73	47
Travel Funds	19	56	63	39	3	13	46
Private Sector Collaboration	7	37	33	19	2	87	54
Critical Mass of Researchers	17	56	51	30	4	34	47
Seed Funding	26	49	43	29	4	40	48
Internal Research Funding	28	62	49	33	2	22	43

Table 6: The Satisfaction of Faculty Members With Various Research Drivers at Memorial University by Percentage of Respondents and Category of Response

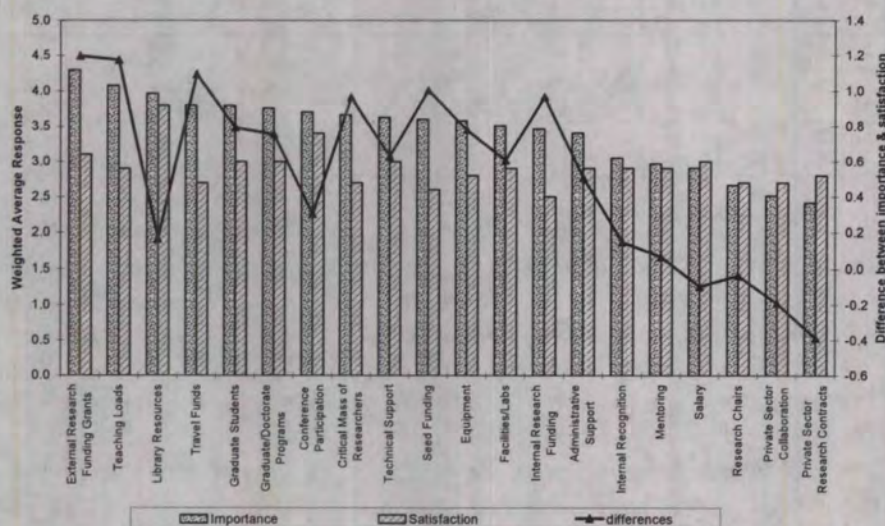
	Very Dissatisfied	Dissatisfied	Moderately Satisfied	Satisfied	Very Satisfied	No Opinion	Weighted Average
	1	2	3	4	5	0	Response
	Percent of Valid Respondents						
Library Resources	1.5%	7.7%	19.9%	45.9%	23.5%	1.5%	3.8
Conference Participation	1.5%	11.3%	33.3%	36.4%	6.7%	10.8%	3.4
External Research Funding Grants	5.2%	19.7%	29.0%	28.0%	5.2%	13.0%	3.1
Graduate/Doctorate Programs	7.3%	14.6%	32.8%	27.1%	2.1%	16.1%	3.0
Technical Support	5.7%	19.2%	34.2%	22.8%	3.6%	14.5%	3.0
Graduate Students	4.1%	22.3%	31.1%	24.4%	2.1%	16.1%	3.0
Salary	9.1%	22.7%	34.3%	27.3%	4.5%	2.0%	3.0
Teaching Loads	10.3%	23.1%	32.8%	27.7%	5.1%	1.0%	2.9
Facilities/Labs	8.0%	16.6%	28.9%	23.0%	2.1%	21.4%	2.9
Internal Recognition	10.7%	18.8%	30.5%	31.0%	1.0%	8.1%	2.9
Mentoring	6.5%	20.4%	24.2%	21.5%	2.2%	25.3%	2.9
Administrative Support	6.6%	31.0%	29.9%	24.9%	4.6%	3.0%	2.9
Equipment	8.6%	21.3%	35.5%	19.8%	2.0%	12.7%	2.8
Private Sector Research Contracts	4.3%	17.6%	15.5%	9.6%	2.1%	50.8%	2.8
Research Chairs	8.9%	14.6%	24.0%	13.5%	1.0%	38.0%	2.7
Travel Funds	9.8%	29.0%	32.6%	20.2%	1.6%	6.7%	2.7
Private Sector Collaboration	3.8%	20.0%	17.8%	10.3%	1.1%	47.0%	2.7
Critical Mass of Researchers	8.9%	29.2%	26.6%	15.6%	2.1%	17.7%	2.7
Seed Funding	13.6%	25.7%	22.5%	15.2%	2.1%	20.9%	2.6
Internal Research Funding	14.3%	31.6%	25.0%	16.8%	1.0%	11.2%	2.5

Note: valid responses include only those who actually provided a response to the question. In calculating the weighted average responses, those providing no opinion or no responses were not considered in calculating the weights used. The weights employed were simply the proportion of those providing a response to one of the satisfaction options. Each satisfaction option was assigned a number from one to five – one was given to the “very dissatisfied” category and five was allocated to the “very satisfied” category. The weighted average response was calculated by applying the weights to these numbers and summing the products. In effect, this assumes that the frequency of response for each category is equivalent to the probability of occurrence of that response in the true population.

Table 7: The Importance of Various Research Drivers Relative to Their Satisfaction Levels Reported by Memorial University Researchers

	Average Importance	Average Satisfaction	Difference
External Research Funding Grants	4.3	3.1	1.2
Teaching Loads	4.1	2.9	1.2
Library Resources	4.0	3.8	0.2
Travel Funds	3.8	2.7	1.1
Graduate Students	3.8	3.0	0.8
Graduate/Doctorate Programs	3.8	3.4	0.8
Conference Participation	3.7	3.0	0.3
Critical Mass of Researchers	3.7	2.8	1.0
Technical Support	3.6	3.0	0.6
Seed Funding	3.6	2.7	1.0
Equipment	3.6	2.9	0.8
Facilities/Labs	3.5	2.6	0.6
Internal Research Funding	3.5	2.5	1.0
Administrative Support	3.4	2.9	0.5
Internal Recognition	3.0	2.9	0.1
Mentoring	3.0	3.0	0.1
Salary	2.9	2.9	-0.1
Research Chairs	2.7	2.7	0.0
Private Sector Collaboration	2.5	2.7	-0.2
Private Sector Research Contracts	2.4	2.8	-0.4

Figure 21: Average Response of Memorial University Researchers in Terms of Satisfaction With and Importance of Various Research Drivers



The most important driver of research listed by the respondents, receiving an average response of 4.3 out of a possible 5, is the availability of external research funding grants. Approximately 82% of respondents considered this to be an important or very important driver of their research. This is followed closely in importance by teaching loads, which received an average response of 4.1 and was listed as important or very important by 77% of the respondents. It is reassuring to observe that the importance attributed to teaching as a research driver corroborates the opinions expressed above with respect to the relationship between teaching and research. Library resources (average score of 4.0), travel funds (average score of 3.8), graduates students (average score of 3.8) and the graduate/doctorate program (average score of 3.8) round out the top six drivers of research at Memorial University.

The least important drivers for Memorial University faculty members' research activities were private sector contracts, private sector collaboration and research chairs with average responses of 2.4, 2.5 and 2.7, respectively. Even though these items were considered not to be important drivers of researchers for most respondents, between 20 and 30 percent of the faculty revealed that they were important. Internal recognition (average score of 3.0), mentoring (average score of 3.0), and salary (average score of 2.9) also ranked in the bottom group in terms of their importance in driving research at Memorial University. Again, it is important to acknowledge that while this group is towards the bottom in terms of importance, these drivers were important or very important for 40% of respondents.

All the other potential drivers showed up as more or less the same – they were important to moderately important in driving research at Memorial University as reflected by the fact that the average response for each of them fell in the range of 3.4 to 3.7. These research drivers were important or very important for more than 50% of the respondents.

A review of the satisfaction levels reported by Memorial University faculty members for the identified research drivers reveals that library resources, with an average response of 3.8, was the only driver with which researchers indicated any degree of satisfaction. In fact, it was the only research driver for which more than 50% of the respondents reported being satisfied or very satisfied. Conference funding, with an average response of 3.4, and external research funding grants, with an average response of 3.1, represented the second and third highest research drivers in terms of satisfaction expressed by Memorial University researchers.

Respondents referred to being dissatisfied to moderately satisfied with all other research drivers. Internal research funding, seed funding and the critical mass of researchers at Memorial University came at the bottom of the list, with average responses of 2.5, 2.7 and 2.8, respectively.

From the perspective of the current study, it is interesting to note that less than 12% of Memorial University researchers were satisfied or very satisfied with the level of private sector collaboration and contracts. However, these items were also considered to be the

least important research drivers for the respondents. How could this be interpreted? One possible interpretation is that the "importance" response reflects that joint research initiatives with the private sector do not currently constitute a substantial part of research activities at Memorial University. The low level of satisfaction may imply that Memorial University researchers would be receptive to these collaborations should they become available in the future and should their research expertise prove useful in this regard.

If something is an important driver of research and researchers are generally satisfied with its status at Memorial University, then there is no real problem. On the other hand, if something is an important research driver and researchers assign a low level of satisfaction to that issue, then it might be reasonable to attempt to rectify that particular problem. Addressing this problem should translate into enhanced research productivity at Memorial University. Comparing the differences between the importance ascribed to various research drivers and the level of satisfaction that researchers attach to them reveals a number of interesting observations. Specifically, the items that seem most divergent in terms of their importance to research relative to their satisfaction levels are:

- external research funding;
- teaching loads;
- travel funds;
- critical mass of researchers;
- seed funding; and
- internal research funding.

The importance of drivers to the research activity of Memorial University researchers can be summarized as follows:

- The drivers that researchers credited with being important in influencing their research activity were:
 - external research funding grants;
 - teaching loads;
 - library resources;
 - travel funds;
 - graduate students;
 - graduate/doctorate programs;
 - conference participation;
 - critical mass of researchers;
 - technical support;
 - seed funding;
 - equipment, facilities and labs; and
 - internal research funding;
- There was no consensus on the role of salary, mentoring or research chairs in influencing research activity;
- Most researchers were neutral or had no opinion with respect to the role that internal recognition of research plays in enhancing research activity at Memorial University; and

- The majority of researchers implied that private sector research collaboration and private sector contracts were not important in influencing their research activity.

In terms of the satisfaction that researchers attach to the levels of these drivers at Memorial University, the key findings can be summarized as follows:

- With respect to the status of research drivers at Memorial University, researchers appeared to be more or less satisfied with:
 - library resources;
 - conference travel;
 - facilities and labs;
 - the graduate program; and
 - external research funding;
- Researchers appeared to be dissatisfied with:
 - administrative support;
 - internal research funding;
 - the critical mass of researchers; and
 - seed funding;
- There was no consensus on the level of satisfaction attached to the following research drivers:
 - teaching loads;
 - salary;
 - internal recognition of research;
 - graduate students;
 - equipment;
 - travel funds; and
 - technical support; and
- There was no opinion or researchers were neutral on their satisfaction with:
 - Mentoring;
 - research chairs;
 - private sector collaboration; and
 - private sector contracts.

The research drivers for which their importance and satisfaction were most out of line are:

- external research funding;
- teaching loads;
- travel funds;
- critical mass of researchers;
- seed funding; and
- internal research funding.

These represent some of the more productive areas where research productivity might be enhanced at Memorial University.

8. Research Funding

8.1 *External funding sources*

An important input into research productivity is whether faculty members have sufficient resources to effectively complete their research activities. An important indicator of whether sufficient resources exist is the extent to which researchers receive external research funding. The survey included a number of questions asking whether Memorial University researchers participated in external funding programs. Specifically, researchers were asked about the following areas of external research funding:

- Social Science and Humanities Research Council of Canada (SSHRC) funding;
- Natural Sciences and Engineering Research Council of Canada (NSERC) funding;
- Canadian Institutes of Health Research (CIHR) funding;
- Canadian Foundation for Innovation (CFI) funding;
- Networks of Centres of Excellence funding;
- Tri-Council funding;
- Canada Council funding;
- Atlantic Canada Opportunities Agency (ACOA) funding;
- foundations funding;
- non-profit Organizations funding;
- Heart and Stroke Foundation of Canada funding;
- Canadian Foundation for Climate and Atmospheric Services funding;
- SSHRC Initiatives on the New Economy funding;
- Newfoundland and Labrador Arts Council funding;
- World Wildlife Fund Canada funding;
- Banting Research Foundation funding;
- NSERC Collaborative Research and Development program funding;
- Imperial Oil Limited funding;
- CIHR Research-Based Pharmaceutical Companies Health Program funding;
- Fisheries and Oceans Canada science Subvention Program funding;
- Literacy Development Council of Newfoundland and Labrador funding; and
- Canadian Health Services Research Foundation funding.

The analysis associated with each of these programs/funding sources is provided in a separate section below.

8.2 SSHRC Funding

Figure 22 and Table 8 illustrate that only 37% or 58 of 156 respondents had applied for any SSHRC funding in the last 10 years. If the 82 “no-responses” were included with the 99 researchers who did not apply for any SSHRC funding in the last 10 years, then only 24% of the faculty have applied for funding from SSHRC.

Figure 22: Distribution of respondents by number of SSHRC grants applied for and funded over the last 10 years

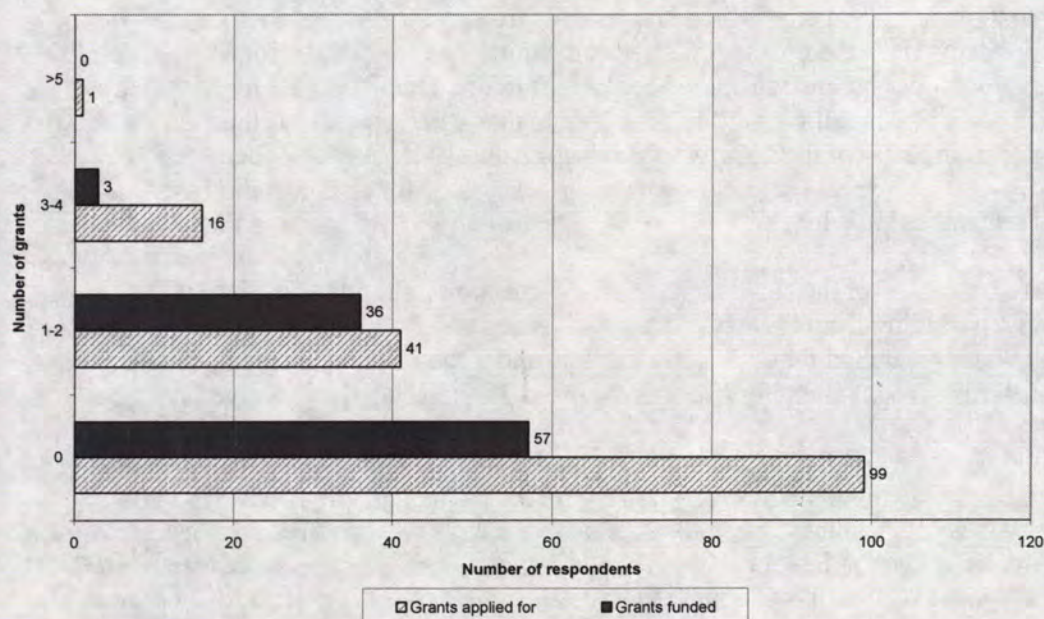


Table 8: Distribution of Respondents by the Number of SSHRC Grants Applied for and Funded in the Last 10 Years

	0 Grants	1-2 Grants	3-4 Grants	5 or More Grants	No Response
Number of Respondents					
Applied for	98	41	16	1	83
Funded	57	36	3	0	143
Percent of Respondents					
Applied for	41.0%	17.2%	6.7%	0.4%	34.7%
Funded	23.8%	15.1%	1.3%	0%	59.8%
Valid Percent of Respondents					
Applied for	62.8%	26.3%	10.3%	0.6%	
Funded	59.4%	37.5%	3.1%	0%	

Even though this percentage is low, it is explained, in part, by the fact that a significant number of the respondents come under the jurisdiction of other granting councils. The distribution across faculties of researchers who applied for SSHRC funding, displayed in Table 9, is enlightening in this regard. For example, 82% of respondents from the Faculty of Arts who answered this question reported that they had applied for SSHRC funding in the last ten years; 86% of the Faculty of Business Administration respondents indicated that they also applied for funding under this program; 69% of the Faculty of Education respondents applied; and 75% of the School of Nursing respondents submitted an application for SSHRC funding. On the other hand, no one from the Marine Institute or Faculty of Engineering and Applied Sciences indicated that they had applied for SSHRC funding and only 9% of respondents from the Faculty of Medicine and 7% of respondents from the Faculty of Science submitted an application for SSHRC funding. If the "no-responses" are considered equivalent to not having applied for any funding, then these percentages fall further. Even so, more than three quarters of the Faculty of Arts respondents, 60% of the Faculty of Business Administration respondents, two-thirds of the Faculty of Education respondents and in excess of 40% of the School of Nursing respondents acknowledged applying for at least one SSHRC grant in the last 10 years.

Interestingly, 39 of those who answered the question on funding replied that they received funding from SSHRC. When this is compared to the number of respondents who actually applied for one or more grants under the SSRHC program, this represents a two-thirds success rate (58 people applied and 39 indicated they received funding).

While the Office of Research confirms that the success rate for SSHRC is variable, typically in the range of 35 to 40%, these success rates seem high. Even when the strategic grants applicants, who normally have a higher success rate, are separated from researchers who applied for regular SSHRC operating grants, the success rate reported by the respondents is still higher than the average observed by the Office of Research. Furthermore, without having had the opportunity to compile specific data on this issue, the Office of Research has suggested that the application rates reported by the survey respondents are larger than those that appear to be consistent with participation in this program by Memorial University researchers. Moreover, this holds true even when concentrating only on the disciplines that come under the purview of SSHRC. Hence, although the distribution of respondents is similar to the university population in broad characteristics, it does appear to be skewed toward those researchers who have had more experience in applying for these grants and who have been relatively more successful with this program than the relevant population of Memorial University faculty members.

Table 9: Distribution of Respondents by the Number of SSHRC Grants
Applied for in the Last 10 Years Across Faculties and Institutes

	Applied for 0 Grants	Applied for 1-2 Grants	Applied for 3-4 Grants	Applied for 5 or More Grants	No Response
Number of Respondents					
SWGC	9	1	0	0	4
Arts	7	20	11	0	3
Business	1	6	0	0	3
Education	4	5	3	1	3
Engineering	6	0	0	0	7
Marine Inst	3	0	0	0	11
Medicine	20	1	1	0	10
Nursing	1	3	0	0	3
Other	10	3	0	0	11
Science	38	2	1	0	27
Total	99	41	16	1	82
Percent of Respondents					
SWGC	64.3%	7.1%	0.0%	0.0%	28.6%
Arts	17.1%	48.8%	26.8%	0.0%	7.3%
Business	10.0%	60.0%	0.0%	0.0%	30.0%
Education	25.0%	31.3%	18.8%	6.3%	18.8%
Engineering	46.2%	0.0%	0.0%	0.0%	53.8%
Marine Inst	21.4%	0.0%	0.0%	0.0%	78.6%
Medicine	62.5%	3.1%	3.1%	0.0%	31.3%
Nursing	14.3%	42.9%	0.0%	0.0%	42.9%
Other	41.7%	12.5%	0.0%	0.0%	45.8%
Science	55.9%	2.9%	1.5%	0.0%	39.7%
Total	41.4%	17.2%	6.7%	0.4%	34.3%
Valid Percent of Respondents					
SWGC	90.0%	10.0%	0.0%	0.0%	
Arts	18.4%	52.6%	28.9%	0.0%	
Business	14.3%	85.7%	0.0%	0.0%	
Education	30.8%	38.5%	23.1%	7.7%	
Engineering	100.0%	0.0%	0.0%	0.0%	
Marine Inst	100.0%	0.0%	0.0%	0.0%	
Medicine	90.9%	4.5%	4.5%	0.0%	
Nursing	25.0%	75.0%	0.0%	0.0%	
Other	76.9%	23.1%	0.0%	0.0%	
Science	92.7%	4.9%	2.4%	0.0%	
Total	63.1%	26.1%	10.2%	0.6%	

8.3 NSERC Funding

Figure 23 and Table 10 show that 55% of the people (84 of 153) who answered to this question submitted at least one NSERC application in the last 10 years. Allocating the missing 86 observations to the “zero-application” category, this number drops to 35%. That is, 35% of all Memorial University researchers who responded to the survey replied that they have applied for NSERC funding within the last ten years.

Figure 23: Distribution of respondents by number of NSERC grants applied for and funded over the last 10 years

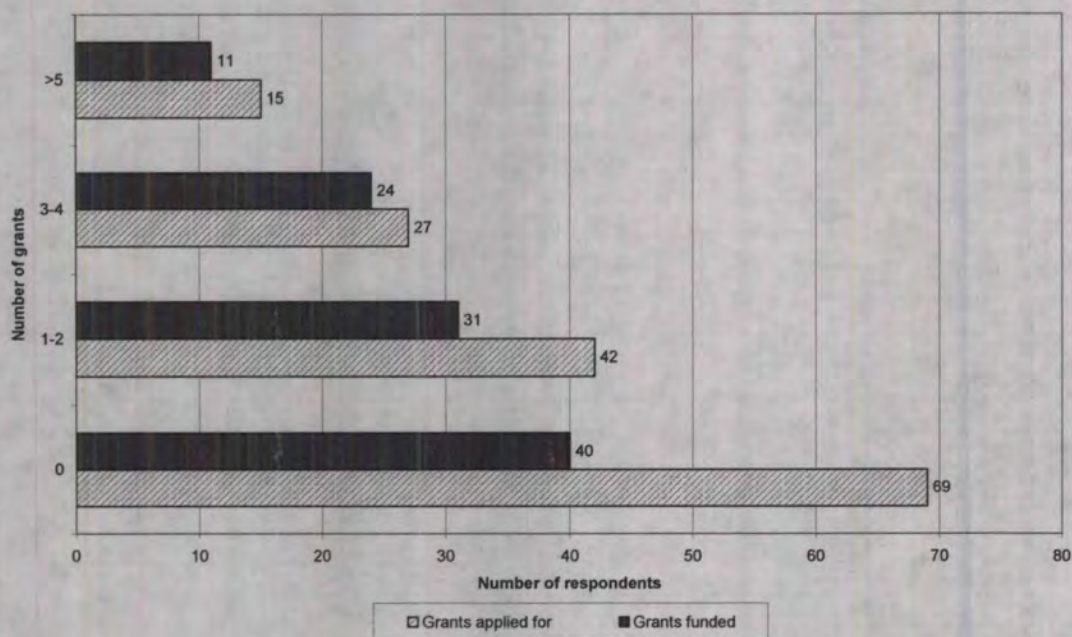


Table 10: Distribution of Respondents by the Number of NSERC Grants Applied for and Funded in the Last 10 Years

	0 Grants	1-2 Grants	3-4 Grants	5 or More Grants	No Response
Number of Respondents					
Applied for	69	42	27	15	86
Funded	40	31	24	11	133
Percent of Respondents					
Applied for	28.9%	17.6%	11.3%	6.3%	36.0%
Funded	16.7%	13.0%	10.0%	4.6%	55.6%
Valid Percent of Respondents					
Applied for	45.1%	27.5%	17.6%	9.8%	
Funded	37.7%	29.2%	22.6%	10.4%	

The distribution of applicants for NSERC funding by faculty is displayed in Table 11. As illustrated in this table, 100% of respondents from the Faculty of Engineering and Applied Sciences reported applying for NSERC funding; 93% of the respondents from the Faculty of Science reported applying for NSERC funding; one-third of the respondents from Sir Wilfred Grenfell College, the Marine Institute and Medicine/Pharmacy applied for funding under NSERC. Surprisingly, between 20 and 30% of the respondents from the Faculties of Arts and Business Administration indicated that they had applied for funding under this program. At this point, it is important to consider that only four respondents from the Faculty of Arts actually applied under NSERC. However, this represented approximately 20% of the people from the Faculty of Arts who provided a response to this question. With small numbers, percentages can be deceiving.

These percentages are altered when the “no-response” category is amalgamated with the “no-application” category. Making this adjustment implies that 79% of the Faculty of Science and 77% of the Faculty of Engineering and Applied Sciences had applied for NSERC grants in the last 10 years. Twenty-five percent of researchers from the Faculty of Medicine applied under this program and approximately 20% from the Faculty of Business Administration and Sir Wilfred Grenfell College applied. Furthermore, only 9% of the Faculty of Arts respondents and 7% of the Marine Institute had applied to NSERC.

Sixty-six respondents who answered this question indicated that they received funding under NSERC. This represents an 80% success rate (84 researchers applied and 66 researchers received funding). Again, this seems high, but it appears to be more or less consistent with the information available through the Office of Research. This office confirms that the recent experience with NSERC renewal applications has been in the range of 70 to 98% and 60 to 80% overall, which includes new applications. However, according to the Office of Research, the application rate appears to be consistent with that observed in the Faculty of Engineering and Applied Sciences but it does appear to be higher than that experienced at Memorial University for the other disciplines that are eligible to apply under the NSERC programs. Unfortunately, the detailed data required to confirm this is not available at the time of writing this report.

Table 11: Distribution of Respondents by the Number of NSERC Grants
Applied for in the Last 10 Years Across Faculties and Institutes

	Applied for 0 Grants	Applied for 1-2 Grants	Applied for 3-4 Grants	Applied for 5 or More Grants	No Response
Number of Respondents					
SWGC	6	3	0	0	5
Arts	12	2	1	1	25
Business	5	2	0	0	3
Education	10	0	0	0	6
Engineering	0	4	3	3	3
Marine Inst	2	0	1	0	11
Medicine	17	7	1	0	7
Nursing	2	0	0	0	5
Other	11	1	1	0	11
Science	4	23	20	11	10
Total	69	42	27	15	86
Percent of Respondents					
SWGC	42.9%	21.4%	0.0%	0.0%	35.7%
Arts	29.3%	4.9%	2.4%	2.4%	61.0%
Business	50.0%	20.0%	0.0%	0.0%	30.0%
Education	62.5%	0.0%	0.0%	0.0%	37.5%
Engineering	0.0%	30.8%	23.1%	23.1%	23.1%
Marine Inst	14.3%	0.0%	7.1%	0.0%	78.6%
Medicine	53.1%	21.9%	3.1%	0.0%	21.9%
Nursing	28.6%	0.0%	0.0%	0.0%	71.4%
Other	45.8%	4.2%	4.2%	0.0%	45.8%
Science	5.9%	33.8%	29.4%	16.2%	14.7%
Total	28.9%	17.6%	11.3%	6.3%	36.0%
Valid Percent of Respondents					
SWGC	66.7%	33.3%	0.0%	0.0%	
Arts	75.0%	12.5%	6.3%	6.3%	
Business	71.4%	28.6%	0.0%	0.0%	
Education	100.0%	0.0%	0.0%	0.0%	
Engineering	0.0%	40.0%	30.0%	30.0%	
Marine Inst	66.7%	0.0%	33.3%	0.0%	
Medicine	68.0%	28.0%	4.0%	0.0%	
Nursing	100.0%	0.0%	0.0%	0.0%	
Other	84.6%	7.7%	7.7%	0.0%	
Science	6.9%	39.7%	34.5%	19.0%	
Total	45.1%	27.5%	17.6%	9.8%	

8.4 CIHR Funding

Funding requests from Memorial University researchers under the CIHR are exhibited in Figure 24 and Table 12. Twenty-eight percent or 39 of 140 respondents indicated that they had applied for funding under this granting council in the last 10 years. As well, when the 99 missing observations are taken into account, this percent fell to 16%.

Figure 24: Distribution of respondents by number of CIHR/MRC grants applied for and funded over the last 10 years

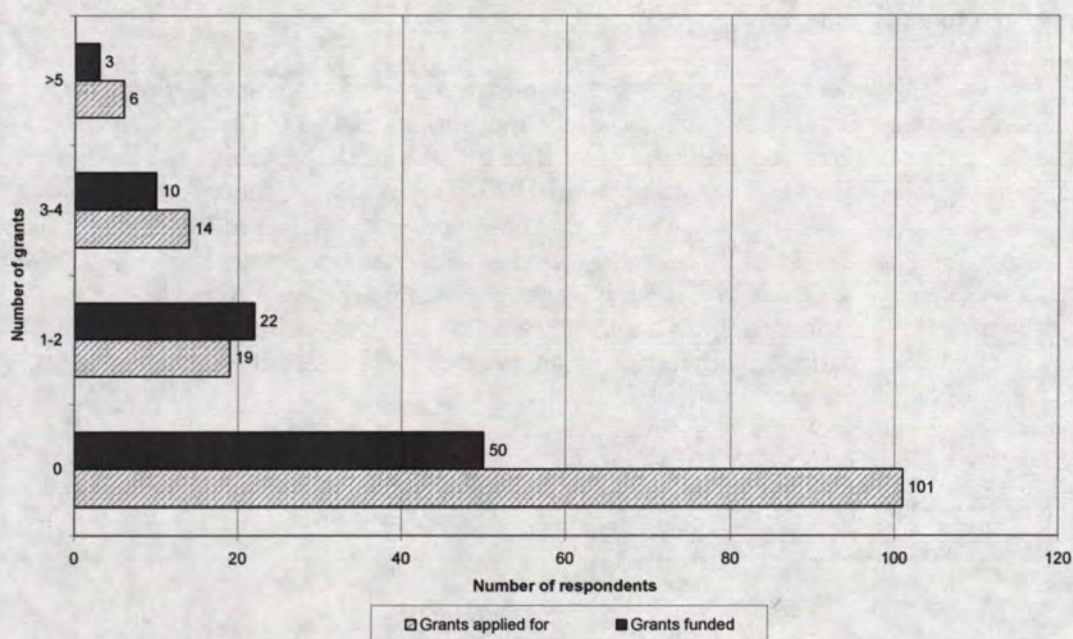


Table 12: Distribution of Respondents by the Number of CIHR Grants Applied for and Funded in the Last 10 Years

	0 Grants	1-2 Grants	3-4 Grants	5 or More Grants	No Response
Number of Respondents					
Applied for	101	19	14	6	99
Funded	50	22	10	0	157
Percent of Respondents					
Applied for	42.3%	7.9%	5.9%	2.5%	41.4%
Funded	20.9%	9.2%	4.2%	0%	65.7%
Valid Percent of Respondents					
Applied for	72.1%	13.6%	10.0%	4.3%	
Funded	61.0%	26.8%	12.2%	0%	

Examining the distribution of applications across faculties (see Table 13), one observes that 78% of respondents from the Faculty of Medicine and the School of Pharmacy applied under the CIHR/MRC program and 50% of the School of Nursing submitted applications. In addition, there were 24% of respondents from the Faculty of Arts that indicated that they applied for funding under this program; 14% of the Faculty of Engineering Applied Sciences; and 24% of the Faculty of Science. When the missing observations were combined with the "no-application" category, the implied distribution of applicants to CIHR funding programs is: 66% of researchers from the Faculty of Medicine, 29% from the School of Nursing, and 13% of researchers from the Faculty of Science. No other group of researchers had more than 10% of its group apply for research funding under this program.

Thirty-five respondents who answered this question received funding under the CIHR. This represents a 90% success rate (35 of 39 applications funded). The actual success rate under this program, according to the Office of Research, is variable, ranging from 25% in the fall of 1998 to 73% in the fall of 1999. Obviously, the success rate reported by the survey respondents is higher than that observed by the Office of Research for the corresponding group. In addition, the reported application rate appears to be higher than that observed by the Office of Research for the relevant disciplines. Again, the respondents to this survey appeared to be skewed towards those researchers who had relatively more experience with this program and who were relatively more successful in receiving funding under this program.

Table 13: Distribution of Respondents by Number of CIHR/MRC Grants
Applied for in the Last 10 Years Across Faculties and Institutes

	Applied for 0 Grants	Applied for 1-2 Grants	Applied for 3-4 Grants	Applied for 5 or More Grants	No Response
Number of Respondents					
SWGC	9	0	0	0	5
Arts	13	4	0	0	24
Business	5	0	0	0	5
Education	10	0	0	0	6
Engineering	6	1	0	0	6
Marine Inst	3	1	0	0	10
Medicine	6	5	10	6	5
Nursing	2	2	0	0	3
Other	12	1	0	0	11
Science	35	5	4	0	22
Total	101	19	14	6	99
Percent of Respondents					
SWGC	64.3%	0.0%	0.0%	0.0%	35.7%
Arts	31.7%	9.8%	0.0%	0.0%	58.5%
Business	50.0%	0.0%	0.0%	0.0%	50.0%
Education	62.5%	0.0%	0.0%	0.0%	37.5%
Engineering	46.2%	7.7%	0.0%	0.0%	46.2%
Marine Inst	21.4%	7.1%	0.0%	0.0%	71.4%
Medicine	18.8%	15.6%	31.3%	18.8%	15.6%
Nursing	28.6%	28.6%	0.0%	0.0%	42.9%
Other	50.0%	4.2%	0.0%	0.0%	45.8%
Science	51.5%	7.4%	5.9%	0.0%	32.4%
Total	42.3%	7.9%	5.9%	2.5%	41.4%
Valid Percent of Respondents					
SWGC	100.0%	0.0%	0.0%	0.0%	
Arts	76.5%	23.5%	0.0%	0.0%	
Business	100.0%	0.0%	0.0%	0.0%	
Education	100.0%	0.0%	0.0%	0.0%	
Engineering	85.7%	14.3%	0.0%	0.0%	
Marine Inst	75.0%	25.0%	0.0%	0.0%	
Medicine	22.2%	18.5%	37.0%	22.2%	
Nursing	50.0%	50.0%	0.0%	0.0%	
Other	92.3%	7.7%	0.0%	0.0%	
Science	76.1%	10.9%	8.7%	0.0%	
Total	72.1%	13.6%	10.0%	4.3%	

8.5 CFI Funding

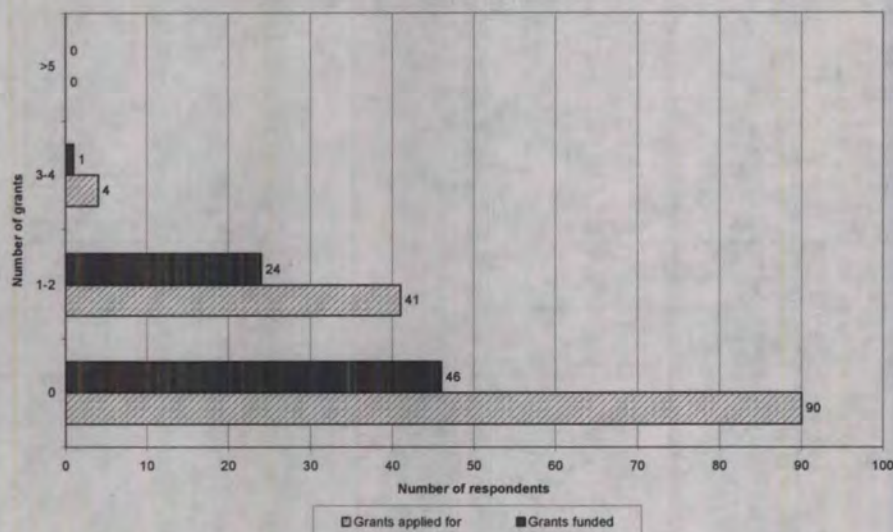
Figure 25 and Table 14 show that 45 of 135 (33%) of those responding to the question indicated that they have applied for funding under the Canadian Foundation for Innovation, but there were 104 missing observations. Adjusting for the missing observations reveals that 19% of Memorial University researchers answered that they have been involved in at least one CFI application within the last 10 years.

Table 14: Distribution of Respondents by the Number of CFI Grants Applied for and Funded in the Last 10 Years

	0 Grants	1-2 Grants	3-4 Grants	5 or More Grants	No Response
Number of Respondents					
Applied for	90	41	4	0	104
Funded	46	24	1	0	168
Percent of Respondents					
Applied for	37.7%	17.2%	1.7%	0%	43.5%
Funded	19.2%	10.0%	0.4%	0%	70.3%
Valid Percent of Respondents					
Applied for	66.7%	30.4%	3.0%	0%	
Funded	64.8%	33.8%	1.4%	0%	

The success rate reported for applications under the CFI is displayed in Figure 25. Thirty-four percent of people responding to this question stated that they received funding under this program, which corresponds to a 56% success rate (25 of 45 applicants were funded). Even allowing for the 165 missing observations, these numbers are high in relation to Memorial University's success rate under this program.

Figure 25 Distribution of respondents by number of Canadian Foundation for Innovation grants applied for and funded over the last 10 years



8.6 Networks of Centres of Excellence Funding

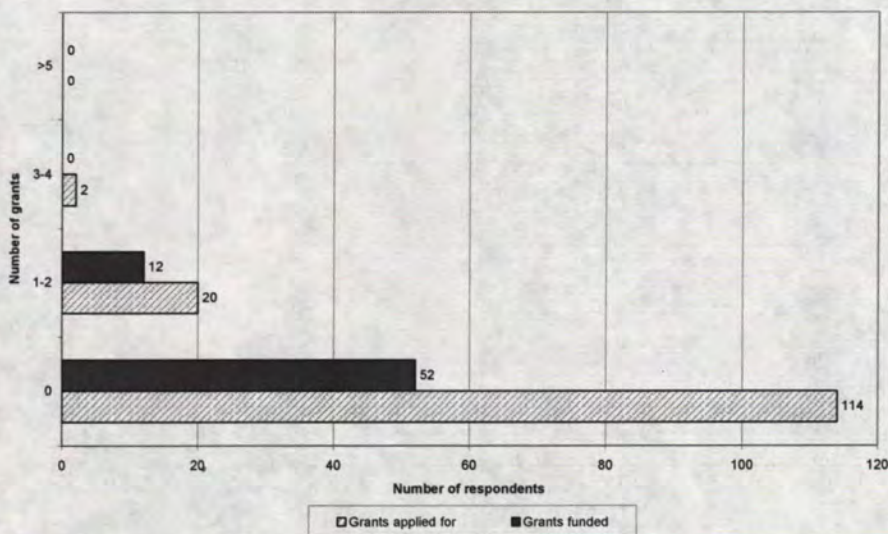
Figure 26 and Table 15 establish that 16% or 22 of 136 of those who answered the question had applied for funding to the Networks of Centres of Excellence. Also, 103 people did not answer this question. Only 9% of Memorial faculty surveyed applied for funding through the Networks of Centres of Excellence.

Table 15: Distribution of Respondents by the Number of NCE Grants Applied for and Funded in the Last 10 Years

	0 Grants	1-2 Grants	3-4 Grants	5 or More Grants	No Response
Number of Respondents					
Applied for	114	20	2	0	103
Funded	52	12	0	0	175
Percent of Respondents					
Applied for	47.7%	8.4%	0.8%	0.0%	43.1%
Funded	21.8%	5.0%	0%	0%	73.2%
Valid Percent of Respondents					
Applied for	83.8%	14.7%	1.5%	0%	
Funded	81.3%	18.8%	0%	0%	

As demonstrated in Figure 26, 18% of respondents indicated that they received funding under this program and 172 researchers did not respond to his question. This represents a 55% success rate (12 of 22 applicants were funded).

Figure 26: Distribution of respondents by number of Networks of Centres of Excellence grants applied for and funded over the last 10 years



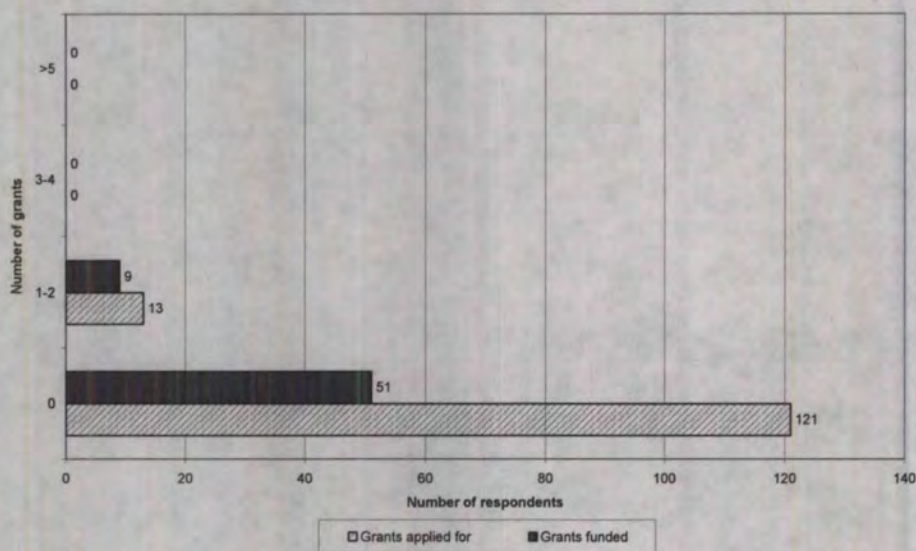
8.7 Tri-Council Funding

Figure 27 and Table 16 illustrate that 13 researchers (10% of respondents) submitted an application under the Tri-Council grants program. Allowing for 105 missing observations, only 5% of Memorial University researchers reported that they applied for funding under this program. As illustrated in Figure 27, 15% of those who responded to the question suggested that they were successful in receiving funding. With 9 of 13 applicants confirming that they have received funding, this corresponds to a 69% success rate.

Table 16: Distribution of Respondents by the Number of Tri-Council Grants Applied for and Funded in the Last 10 Years

	0 Grants	1-2 Grants	3-4 Grants	5 or More Grants	No Response
Number of Respondents					
Applied for	121	13	0	0	105
Funded	51	9	0	0	179
Percent of Respondents					
Applied for	50.6%	5.4%	0%	0%	43.9%
Funded	21.3%	3.8%	0%	0%	74.9%
Valid Percent of Respondents					
Applied for	90.3%	9.7%	0%	0%	
Funded	85.0%	15.0%	0%	0%	

Figure 27: Distribution of respondents by number of Tri-Council grants applied for and funded over the last 10 years



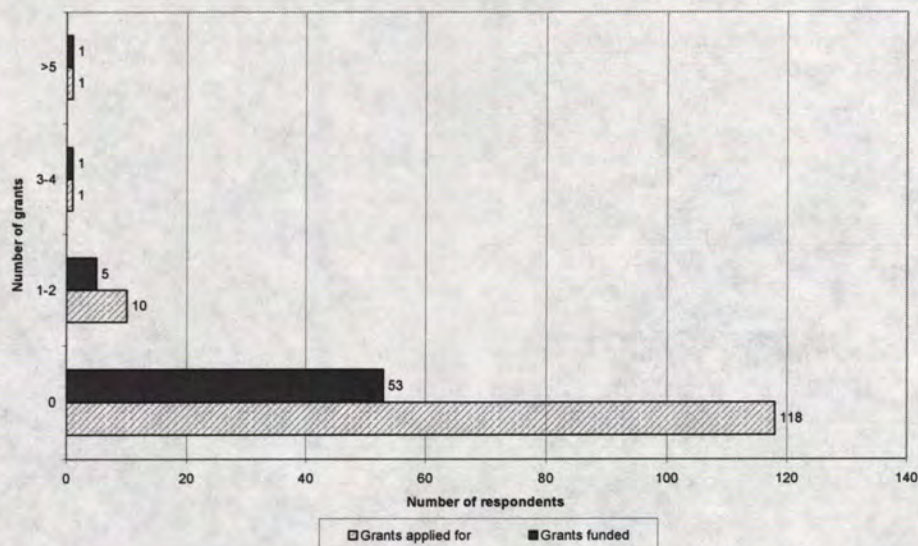
8.8 Canada Council Funding

Figure 28 and Table 17 reveal that less than 12 of 130 or 10% of respondents applied for funding through the Canada Council. When the 110 missing observations are taken into account, this falls to under 5%. According to the information presented in Figure 28, 11% of the applicants from Memorial were successful. This is a success rate of 58% (7 of 12 applicants received funding). There were 176 missing observations for this question.

Table 17: Distribution of Respondents by the Number of Canada Council Grants Applied for and Funded in the Last 10 Years

	0 Grants	1-2 Grants	3-4 Grants	5 or More Grants	No Response
Number of Respondents					
Applied for	118	10	1	0	110
Funded	53	5	1	1	179
Percent of Respondents					
Applied for	49.4%	4.2%	0.4%	0%	46.0%
Funded	22.2%	2.1%	0.4%	0.4%	74.9%
Valid Percent of Respondents					
Applied for	91.5%	7.8%	0.8%	0%	
Funded	88.3%	8.3%	1.7%	1.7%	

Figure 28: Distribution of respondents by number of Canada Council grants applied for and funded over the last 10 years



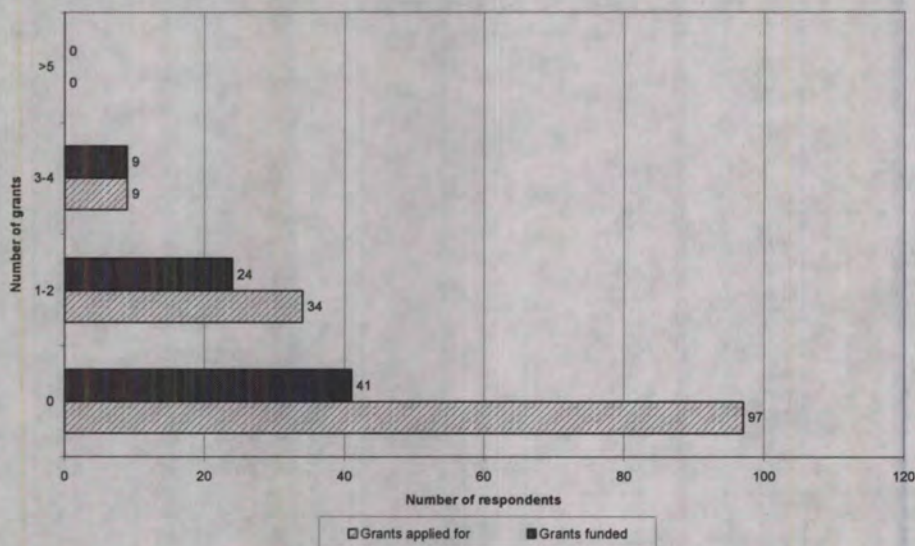
8.9 ACOA Funding

Figure 29 and Table 18 establish that 31% (43 of 140) of the faculty responding to this question indicated that they had applied for some ACOA funding. Allocating the 99 missing observations to the "did-not-apply" category, only 18% of Memorial University researchers applied for ACOA funding. Seventy-seven percent (33 of 43) of those who applied for funding were funded.

Table 18: Distribution of Respondents by the Number of ACOA Grants Applied for and Funded in the Last 10 Years

	0 Grants	1-2 Grants	3-4 Grants	5 or More Grants	No Response
Number of Respondents					
Applied for	97	34	9	0	99
Funded	41	24	9	0	165
Percent of Respondents					
Applied for	40.6%	14.2%	3.8%	0%	41.4%
Funded	17.2%	10.0%	3.8%	0%	69.0%
Valid Percent of Respondents					
Applied for	69.3%	24.3%	6.4%	0%	
Funded	55.4%	32.4%	12.2%	0%	

Figure 29 Distribution of respondents by number of Atlantic Canada Opportunities Agency grants applied for and funded over the last 10 years



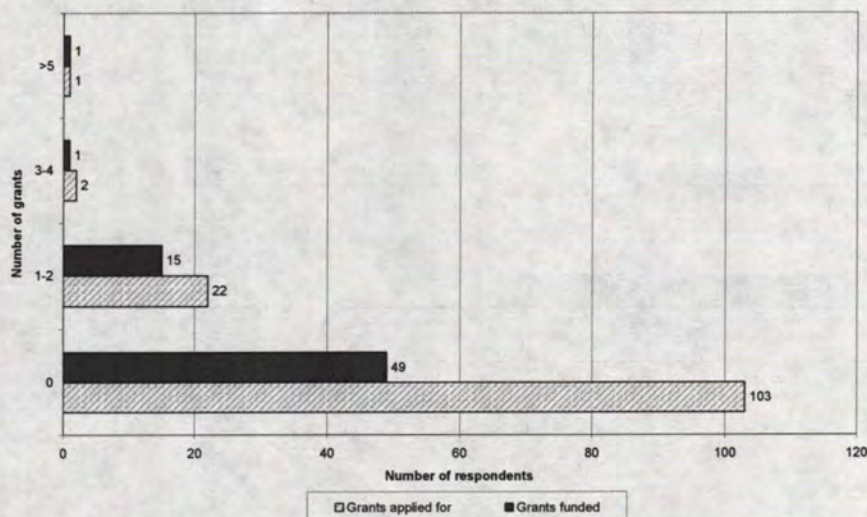
8.10 Foundations Funding

Figure 30 and Table 19 display the proportion of the faculty who applied to foundations for funding. Twenty-five of one hundred and twenty-eight (19%) faculty members suggested that they attempted to receive support for their research from foundations. Assuming the 111 missing observations did not apply, only 10% of people responding to the survey signified that they had applied to foundations for funding. Figure 30 shows that 25% of those who responded to this question received funding. There were 170 missing observations for this question. With 17 of 25 applicants being funded, the success rate was 68%.

Table 19: Distribution of Respondents by the Number of Foundations Grants Applied for and Funded in the Last 10 Years

	0 Grants	1-2 Grants	3-4 Grants	5 or More Grants	No Response
Number of Respondents					
Applied for	103	22	2	1	111
Funded	49	15	1	1	173
Percent of Respondents					
Applied for	43.1%	9.2%	0.8%	0.4%	46.4%
Funded	20.5%	6.3%	0.4%	0.4%	72.4%
Valid Percent of Respondents					
Applied for	80.5%	17.2%	1.6%	0.8%	
Funded	74.2%	22.7%	1.5%	1.5%	

Figure 30: Distribution of respondents by number of Foundations grants applied for and funded over the last 10 years



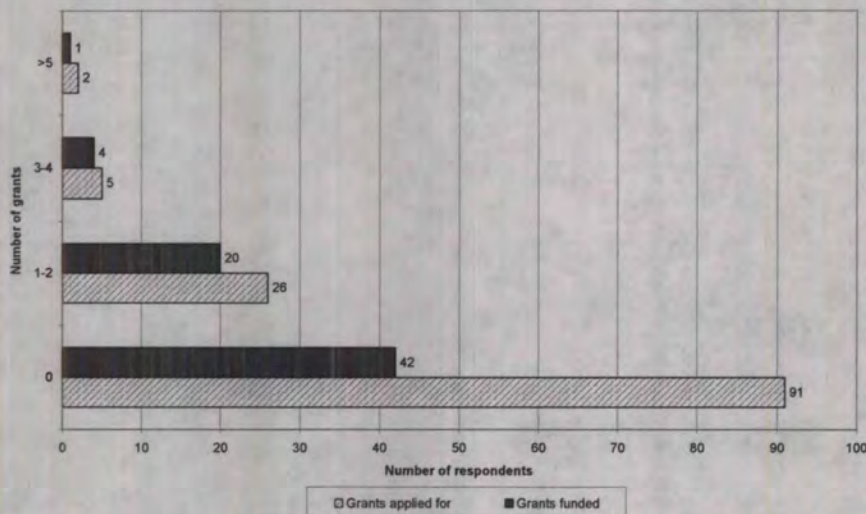
8.11 Non-profit Organizations Funding

The proportion of Memorial University researchers who applied to non-profit organizations for research funding is given in Figure 31 and Table 20. Twenty-six percent (33 of 124) of the respondents who answered that question expressed that they had applied to non-profit organizations for funding of their research. When the 115 missing observations were included, that percentage fell to 14%. Thirty-six percent of the respondents were funded through this source. With 25 of 33 applicants being funded, this represents a success rate of 76%. As well, 169 people did not respond to that question.

Table 20: Distribution of Respondents by the Number of Non-profit Organizations Grants Applied for and Funded in the Last 10 Years

	0 Grants	1-2 Grants	3-4 Grants	5 or More Grants	No Response
Number of Respondents					
Applied for	91	26	5	2	115
Funded	42	20	4	1	172
Percent of Respondents					
Applied for	38.1%	10.9%	2.1%	0.8%	48.1%
Funded	17.6%	8.4%	1.7%	0.4%	72.0%
Valid Percent of Respondents					
Applied for	73.4%	21.0%	4.0%	1.6%	
Funded	62.7%	29.9%	6.0%	1.5%	

Figure 31: Distribution of respondents by number of Non-Profit Organization grants applied for and funded over the last 10 years



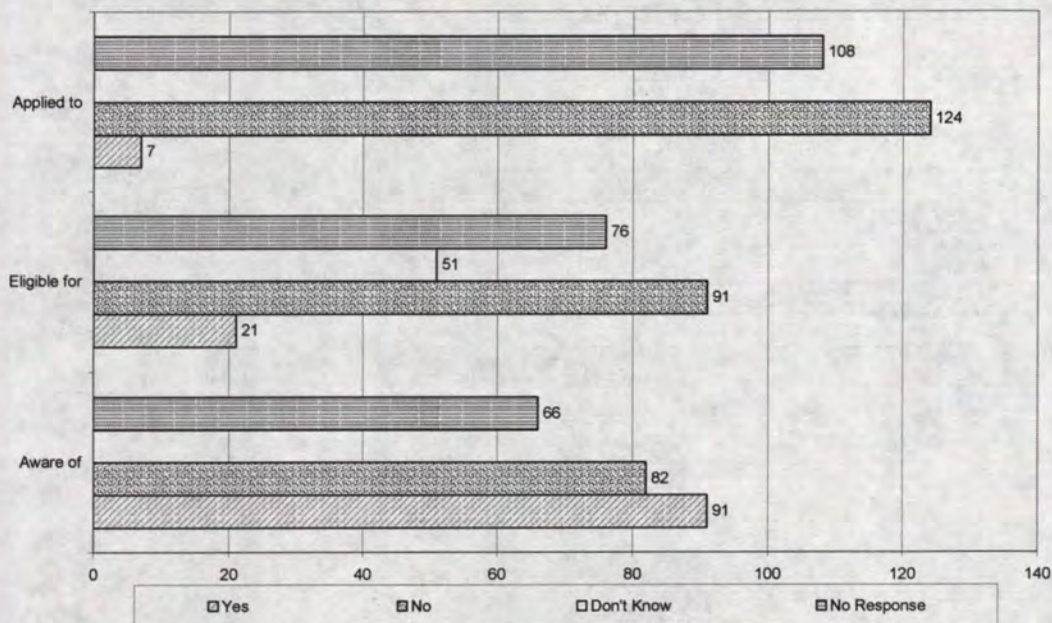
8.12 Heart and Stroke Foundation

The participation of Memorial University researchers in funding programs offered through the Heart and Stroke Foundation are profiled in Figure 32 and Table 21. Thirty-eight percent of respondents report an awareness of this funding source, but only 8.8% considered that they were eligible and less than 3% actually applied for funding under this program. Clearly, the take-up rate on this research funding source is low, but this is a very specialized program that would appeal to only a small subset of university researchers.

Table 21: Distribution of Respondents by Awareness of, Eligibility for and Application to the Heart and Stroke Foundation for Funding

	Yes	No	Don't Know	No Response
Number of Respondents				
Aware of	91	82		66
Eligible for	21	91	51	76
Applied to	7	124		108
Percent of Respondents				
Aware of	38.1%	34.3%		27.6%
Eligible for	8.8%	38.1%	21.3%	31.8%
Applied to	2.9%	51.9%		45.2%

Figure 32: Distribution of respondents by awareness of, eligibility for and application to the Heart and Stroke Foundation for research funding



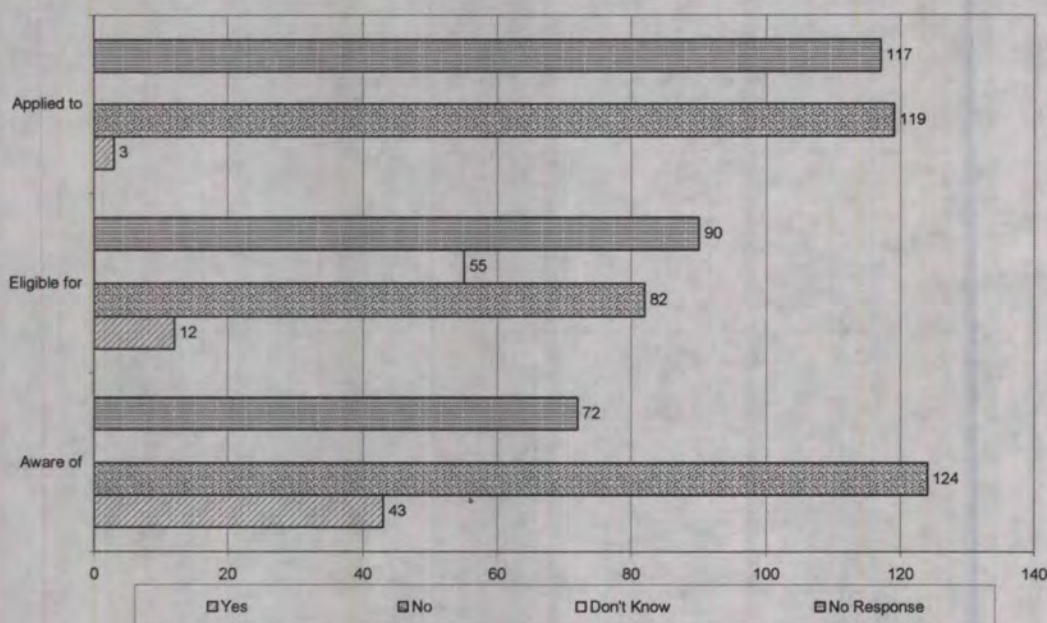
8.13 Canadian Foundation for Climate and Atmosphere

As demonstrated in Table 22 and Figure 33, less than 20% (43 respondents) report an awareness of the possibility of receiving funding the Canadian Foundation for Climate and Atmosphere. Only five percent of the respondents considered themselves eligible for this program and slightly more than 1% or 3 researchers applied for funding under this program.

Table 22: Distribution of Respondents by Awareness of, Eligibility for and Application to the Canadian Foundation for Climate and Atmosphere for Funding

	Yes	No	Don't Know	No Response
Number of Respondents				
Aware of	43	124		72
Eligible for	12	82	55	90
Applied to	3	119		117
Percent of Respondents				
Aware of	18.0%	51.9%		30.1%
Eligible for	5.0%	34.3%	23.0%	37.7%
Applied to	1.3%	49.8%		49.0%

Figure 33: Distribution of respondents by awareness of, eligibility for and application to the Canadian Foundation for Climate and Atmosphere for research funding



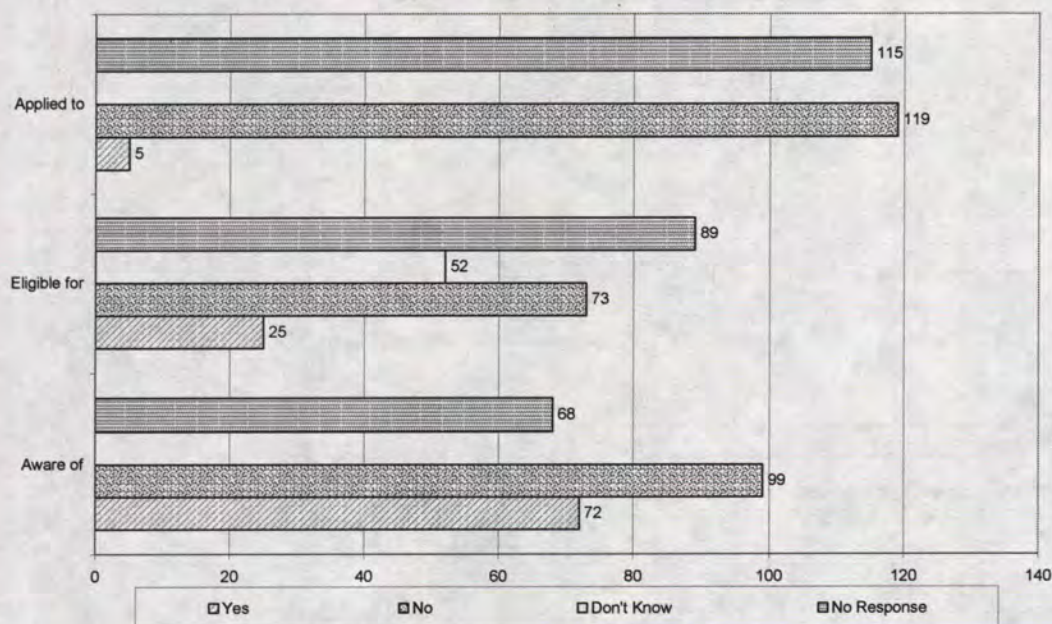
8.14 SSHRC Initiatives on the New Economy

Table 23 and Figure 34 profile the participation of respondents in the recently introduced initiative from SSHRC on the new economy. Thirty percent of the respondents replied that they were aware of this initiative, 10.5% of the respondents thought that they were eligible and only 2.1% (5 individuals) actually applied under this program. Again, this represents a low participation rate for this program, which might be explained, in part, by it being a relatively new program.

Table 23: Distribution of Respondents by Awareness of, Eligibility for and Application to the SSHRC Initiatives on the New Economy for Funding

	Yes	No	Don't Know	No Response
Number of Respondents				
Aware of	72	99		68
Eligible for	25	73	52	89
Applied to	5	119		115
Percent of Respondents				
Aware of	30.1%	41.4%		28.5%
Eligible for	10.5%	30.5%	21.8%	37.2%
Applied to	2.1%	49.8%		48.1%

Figure 34: Distribution of respondents by awareness of, eligibility for and application to the SSHRC Initiatives on the New Economy for research funding



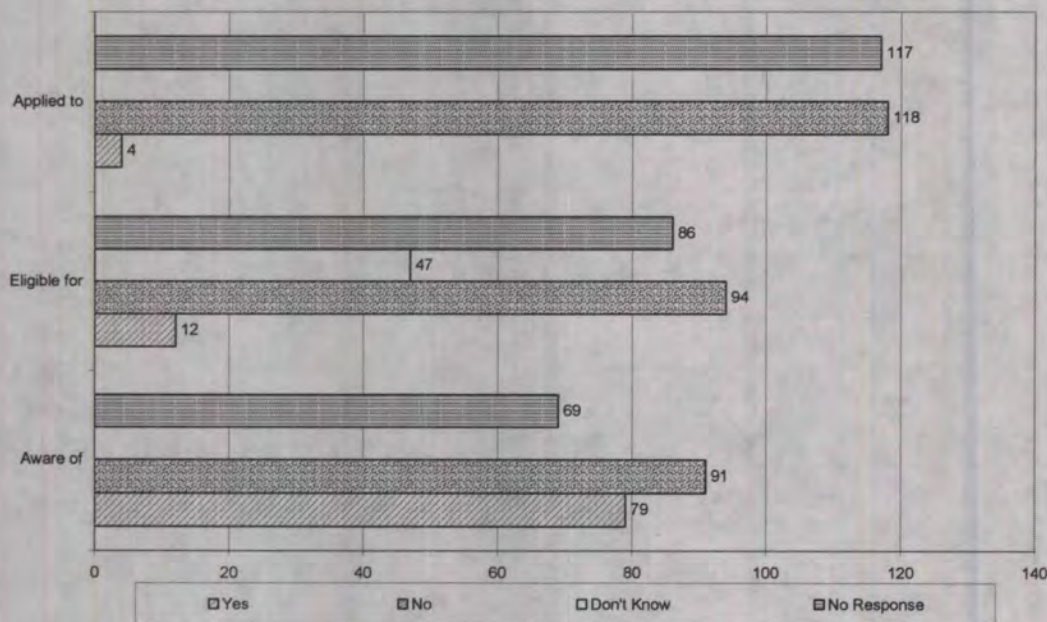
8.15 Newfoundland and Labrador Arts Council

As reflected in Table 24 and Figure 35, one third of respondents were aware of the possibility of receiving research funding from the Newfoundland and Labrador Arts Council. Only five percent of the respondents thought that they were eligible to receive funding from this source and less than two percent actually applied to this source. The low participation rate through this funding source is partially explained by the specialized nature of this funding source that is incompatible with the research interests and focus of the majority of Memorial University researchers.

Table 24: Distribution of Respondents by Awareness of, Eligibility for and Application to the Newfoundland and Labrador Arts Council for Funding

	Yes	No	Don't Know	No Response
Number of Respondents				
Aware of	79	91		69
Eligible for	12	94	47	86
Applied to	4	118		117
Percent of Respondents				
Aware of	33.1%	38.1%		28.9%
Eligible for	5.0%	39.3%	19.7%	36.0%
Applied to	1.7%	49.4%		49.0%

Figure 35: Distribution of respondents by awareness of, eligibility for and application to the Newfoundland and Labrador Arts Council for research funding



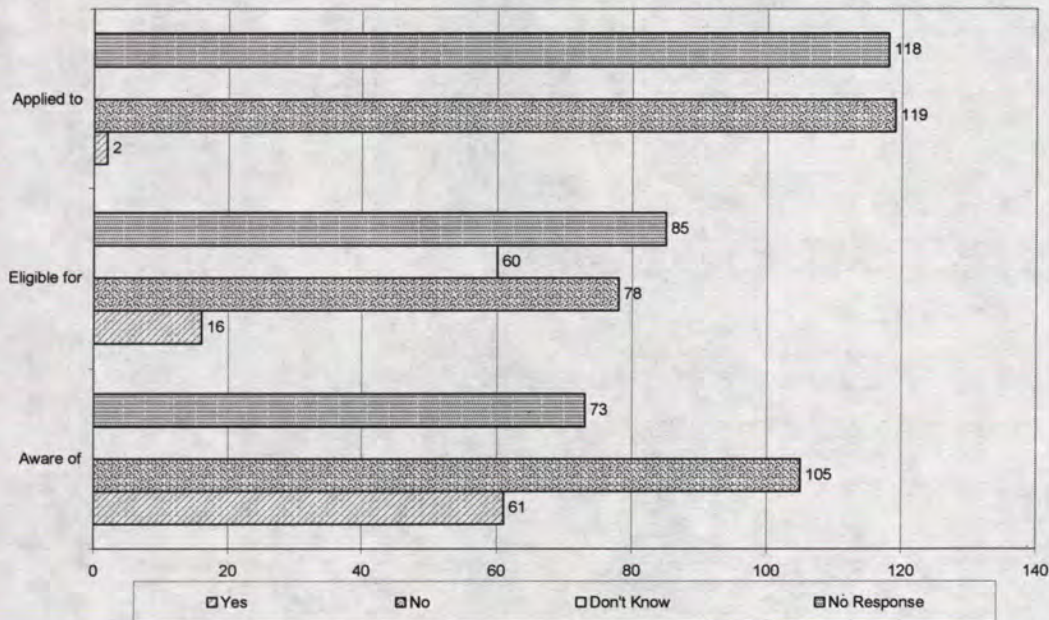
8.16 World Wildlife Fund Canada

Nearly 26% (61 respondents) were aware that the World Wildlife Fund Canada was a potential source of external research funding, see Table 25 and Figure 36. However, only 6.7% of the respondents felt that they were eligible to apply for funds under this program and less than one percent (2 people) actually applied for funding under this program. The low participation rate should not be surprising given the specialized nature of the research that might be funded through this source.

Table 25: Distribution of Respondents by Awareness of, Eligibility for and Application to the World Wildlife Fund Canada for Funding

	Yes	No	Don't Know	No Response
Number of Respondents				
Aware of	61	105		73
Eligible for	16	78	60	85
Applied to	2	119		118
Percent of Respondents				
Aware of	25.5%	43.9%		30.5%
Eligible for	6.7%	32.6%	25.1%	35.6%
Applied to	0.8%	49.8%		49.4%

Figure 36: Distribution of respondents by awareness of, eligibility for and application to the World Wildlife Fund Canada for research funding



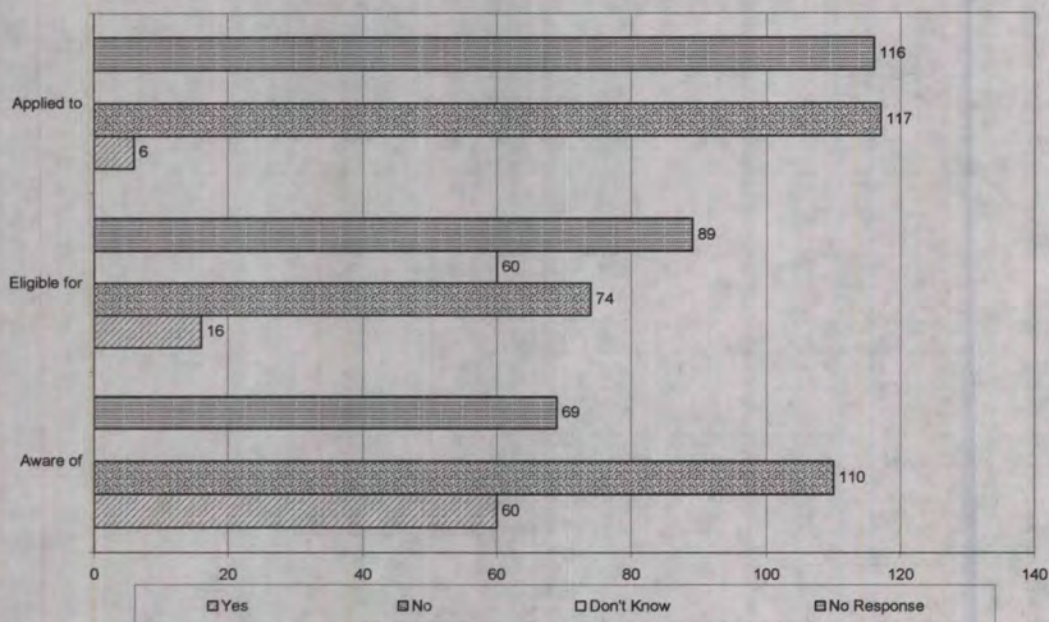
8.17 Banting Research Foundation

As shown in Table 26 and Figure 37, one-quarter of the survey respondents were aware of the possibility of receiving research funding from the Banting Foundation. Only 6.7% of the respondents felt they met the eligibility criteria for this funding source. Again, the participation rate through this funding source was low, with 2.5% of respondents (6 individuals) reporting having applied for funding from the Banting Foundation.

Table 26: Distribution of Respondents by Awareness of, Eligibility for and Application to the Banting Research Foundation for Funding

	Yes	No	Don't Know	No Response
Number of Respondents				
Aware of	60	110		69
Eligible for	16	74	60	89
Applied to	6	117		116
Percent of Respondents				
Aware of	25.1%	46.0%		28.9%
Eligible for	6.7%	31.0%	25.1%	37.2%
Applied to	2.5%	49.0%		48.5%

Figure 37: Distribution of respondents by awareness of, eligibility for and application to the Banting Foundation for research funding



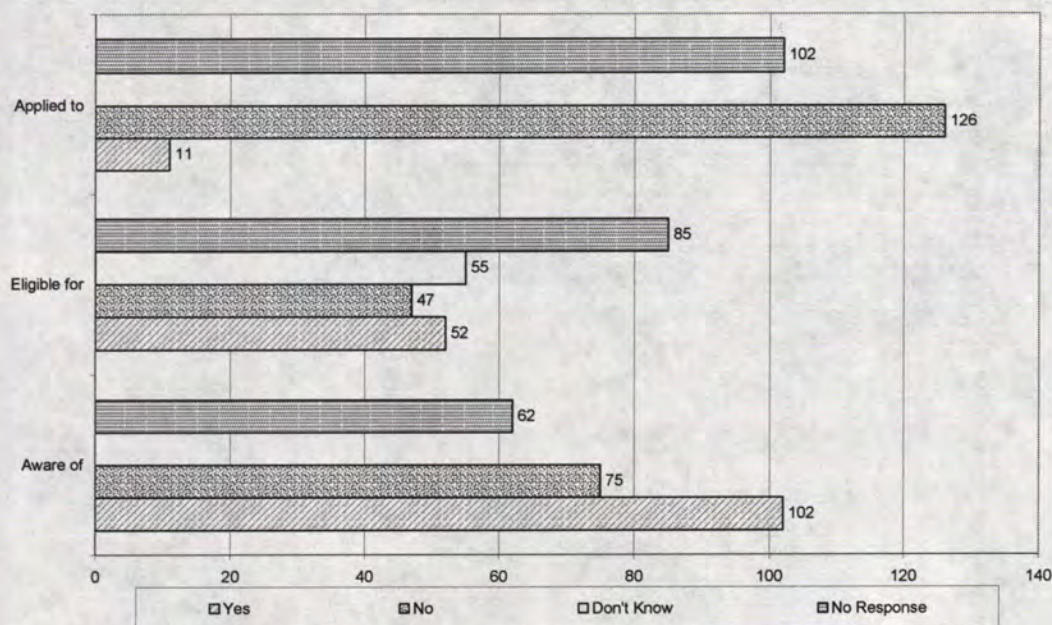
8.18 NSERC Collaborative Research and Development Program

Table 27 and Figure 38 profile the participation of survey respondents in the NSERC Collaborative Research and Development Program. Nearly 43% of the respondents report an awareness of this program and almost half of those (22% or 52 people) considered that they met the eligibility requirements under this program. Yet, less than 5% of respondents (11 individuals) actually applied for funding under this program.

Table 27: Distribution of Respondents by Awareness of, Eligibility for and Application to the NSERC Collaborative Research and Development Program for Funding

	Yes	No	Don't Know	No Response
Number of Respondents				
Aware of	102	75		62
Eligible for	52	47	55	85
Applied to	11	126		102
Percent of Respondents				
Aware of	42.7%	31.4%		25.9%
Eligible for	21.8%	19.7%	23.0%	35.6%
Applied to	4.6%	52.7%		42.7%

Figure 38: Distribution of respondents by awareness of, eligibility for and application to the NSERC Collaborative Research and Development Program for research funding



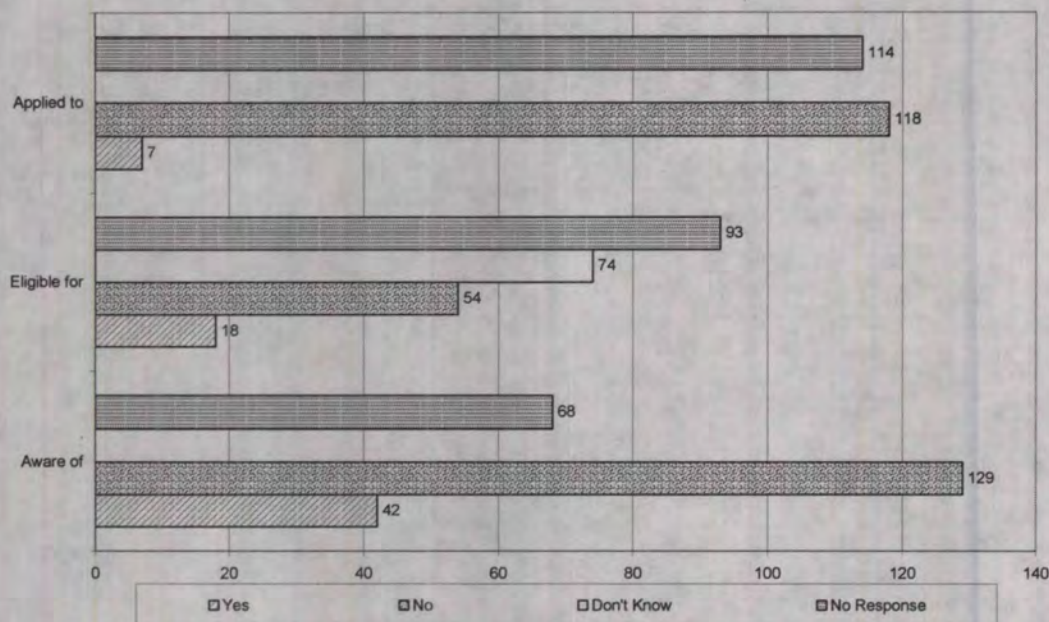
8.19 Imperial Oil Limited

Imperial Oil limited is also a potential source of external research funding for Memorial University faculty members. As demonstrated in Table 28 and Figure 39, approximately 18% of the respondents replied that they were aware of this funding source and 7.5% of respondents consider that they meet the eligibility criteria associated with this funding source. Even so, less than 3% of the respondents actually applied for research funding from programs available through Imperial Oil Limited.

Table 28: Distribution of Respondents by Awareness of, Eligibility for and Application to Imperial Oil Limited for Funding

	Yes	No	Don't Know	No Response
Number of Respondents				
Aware of	42	129		68
Eligible for	18	54	74	93
Applied to	7	118		114
Percent of Respondents				
Aware of	17.6%	54.0%		28.5%
Eligible for	7.5%	22.6%	31.0%	38.9%
Applied to	2.9%	49.4%		47.7%

Figure 39: Distribution of respondents by awareness of, eligibility for and application to Imperial Oil Limited for research funding



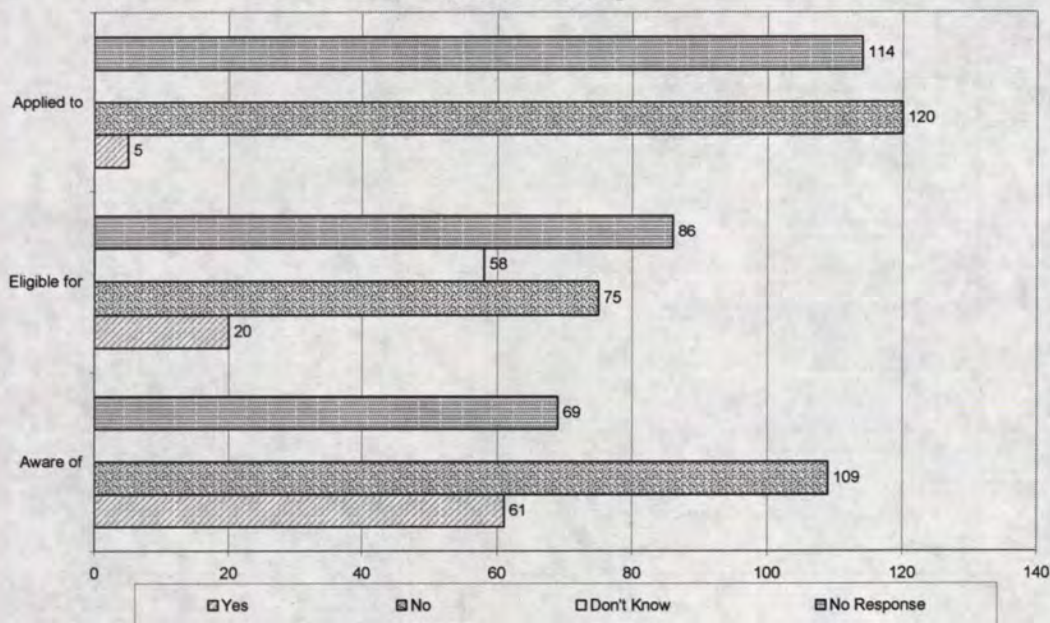
8.20 CIHR Research-Based Pharmaceutical Companies Health Program

Table 29 and Figure 40 reveal that slightly more than one quarter of the survey respondents (61 individuals) were aware that research funding was available from the CIHR Research-Based Pharmaceutical Companies Health Program. Slightly more than 8% of respondents thought that they met the eligibility requirements for this program, but only 2.1% of the respondents indicated having applied for funding under this program.

Table 29: Distribution of Respondents by Awareness of, Eligibility for and Application to the CIHR Research-Based Pharmaceutical Companies Health Program for Funding

	Yes	No	Don't Know	No Response
Number of Respondents				
Aware of	61	109		69
Eligible for	20	75	58	86
Applied to	5	120		114
Percent of Respondents				
Aware of	25.5%	45.6%		28.9%
Eligible for	8.4%	31.4%	24.3%	36.0%
Applied to	2.1%	50.2%		47.7%

Figure 40: Distribution of respondents by awareness of, eligibility for and application to the CIHR Research-Based Pharmaceutical Companies Health Program for research funding



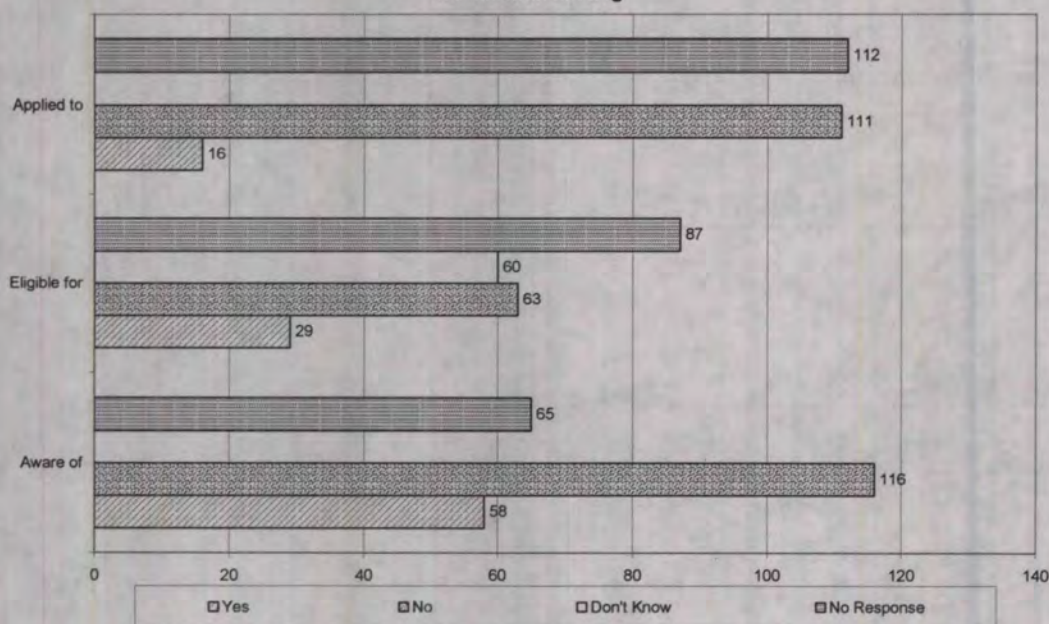
8.21 Fisheries and Oceans Canada Science Subvention Program

As illustrated in Table 30 and Figure 41, approximately one quarter of the respondents indicate being aware of funding possibility from the Fisheries and Oceans Canada Science Subvention Program. One half of the respondents who were aware of this funding source considered that they met the eligibility requirements. Nearly 7% of the respondents (16 individuals) reported applying for funding under the Fisheries and Oceans Canada Science Subvention Program.

Table 30: Distribution of Respondents by Awareness of, Eligibility for and Application to the Fisheries and Oceans Canada Science Subvention Program for Funding

	Yes	No	Don't Know	No Response
Number of Respondents				
Aware of	58	116		65
Eligible for	29	63	60	87
Applied to	16	111		112
Percent of Respondents				
Aware of	24.3%	48.5%		27.2%
Eligible for	12.1%	26.4%	25.1%	36.4%
Applied to	6.7%	46.4%		46.9%

Figure 41: Distribution of respondents by awareness of, eligibility for and application to the Department of Fisheries and Oceans Canada Science Subvention Program for research funding



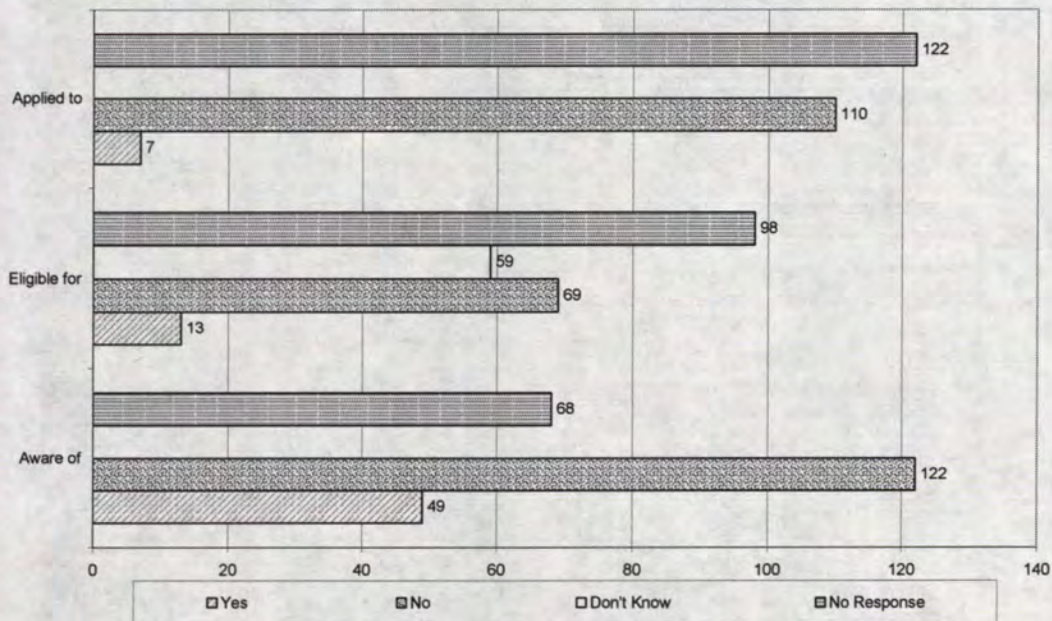
8.22 Literacy Development Council

Table 31 and Figure 42 profile the participation of survey respondents in funding opportunities from the Literacy Development Council. While more than 20% of the respondents were aware of this potential funding source, slightly more than 5% considered themselves eligible to apply for funding and 3% (7 individuals) actually applied to the Literacy Development Council.

Table 31: Distribution of Respondents by Awareness of, Eligibility for and Application to the Literacy Development Council for Funding

	Yes	No	Don't Know	No Response
Number of Respondents				
Aware of	49	122		68
Eligible for	13	69	59	98
Applied to	7	110		122
Percent of Respondents				
Aware of	20.5%	51.0%		28.5%
Eligible for	5.4%	28.9%	24.7%	41.0%
Applied to	2.9%	46.0%		51.0%

Figure 42: Distribution of respondents by awareness of, eligibility for and application to the Literacy Development Council for research funding



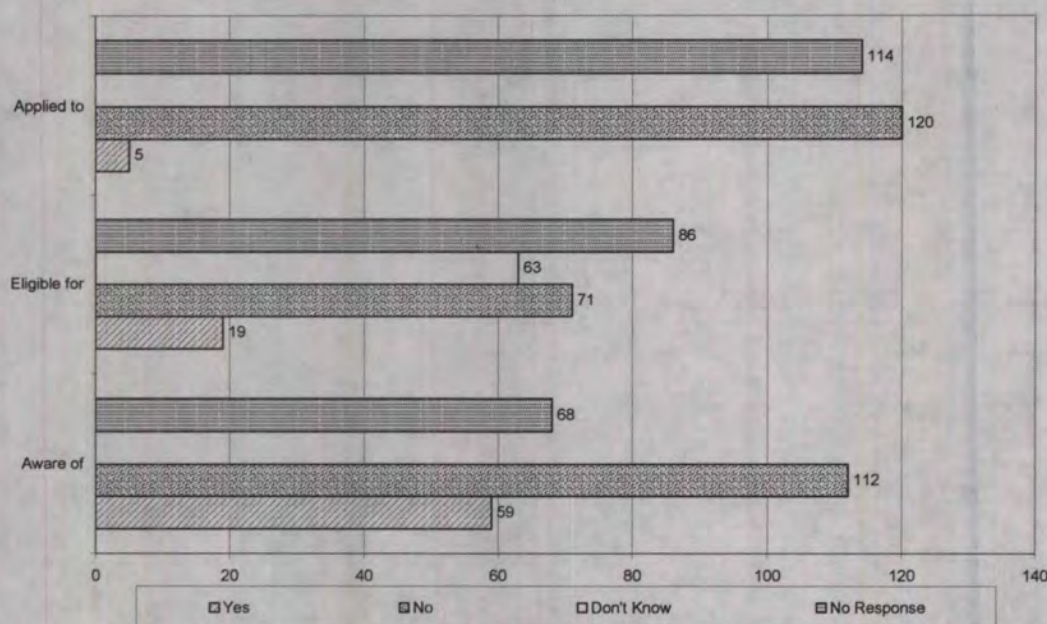
8.23 Canadian Health Services Research Foundation

Table 32 and Figure 43 profile the participation of survey respondents in funding opportunities from the Canadian Health Services Research Foundation. While more than 20% of the respondents were aware of this potential funding source, only 8% considered themselves eligible to apply for funding and 2% (5 individuals) actually applied to the Canadian Health Services Research Foundation for funding.

Table 32: Distribution of Respondents by Awareness of, Eligibility for and Application to the Canadian Health Services Research Foundation for Funding

	Yes	No	Don't Know	No Response
Number of Respondents				
Aware of	59	112		68
Eligible for	19	71	63	86
Applied to	5	120		114
Percent of Respondents				
Aware of	24.7%	46.9%		28.5%
Eligible for	7.9%	29.7%	26.4%	36.0%
Applied to	2.1%	50.2%		47.7%

Figure 43: Distribution of respondents by awareness of, eligibility for and application to the Canadian Health Services Research Foundation for research funding



8.24 *Other research funding sources*

In addition to the above categories, respondents specified a number of other funding sources that they have used for their research. These consisted of government departments and agencies such as the Department of Fisheries and Oceans, the Canadian Space Agency, Genome Canada, and Canada International Development Agency; corporations such as Imperial Oil and Aliant; research institutes such as the Atlantic Canada Petroleum Institute; international organizations such as the North Atlantic Treaty Organization; and the departments and agencies of foreign governments such as the United States and the Republic of China.

8.25 *Summary of Research Funding*

In summary, the key finding concerning external research funding at Memorial University are:

- Memorial University researchers appeared to be relatively innovative pursuing various external research funding sources;
- Taking into account the discipline of the applicant, Memorial University researchers reported a high propensity to apply to the relevant granting council for research funding. For example, 76% of the respondents from the Faculty of Arts applied to SSHRC, 60% of the Faculty of Business researchers applied to SSHRC, 43% from the School of Nursing applied to SSHRC and 29% applied to CIHR, 77% of the Faculty of Engineering and Applied Sciences applied to NSERC, 79% from the Faculty of Science applied to NSERC, and 64% of researchers from the Faculty of Medicine applied to CIHR/MRC;
- Very high success rates were reported for those who actually applied for funding. For example, the success rates associated with researchers who responded to the survey were:
 - SSHRC - 67%;
 - NSERC - 79%;
 - CIHR - 90%;
 - CFI - 56%;
 - NCE - 55%;
 - Tri-Council - 69%;
 - Canada Council - 58%;
 - ACOA - 77%;
 - foundations - 68%;
 - non-profit associations - 76%; and
- Given the information available for the Office of Research, it appears that the participation rates and success factors associated with the granting council programs reported by the respondents appear to be high.
- The proportion of Memorial University researchers that applied for research funds from sources other than the granting councils was low.

9. Internal Research Funding

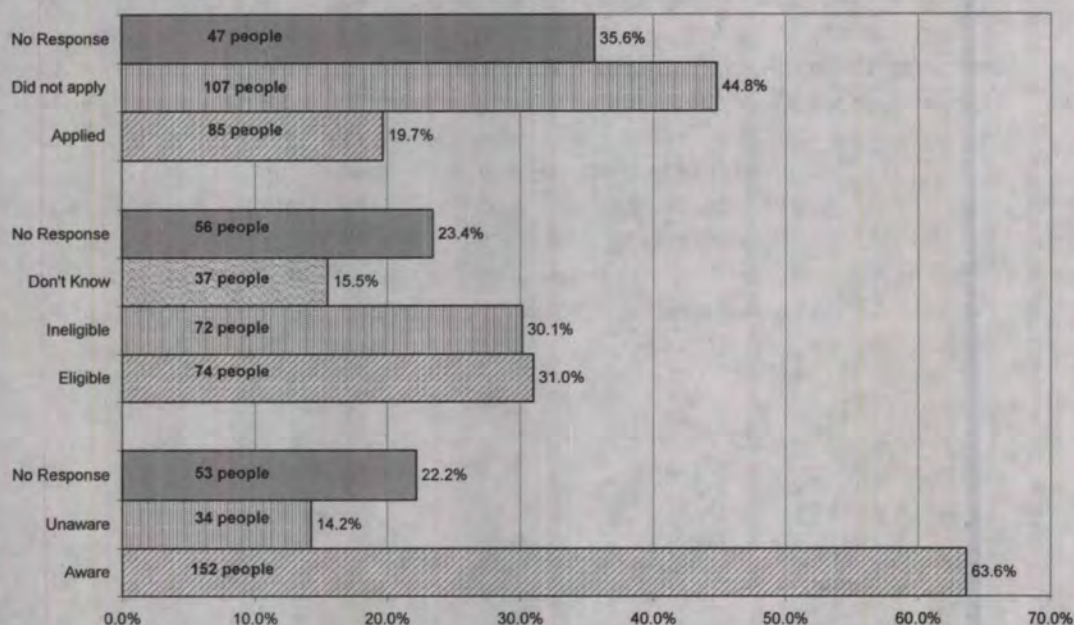
Internal grants are another potential source of research funds. A series of questions were designed to determine the extent to which Memorial University researchers were aware of, were eligible for and applied to the more common internal grant competitions.

Figures 44 through to 53 display the distributions of responses to this series of questions.

9.1 SSHRC/VP internal research grants

Figure 44 profiles the responses of Memorial University faculty with respect to the SSHRC/VP internal research grants. Approximately two-thirds of researchers indicated that they were aware of the existence of these grants. About 30% of the faculty did not think that they were eligible for the grants, 31% thought they were eligible and 16% was not sure of their eligibility. Nearly 20% of researchers replied that they had applied for these grants in the past. This represents about two-thirds of those who suggested that they were eligible.

Figure 44: Distribution of respondents by whether they were aware of, eligible for and/or applied for the SSHRC/VP research grants internal to Memorial University

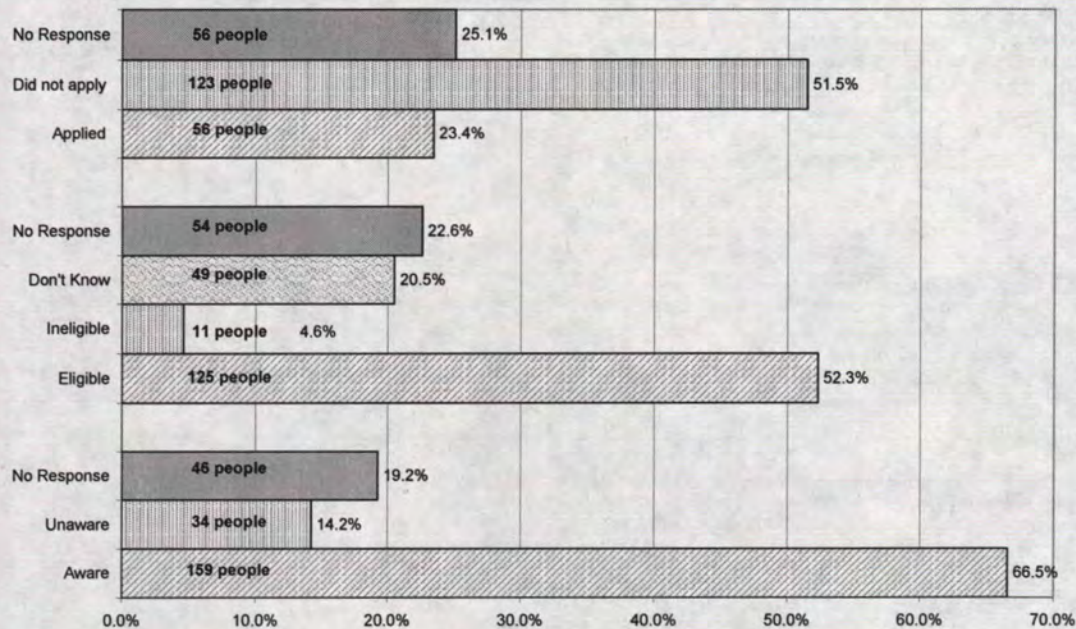


These grants are restricted to faculty members in the disciplines supported by SSHRC. Within this group all persons with academic tenure, probationary appointments or on sabbatical leave are eligible to apply. As well, term employees, except per course employees, are eligible to apply so long as the award is utilized during the term of their employment.

9.2 Salary-based research grants

As reflected in Figure 45, two-thirds of researchers report an awareness of the salary-based research grants available through the university. While 52% of the respondents thought they were eligible, 21% were not sure and 5% did not think they were eligible. Only 23% of faculty stated that they had applied for these grants.

Figure 45: Distribution of respondents by whether they were aware of, eligible for and/or applied for salary-based research grants internal to Memorial University

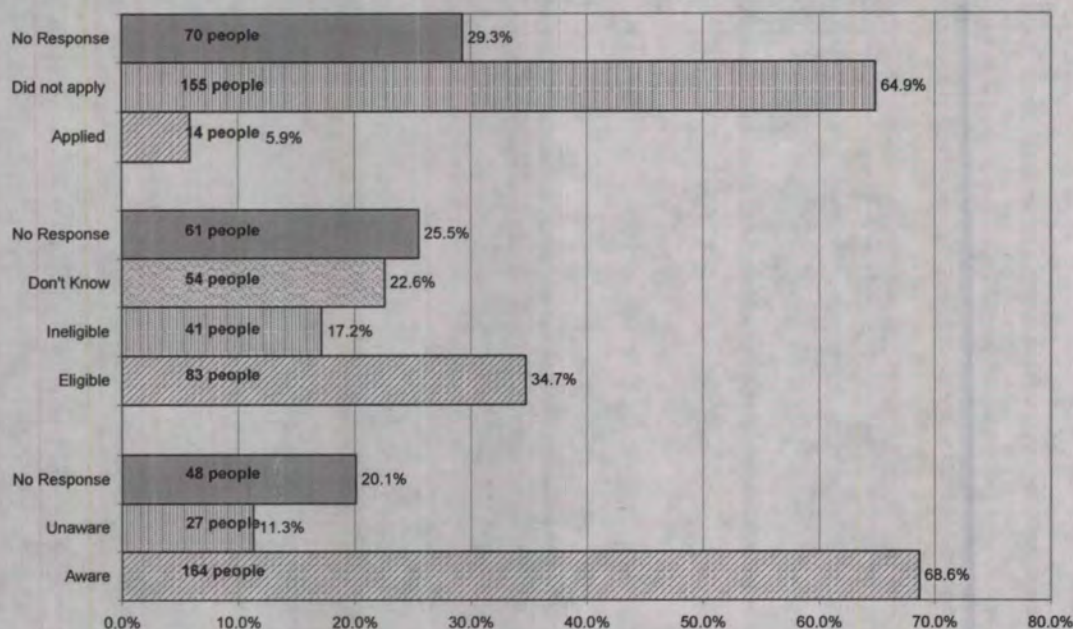


All faculty members who intend to perform research are eligible to apply to have part of their salary designated as a research grant.

9.3 University research professorship

Almost 70% of the faculty members knew of the university research professorship (see Figure 46) and approximately one-half (35%) of those respondents considered themselves eligible to apply. A further 17% did not think they qualified and 23% were uncertain. Despite the high awareness and eligibility, only 6% of Memorial University faculty members submitted an application to be a university research professor.

Figure 46: Distribution of respondents by whether they were aware of, eligible for and/or applied for university research professorship internal to Memorial University

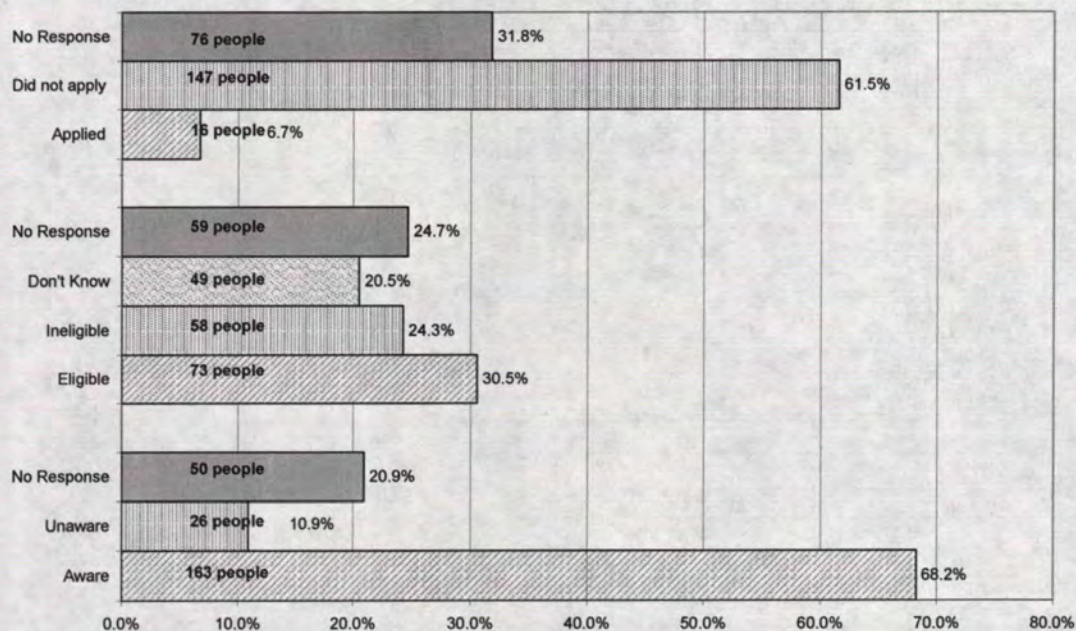


This award is specified for full professors who have demonstrated a consistently high level of scholarship and whose research is of truly international stature.

9.4 President's award for outstanding research

The responses pertaining to the President's award for outstanding research are shown in Figure 47. While the awareness factor was 69% and the eligibility factor was 31%, only 7% of respondents applied for this award. As well, it is interesting to note that 24% of respondents reported they were ineligible and 21% were not sure of their eligibility.

Figure 47: Distribution of respondents by whether they were aware of, eligible for and/or applied for President's award for outstanding research internal to Memorial University

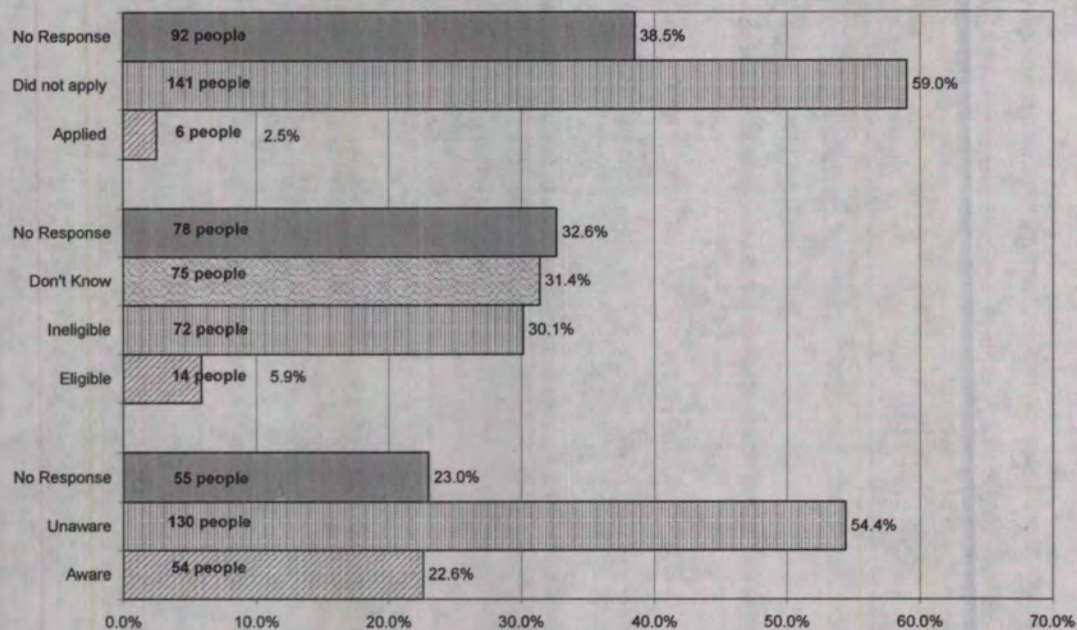


According to the Office of Research's website, this award is available to full-time faculty members who have received a graduate degree within the ten-year period immediately pre-dating the granting of this award. As well, the researcher should have served a minimum of two years at Memorial University prior to applying for or being nominated for this award.

9.5 Internal artistic/creative grants

Figure 48 relates to internal artistic/creative grants. Awareness and eligibility for these grants were low – 23% and 6%, respectively. Less than 3% of the faculty members applied under this program and 31% did not know whether they were eligible to apply.

Figure 48: Distribution of respondents by whether they were aware of, eligible for and/or applied for the artistic/creative grants program internal to Memorial University

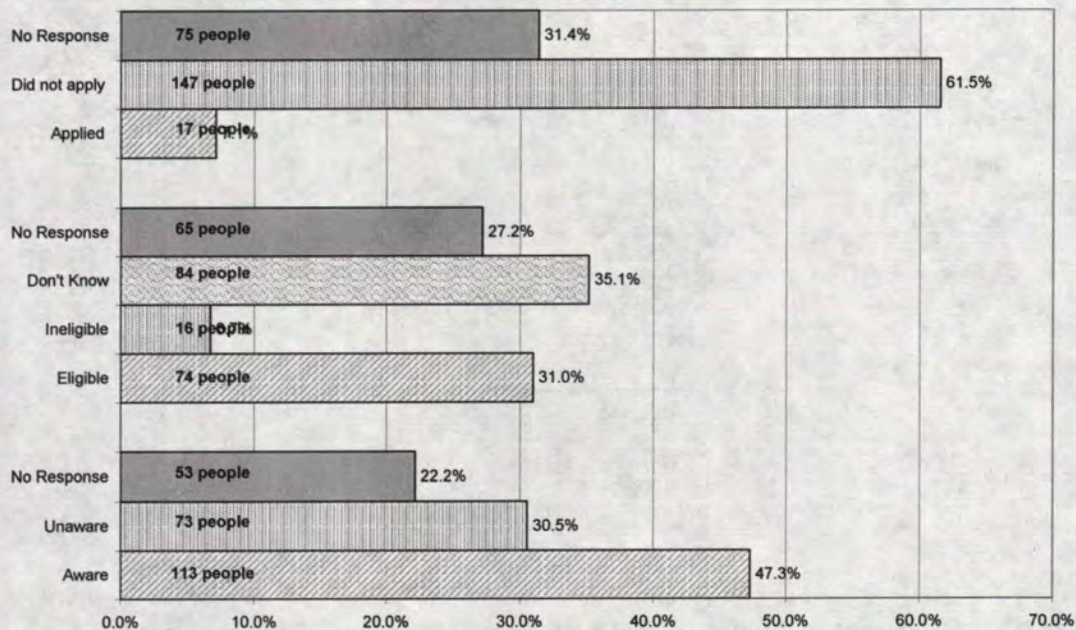


As specified by the Office of Research, these grants are open to all faculty members. However, this grant would be of more interest to people in the School of Fine Arts, School of Music and the Theatre/Drama specialization of the Department of English.

9.6 Publications subvention program

Less than 10% of the survey respondents (7%) submitted a grant application under the publications subvention program. Even though 47% of faculty members were aware of the program and 31% felt that they were eligible to apply, the low level of research disseminated in the form of books is a probable explanation for the relatively low take-up rate on this program. A further point worth noting is that more than one-third of the faculty was unaware of this program.

Figure 49: Distribution of respondents by whether they were aware of, eligible for and/or applied for the publications subvention program internal to Memorial University

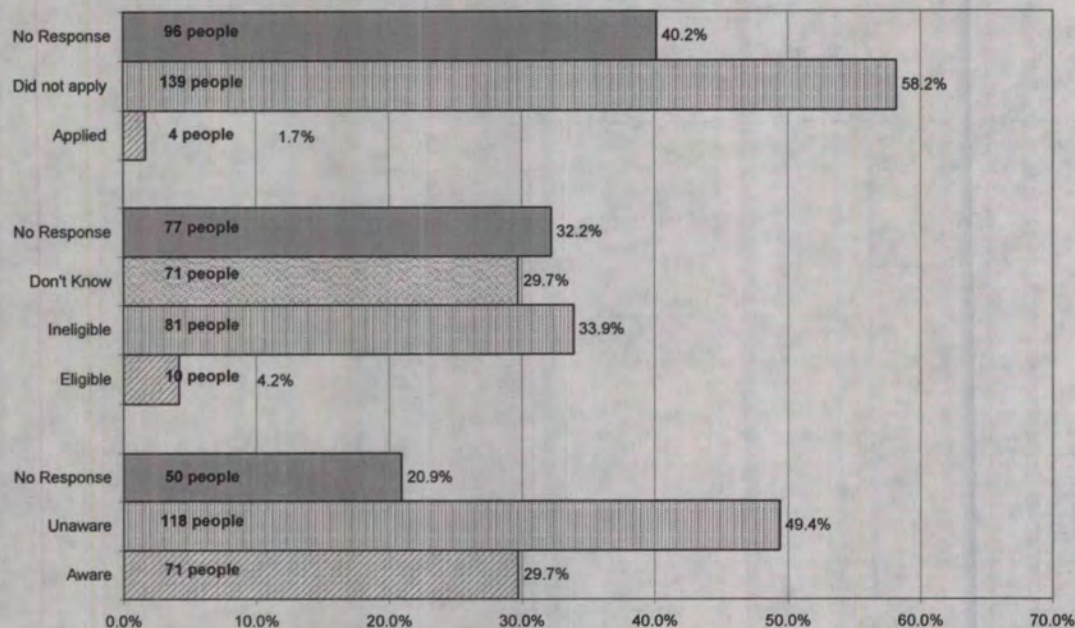


As specified on the Office of Research's website, the Publication Subvention program is open to any member of the university community. It is meant primarily to give support for scholarly publications that are book-length manuscripts.

9.7 Petro-Canada Young Innovator award

Figure 50 profiles the responses associated with the Petro-Canada Young Innovator award program. The fact that almost half of the faculty was not aware of this award and only 4% thought that they satisfied the eligibility requirements probably explains why only 2% of the respondents had applied for this award.

Figure 50: Distribution of respondents by whether they were aware of, eligible for and/or applied for the Petro-Canada Young Innovator award program internal to Memorial University

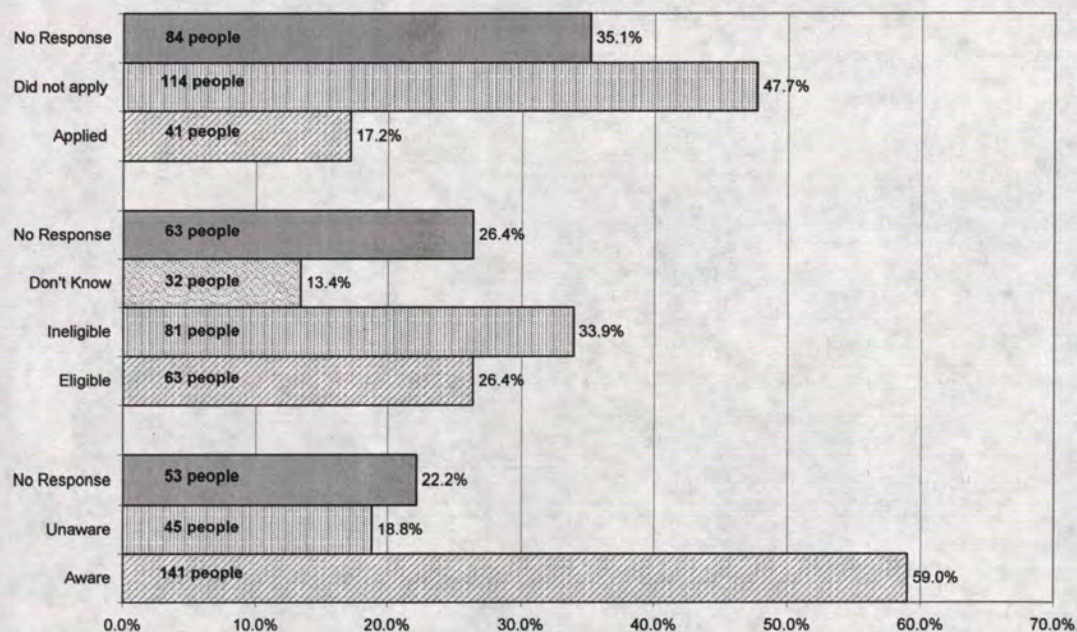


To be eligible for this award, the applicant must have received his/her first university faculty-level appointment within the last 8 years. As well, the faculty member must be engaged in innovative research.

9.8 SSHRC travel grants

As demonstrated in Figure 51, nearly 60% of respondents were aware of the SSHRC travel grants. However, only one-quarter of the faculty thought they were eligible and less than 20% applied for funding under this program. Surprisingly, 20% of the researchers replied that they were not aware of the program and another 13% were not sure of their eligibility.

Figure 51: Distribution of respondents by whether they were aware of, eligible for and/or applied for the SSHRC travel grants internal to Memorial University

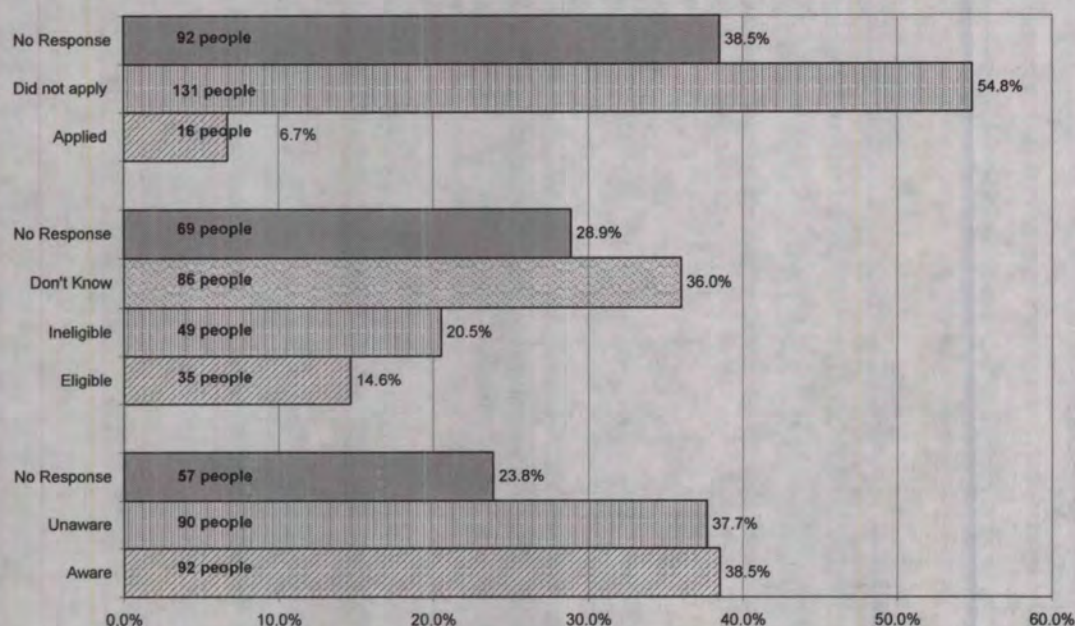


This grant provides financial assistance to faculty members in disciplines supported by SSHRC to attend business meetings of international scholarly organizations in which they hold office.

9.9 ISER grants

The Institute for Social and Economic Research (ISER) is another vehicle through which Memorial University faculty members can fund their research. Approximately 40% of faculty members (see Figure 52) were aware of these grants, but 38% did not know about them. Only 15% of researchers thought they were eligible and 7% of the respondents actually applied for ISER funding.

Figure 52: Distribution of respondents by whether they were aware of, eligible for and/or applied for ISER grants internal to Memorial University

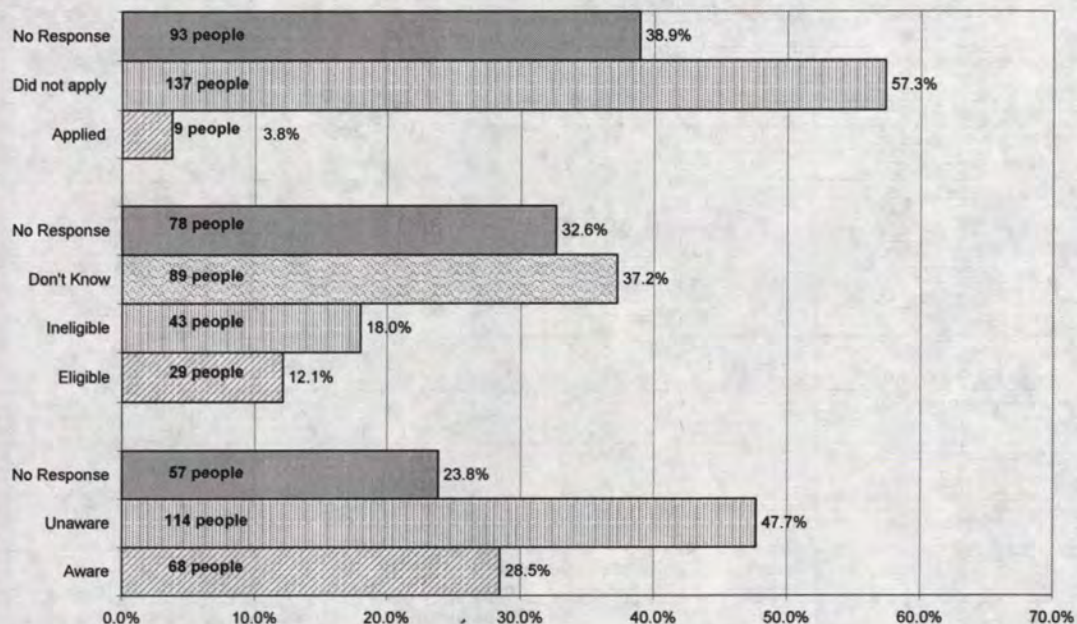


While the grant competition is open, special consideration is given to research directly pertaining to social and economic development in Newfoundland and Labrador.

9.10 Smallwood Centre grants

The J. R. Smallwood Centre for Newfoundland and Labrador Studies grants are covered in Figure 53. Nearly one-half of respondents were unaware of these grants, only 12% thought that they were eligible, and a further 37% of respondents were not sure of their eligibility. This has been manifested in only 4% of the respondents having applied for funding through this source. The fact that the Smallwood Centre is relatively new may explain the low application rate.

Figure 53: Distribution of respondents by whether they were aware of, eligible for and/or applied for Smallwood Centre grants internal to Memorial University



Grants are to support research in the humanities and social sciences in Newfoundland and Labrador studies.

9.11 Summary of internal research funding

The key findings to be drawn from the questions on internal grant funding are:

- the take-up rates on internal grant programs were relatively low and
- the lack of awareness of the actual programs or the eligibility of researchers to apply for the programs suggests that a more effective communication/information strategy by the Office of Research might be worth considering.

10. Barriers in the Research Funding Application Process

It is interesting to examine the importance that Memorial University researchers attach to different potential barriers that influence the application process for external funding of their research. Table 33 and Figure 54 present the results obtained from the surveys for this series of questions. In interpreting the responses displayed below, it is important to understand that the majority of respondents chose not to answer to these questions and there is no obvious inference to draw from a "no-response" in this case.

Table 33: Barriers to the Application Process for Research Funding

	Not Important	Somewhat Important	Moderately Important	Important	Very Important	No Opinion	No Response
Number of Respondents							
Programs do not match research	12	12	12	19	52	11	121
Past success required	25	10	14	23	26	14	127
Insufficient time to prepare application	18	19	20	29	23	4	126
Inability to obtain matching funds	25	7	20	21	23	15	128
Lack of researchers to support research	30	18	20	15	13	15	128
Lack of support by MUN administration	37	16	16	11	22	9	128
Lack of support staff to prepare application	31	16	18	21	21	7	125
Lack of development funds to application	26	19	19	17	17	13	128
Difficulties collaborating with other researchers	41	4	12	17	11	14	130
Other	5	6	1	2	7	6	218
	Not Important	Somewhat Important	Moderately Important	Important	Very Important	No Opinion	Weighted Average
Percentage of Valid Respondents							
Programs do not match research	10.2%	10.2%	10.2%	16.1%	44.1%	9.3%	3.8
Past success required	22.3%	8.9%	12.5%	20.5%	23.2%	12.5%	3.2
Insufficient time to prepare application	15.9%	16.8%	17.7%	25.7%	20.4%	3.5%	3.2
Inability to obtain matching funds	22.5%	6.3%	18.0%	18.9%	20.7%	13.5%	3.1
Lack of researchers to support research	27.0%	16.2%	18.0%	13.5%	11.7%	13.5%	2.6
Lack of support by MUN administration	33.3%	14.4%	14.4%	9.9%	19.8%	8.1%	2.7
Lack of support staff to prepare application	27.2%	14.0%	15.8%	18.4%	18.4%	6.1%	2.9
Lack of development funds to application	23.4%	17.1%	17.1%	15.3%	15.3%	11.7%	2.8
Difficulties collaborating with other researchers	41.4%	4.0%	12.1%	17.2%	11.1%	14.1%	2.4

Figure 54: Distribution of respondents by average importance of barriers to applying for research funding



More than 50% of the researchers felt that the lack of a match between the funding programs and their research initiatives was an important or very important barrier, which prevented them from applying for external research funding. This was the most important barrier listed with an average response of 3.8 out of 5. It is also the only issue for which the majority of respondents indicated that it acted as an important or very important barrier.

Three barriers were important or very important for a significant proportion (40-50%) of the respondents. For this group the lack of time to prepare a competitive application, the past research record and the inability to obtain matching funds reduced their ability to apply for funding. In addition, the policies and politics of the granting councils were identified as barriers to the application process. Specifically, one researcher thought that the shift in focus to fewer, larger grants acted as a barrier that prevented some researchers from remaining active. Another faculty member felt that there was an "old boys" network associated with the adjudication process, which combined with slow response times, constituted a barrier to applying for funding from this granting council.

Summarizing the key inferences that can be drawn from the responses on what constitutes a barrier to the application process, one can conclude that:

- The important barriers were: (1) the lack of match between programs and research initiatives; (2) past research successes required to leverage new funds; (3) lack of time to prepare a competitive bid; (4) inability to obtain matching funds; and
- There was no consensus on whether the lack of researchers to support initiatives; the lack of administrative support; the availability of support staff during the application process; the availability of development funds and the difficulty to collaborate due to geography acted as barriers to the application process.

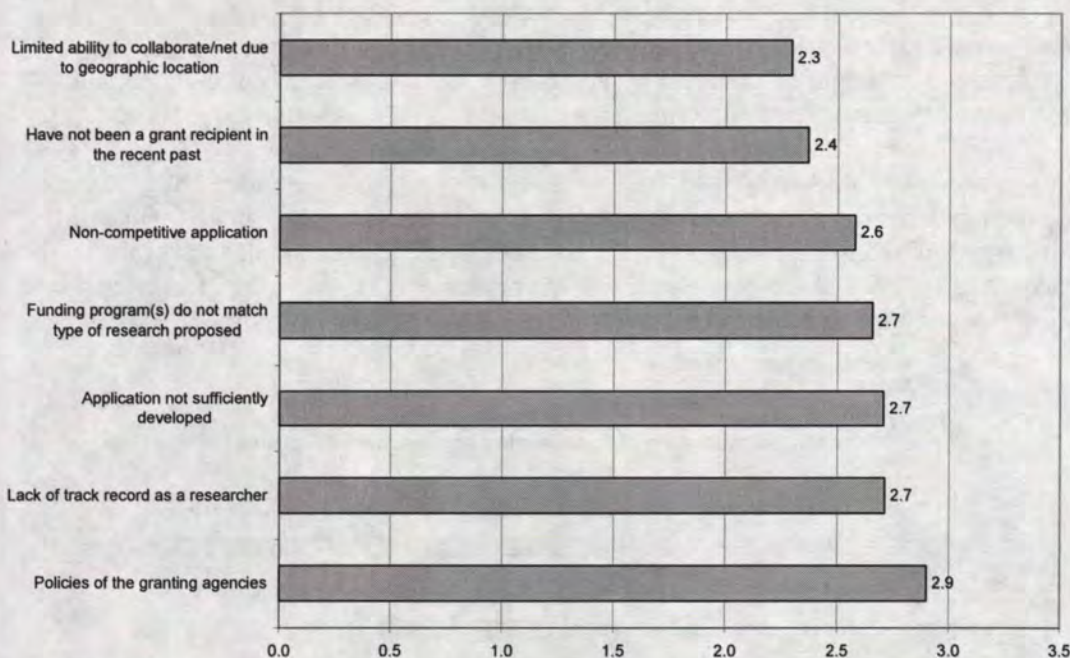
11. Barrier to the Receipt of External Research Funding

Memorial University researchers were asked the importance that they attached to several possible explanations for why they did not receive funding of their research from external sources. Table 34 and Figure 55 summarize these responses. In drawing inferences from each of these barriers, it is important to keep in mind that between 130 and 140 of 239 faculty members chose not to answer these questions.

Table 34: Barriers to Obtaining Research Funding

	Not Important	Somewhat Important	Moderately Important	Important	Very Important	No Opinion	No Response
	Number of Respondents						
Policies of the granting agencies	23	16	14	21	16	16	133
Lack of track record	28	12	21	16	13	12	137
Application not sufficiently developed	17	22	21	12	10	18	139
Funding program(s) do not match research	31	14	11	23	11	17	132
Non-competitive application	22	21	12	14	9	21	140
No grant in recent past	39	12	13	11	12	14	138
Difficult to collaborate due to geography	32	18	14	12	6	17	140
	Not Important	Somewhat Important	Moderately Important	Important	Very Important	No Opinion	Weighted Average
	Percentage of Valid Respondents						
Policies of the granting agencies	21.7%	15.1%	13.2%	19.8%	15.1%	15.1%	2.9
Lack of track record	27.5%	11.8%	20.6%	15.7%	12.7%	11.8%	2.7
Application not sufficiently developed	17.0%	22.0%	21.0%	12.0%	10.0%	18.0%	2.7
Funding program(s) do not match research	29.0%	13.1%	10.3%	21.5%	10.3%	15.9%	2.7
Non-competitive application	22.2%	21.2%	12.1%	14.1%	9.1%	21.2%	2.6
No grant in recent past	38.6%	11.9%	12.9%	10.9%	11.9%	13.9%	2.4
Difficult to collaborate due to geography	32.3%	18.2%	14.1%	12.1%	6.1%	17.2%	2.3

Figure 55: Barriers to obtaining research funding



When faculty members were asked to comment on why, in their opinion, they were not funded, many suggested that they did not know because there was little feedback from the granting councils. Some researchers acknowledged that with their research track record, it was difficult to compete. Others felt that the policies and politics associated with the adjudication process of the granting councils was an explanation.

In summary, the key points contained in Table 34 and Figure 55 with respect to the barriers to receipt of external funding identified by Memorial University researchers were:

- None of the suggested barriers stood out as particularly important;
- The respondents were mixed on their responses to the importance of: (1) policies of the granting agency; (2) match between the funding program(s) and the research proposal; and (3) the lack of a track record as a researcher. For some researchers these were important and for others they were not important barriers;
- The researchers indicated that, in their opinion, “no grants in the past”, the lack of a competitive application and limited ability to collaborate/network with other researchers due to geography were not important barriers to research funding; and
- The majority of researchers chose not to answer this question.

12. Incentives to Increase External Research Funding

Given the prominent role that external research funding plays in driving research at Memorial University, it is interesting to review, from the perspective of the researchers, what incentives might be effective in increasing external research funding available to Memorial University faculty members.

Figure 56 and Table 35 deal with possible initiatives that might be adopted by Memorial University to increase external funding to its researchers. Between 40 and 50 faculty members omitted this question. Faculty members were asked to rank each of the possible incentives in terms of the importance that the researchers assign to the incentive as a means of stimulating external research funding at Memorial University.

Figure 56: The Importance of Incentives to Increase External Research Funding

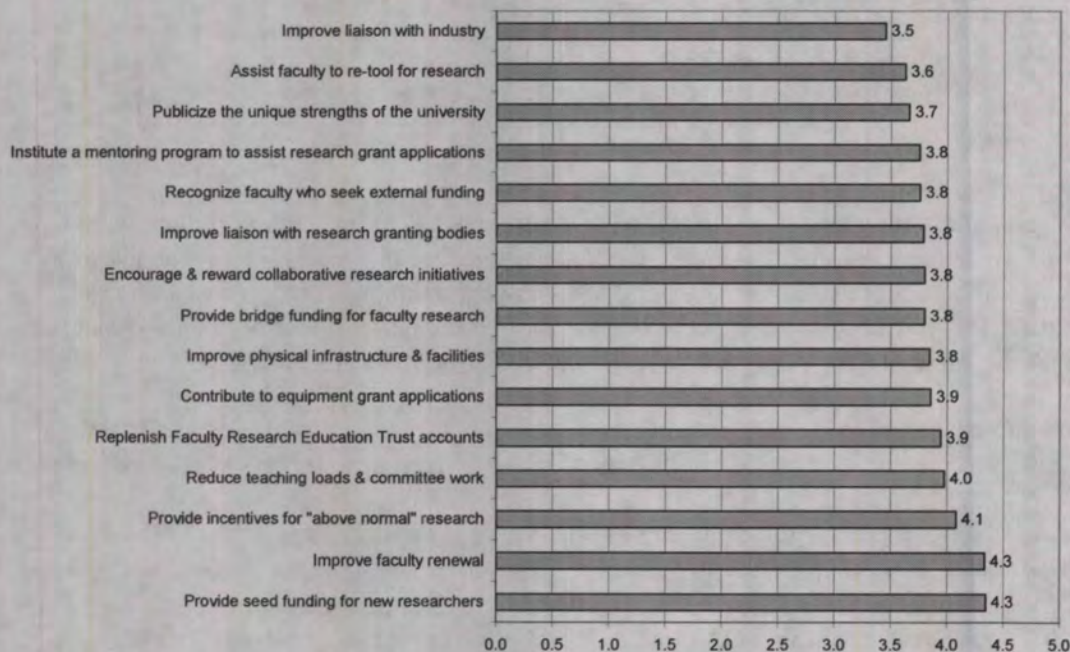


Table 35: Incentives to Increase External Research Funding

	Not Important	Somewhat Important	Moderately Important	Important	Very Important	No Opinion	No Response
	Number of Respondents						
Seed funding	1	6	17	66	96	11	42
Faculty renewal	1	4	25	55	96	15	43
Incentives for "above normal" research	4	13	27	39	78	7	41
Reduced workload	5	10	40	68	70	6	40
FRET accounts	8	5	23	39	50	69	45
Contribute to equipment grant applications	10	12	26	62	56	29	44
Improve physical infrastructure & facilities	9	17	32	61	65	12	43
Bridge funding	5	14	42	66	50	19	43
Encourage & reward collaborative research	8	17	37	60	59	15	43
Improve liaison with granting bodies	3	19	40	70	49	17	41
Recognize faculty who seek external funding	12	16	40	61	62	6	42
Mentoring program for grant applications	11	19	35	69	59	5	41
Publicize the strengths of the university	18	15	39	52	61	8	46
Assist faculty to re-tool for research	12	14	44	65	42	17	45
Improve liaison with industry	19	19	35	57	38	27	44
	Not Important	Somewhat Important	Moderately Important	Important	Very Important	No Opinion	Weighted Average
	Percentage of Valid Respondents						
Seed funding	0.5%	3.0%	8.6%	33.5%	48.7%	5.6%	4.3
Faculty renewal	0.5%	2.0%	12.8%	28.1%	49.0%	7.7%	4.3
Incentives for "above normal" research	2.4%	7.7%	16.1%	23.2%	46.4%	4.2%	4.1
Reduced workload	2.5%	5.0%	20.1%	34.2%	35.2%	3.0%	4.0
FRET accounts	4.1%	2.6%	11.9%	20.1%	25.8%	35.6%	3.9
Contribute to equipment grant applications	5.1%	6.2%	13.3%	31.8%	28.7%	14.9%	3.9
Improve physical infrastructure & facilities	4.6%	8.7%	16.3%	31.1%	33.2%	6.1%	3.8
Bridge funding	2.6%	7.1%	21.4%	33.7%	25.5%	9.7%	3.8
Encourage & reward collaborative research	4.1%	8.7%	18.9%	30.6%	30.1%	7.7%	3.8
Improve liaison with granting bodies	1.5%	9.6%	20.2%	35.4%	24.7%	8.6%	3.8
Recognize faculty who seek external funding	6.1%	8.1%	20.3%	31.0%	31.5%	3.0%	3.8
Mentoring program for grant applications	5.6%	9.6%	17.7%	34.8%	29.8%	2.5%	3.8
Publicize the strengths of the university	9.3%	7.8%	20.2%	26.9%	31.6%	4.1%	3.7
Assist faculty to re-tool for research	6.2%	7.2%	22.7%	33.5%	21.6%	8.8%	3.6
Improve liaison with industry	9.7%	9.7%	17.9%	29.2%	19.5%	13.8%	3.5

12.1 Provide seed funding to new researchers

In excess of 80% of respondents replied that seed or start-up funding for new researchers was an important or very important incentive. With the highest average response (4.3 of a possible 5), this implies that Memorial University researchers felt that the provision of seed funding for new researchers was an important or very important way to stimulate external research funding. In other words, the strength of these responses seems to reflect that, in the opinion of Memorial University researchers, an investment in research effort in the early stages would pay dividends later through improved research projects that, in turn, would qualify for external funding.

12.2 Improved faculty renewal

An overwhelming majority of respondents, 77%, referred to the fact that faculty renewal was important to stimulate external research funding and less than 1% did not think it was important. The average response rate for this incentive was also 4.3, reflecting that respondents saw this as an important or very important means of increasing external research funding. This may imply that new, energetic and enthusiastic, faculty members, being newly trained from graduate schools and striving for tenure and promotion, have the requisite skills and ambition to succeed in research. This, of course, should result in enhanced external funds for research flowing to Memorial University faculty members.

12.3 Provide incentives for "above normal" research

When asked whether rewards for "above normal" research would translate into expanded external research funding, 70% of respondents thought this was an important or very important inducement. This incentive had an average response rate of 4.1. On one level it is not surprising that people generally react favourably to situations in which their behaviour is rewarded. On another level it is surprising; especially given that researchers did not reply strongly that salary was important in determining their research activity. Even though the level of salary might not be a key determinant of research activity, this response rate suggests that tying salary to research performance should increase research effort and translate into enhanced external research funding.

12.4 Reduce teaching loads and committee work

Not surprising is that reduced teaching loads and committee work were seen as important or very important ways to enhance external research funding. With an average response of 4, this was the fourth most important incentive identified by Memorial University researchers. Reduced workload in these areas frees time for research activities and frees time to develop more competitive research grant applications. This, of course, corroborates the responses to earlier questions pertaining to the relationship between teaching and research.

12.5 Replenish the Faculty Research Education Trust Accounts

Replenishing the Faculty Research Education Trust Accounts was important or very important for 46% of the faculty members, but 36% had no opinion. This probably reflects a lack of familiarity with these accounts.

12.6 Contribute to equipment grant applications

Sixty-one percent of respondents felt that Memorial University should contribute to equipment grant applications as a way of increasing external research funding. The university's contribution to equipment grants reduces one of the constraints that researchers face when trying to qualify for external research funding.

12.7 Improved physical infrastructure and facilities

An improved physical infrastructure and facilities was seen by 64% of respondents as an important or very important method for increasing research funding. Presumably, the mechanism through which this would be manifested is that improved infrastructure and facilities would enhance the ability of faculty members to engage in certain kinds of research and be more successful in attracting external research funding of this research.

12.8 Provide bridge funding for faculty research

The provision of bridge funding for faculty research was considered to be an important or very important motivator for 59% of the respondents and less than 3% did not think of it as being important. Presumably, maintaining the inertia of research activity is itself an important input into research productivity and enhanced productivity should generate increased external research funding.

12.9 Encouraging and rewarding collaborative research

Approximately 60% of researchers saw encouraging and rewarding collaborative research initiatives as an important or very important stimulus to increase external research funding at Memorial University. Expanded collaboration should increase research opportunities and result in elevated external funding of research activities at Memorial University.

12.10 Improve liaison with research granting bodies

Sixty percent of respondents suggested that attempting to improve the liaison with research granting bodies would be important in improving external research funding. This may work because it is human nature to react more favourably to the known than the unknown.

12.11 Recognition of faculty who seek external funding

Surprisingly, 62% of respondents replied that recognition of faculty members who seek external funding was an important or very important motivator. Only 6% indicated that they did not think it was important. This seems at odds with the lack of importance attached to internal recognition in affecting research activities. However, one interpretation of this difference is that the respondents are suggesting that while recognition may stimulate their research activity, it may encourage the faculty as a whole to increase their pursuit of external research funding.

12.12 Institute a mentoring program to assist research grant applications

Again, it was a surprise to find 65% of researchers thought a mentoring program was an important impetus for increasing external research funding and only 6% suggested it was not important. What makes this a surprising result is that researchers did not see mentoring as important in influencing their research activity, but they apparently felt that it was important in encouraging faculty members to seek external research funding. One possible explanation is that researchers were indicating that mentoring may help with the grant application process. A mentoring program may, in turn, increase the success rate for grant applications.

12.13 Publicize the unique strengths of the university

A significant number of respondents (59%) were of the opinion that publicizing the unique strengths of the university was an important or very important way of increasing external research funding at Memorial University. It is not clear exactly how to interpret this result without additional information. This idea needs to be explored further, through focus groups of researchers within the university, government and industry officials and members of the grant council adjudication committees, to ascertain the feasibility and effectiveness of this suggestion.

12.14 Assist faculty to re-tool for research

When asked whether Memorial University should assist faculty members to retool for research as a way of increasing external research funding, more than 55% of researchers considered this to be an important or very important initiative. The inference to be drawn here is that the respondents feel that if researchers have a greater capacity to engage in research, then enhanced external funding is a logical progression from that elevated research capacity.

12.15 Improve liaison with industry

Only 40% of researchers saw benefits in improved relations with industry. This may be accounted for by the fact that very little of university research is tied to collaborating with the private sector.

12.16 What can be done to increase research activity and funding

When asked to comment what might be done to increase research activity and funding, faculty members identified the following:

- Rebalancing of workloads so that more time was available for research and to develop applications;
- Enhanced clerical support in the application process;
- Improved technical support, facilities and equipment;
- Improved research track record;
- Provision of matching funds;
- Improved financial support of graduate students to improve the quality of students available to help with research;
- Funds to develop ideas;
- Recognition in the promotion and tenure process of the number of grants for which researcher has applied;
- More mentoring; and
- Enhanced collaboration.

12.17 Summary of external research funding

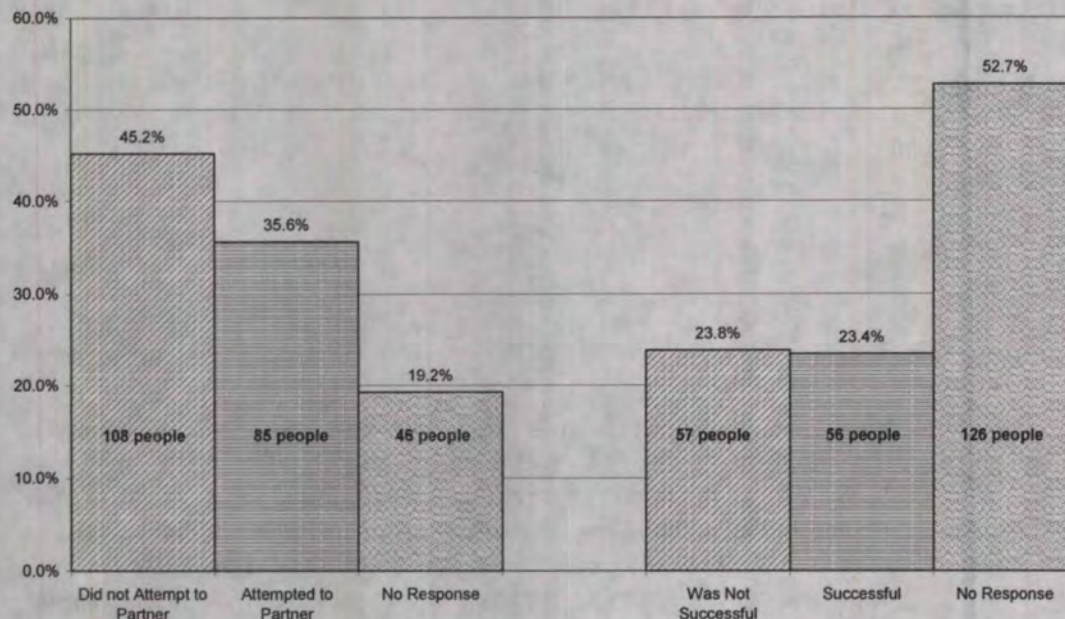
The messages to be drawn from the responses on ways to increase external research funding can be summarized as:

- A number of issues have been identified by Memorial University faculty members as being important means through which external funding of research can be increased. With the numbers in the parenthesis representing the percentage of the respondents who indicated that the initiative was important or very important in stimulating external research funding, the favourably received incentives included:
 - explicit recognition of faculty members who seek external funding (63%);
 - commence a mentoring program to assist with grant applications (65%);
 - assist faculty to re-tool for research (55%);
 - provide incentives for “above-normal” research (70%);
 - improve faculty renewal (77%);
 - improve physical infrastructure and facilities (64%);
 - bridge research funding for faculty members between grants (59%);
 - seed or start-up grants for new researchers (82%);
 - publicize the unique strengths of the university (59%);
 - contribute to equipment grant applications (61%);
 - encourage and reward collaborative research initiatives (61%);
 - replenish Faculty Research Education Trust Accounts (46%);
 - reduce teaching loads and committee work (69%); and
 - improve liaison activities with the granting councils (60%); and
- the initiative that seemed to garner least support, in terms of its mean response score, was improved liaison activities with industry (49%).

13. University-private sector partnering

Figures 57 to 59 pertain to the experience of university researchers in partnering with the private sector. As Figure 57 shows, only 36% of respondents (85 people) indicated that they had attempted to partner with the private sector and 45% or 108 researchers suggested that they did not attempt to partner. The other 19% (46 respondents) did not respond to this question. Of those that attempted to collaborate with the private sector only 23% (56 faculty members) reported that the attempts were successful.

Figure 57: Distribution of respondents by whether they attempted to partner with the private sector in their research and whether they were successful



The experience of Memorial University researchers in terms of whether the private sector attempted to engage the faculty member's expertise in their research efforts is exhibited in Figure 58. More than 30% of the respondents (73 people) replied that they had been contacted by the private sector, but less than 20% or 47 researchers entered into a contract. This corresponds to two-thirds of those contacted entering into contracts with the private sector. However, the contact rate between the private sector and the university is relatively low.

Figure 58: Distribution of respondents by whether private sector firms attempted to engage their expertise in their research and whether they were successful

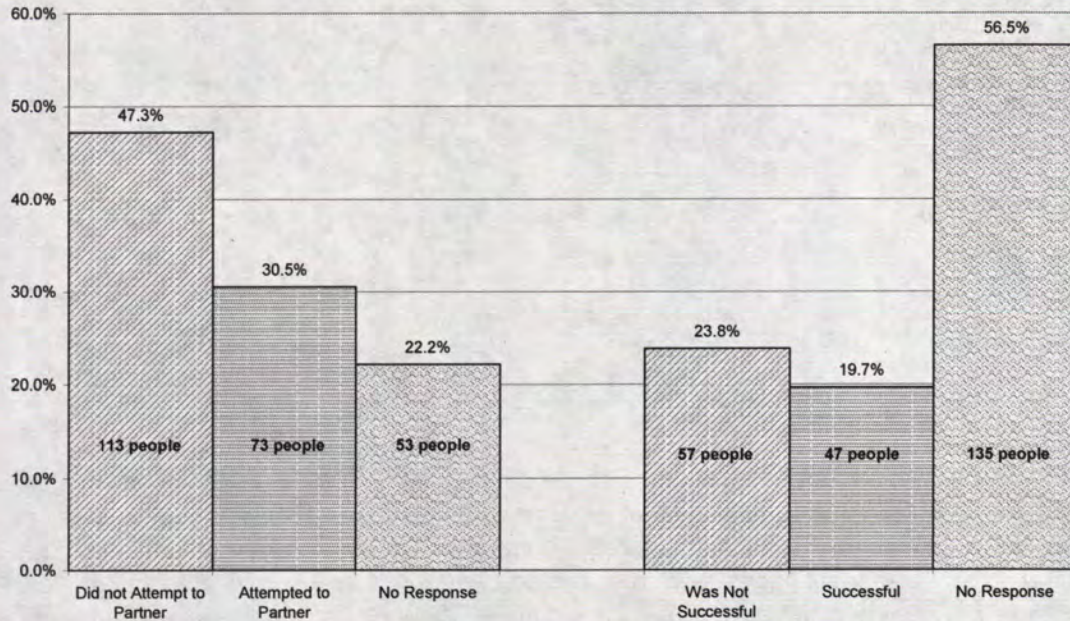
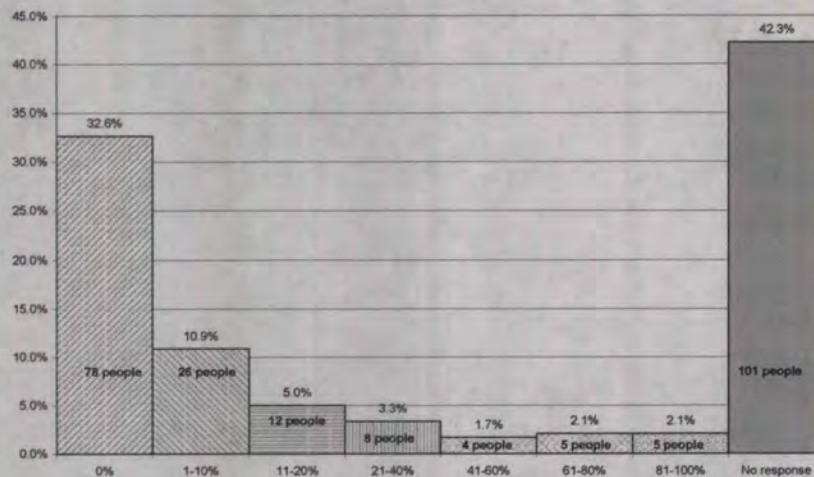


Figure 59 profiles the percent of research undertaken by Memorial University faculty that includes the private sector. In excess of 40% of the researchers (101 people) did not reply to this question and another 78 researchers (33%) confirmed that none of their research involves the private sector. Surprisingly, 11% of the respondents (26 faculty members) indicated that up to 10 percent of the research encompassed the private sector, a further 5% (12 individuals) have between 10 and 20 percent and 9% of the faculty (22 researchers) had more than 20 percent of their research involving the private sector.

Figure 59: Distribution of respondents by percent of their research that involves the private sector



When faculty members were asked what could be done to increase research contracts with the private sector, there were two types of responses. The first type consisted of suggestions about how to increase research contracts. The second type of response questioned whether enhancing research contracts with the private sector was a legitimate activity for the university. These faculty members saw the university as an institution to foster learning and research. In their assessment, the performance of “applied research”, with the associated strings attached, diminished that role. Partnering with the private sector, in their evaluation, erodes the independence of research.

The other group apparently did not see partnering with the private sector as a threat to the legitimate role of the university. One of the suggestions put forward was to facilitate interaction between industry and university researchers; perhaps through a joint research symposium or through the appointment of a liaison to seek out partnerships and identify opportunities. This might require developing a directory of skills and expertise of interested university researchers and promoting it to target groups within industry, which might require some form of awareness campaign. Other suggestions included a rebalancing of workloads to make time for partnering activities; recognizing these activities in promotion and tenure decisions; and more university support for partnering.

In summary, it is possible to draw the following inferences from this information:

- contact between university researchers and the private sector is relatively low and, consequently, the level of contracts between university researchers and the private is correspondingly low;
- once contact has been established between the private sector and university researchers more than two-thirds of those contacts result in contracts; and
- a very low level of university research is tied up with the private sector. Only 9% of faculty members report that more than 20 percent of their research involves the private sector.

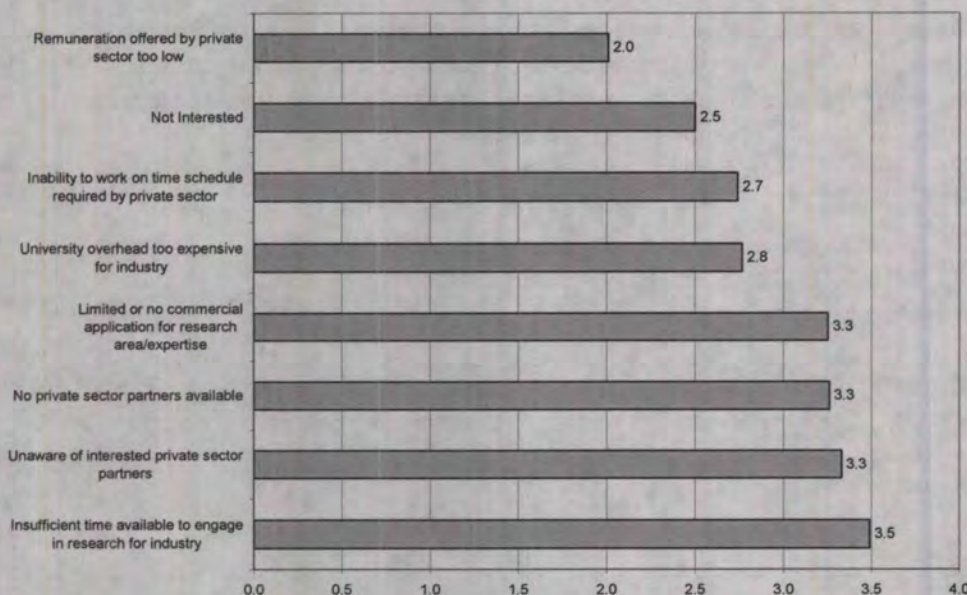
14. Barriers to University-Private Sector Partnering

Researchers were asked to assign a level of importance to a series of potential barriers that reduce their ability to engage in research contracts with the private sector. This is covered in Table 36 and Figures 60. When drawing inferences from these responses, note that between 60 and 85 people chose not to answer this question.

Table 36: Barriers to Partnering With the Private Sector

	Not Important	Somewhat Important	Moderately Important	Important	Very Important	No Opinion	No Response
Number of Respondents							
No time	21	12	20	44	38	35	69
Unaware of potential partners	24	19	25	41	37	30	63
No private sector partners	25	18	15	30	35	44	72
No commercial application for research area/expertise	32	18	15	38	40	28	68
University overhead too expensive	34	11	22	17	19	68	68
Private sector time schedule too restrictive	38	19	13	27	19	54	69
Not Interested	45	16	16	20	15	43	84
Remuneration too low	51	19	12	11	6	71	69
	Not Important	Somewhat Important	Moderately Important	Important	Very Important	No Opinion	Weighted Average
Percentage of Valid Respondents							
No time	12.4%	7.1%	11.8%	25.9%	22.4%	20.6%	3.5
Unaware of potential partners	13.6%	10.8%	14.2%	23.3%	21.0%	17.0%	3.3
No private sector partners	15.0%	10.8%	9.0%	18.0%	21.0%	26.3%	3.3
No commercial application for research area/expertise	18.7%	10.5%	8.8%	22.2%	23.4%	16.4%	3.3
University overhead too expensive	19.9%	6.4%	12.9%	9.9%	11.1%	39.8%	2.8
Private sector time schedule too restrictive	22.4%	11.2%	7.6%	15.9%	11.2%	31.8%	2.7
Not Interested	29.0%	10.3%	10.3%	12.9%	9.7%	27.7%	2.5
Remuneration too low	30.0%	11.2%	7.1%	6.5%	3.5%	41.8%	2.0

Figure 60: Barriers to Private Sector Partnering



14.1 *Insufficient time available to engage in research for industry*

One potential barrier is that researchers do not have sufficient time available, after taking into account their other responsibilities and activities, to engage in research with industry. Forty-eight percent of respondents signified that this was important. In other words, their priorities and responsibilities did not leave much time for collaborating with the private sector to investigate issues that are a priority to industry. This barrier, with an average response of 3.5, was the most important of all barriers considered.

14.2 *Lack of awareness of partners*

Forty-four percent of respondents replied that the lack of awareness of interested private sector partners was an important or very important barrier to engaging in private sector research contracts. Seventeen percent had no opinion on this issue and 14% indicated that it did not inhibit their ability to partner with the private sector. With an average response rate of 3.3 this was considered to be moderately important.

How should one interpret an “important” versus a “not important” response in the context of this particular question? For the 14% who thought that it was not important, there are obviously other things that determine whether they worked with the private sector. On the other hand, there might be some benefit in trying to mesh the skills of university researchers to the needs of the private sector for the 44% who listed it as important or very important. At least this would remove the awareness barrier that may be preventing research alliances from being formed with the private sector.

14.3 Lack of availability of partners

While the lack of availability of private sector partners would act as a barrier to research contracts with the private sector, it is interesting to know how many researchers feel that this has reduced their ability to work with the private sector. Thirty-nine percent of respondents considered the lack of availability of private sector partners was important or very important and for 15% of researchers this was not important. These are similar responses to that received to the awareness question addressed above.

14.4 Limited or no commercial application for their research area or expertise

If a researcher feels that there is no obvious commercial application to his/her research, then he/she is unlikely to be collaborating with the private sector. This is certainly the case for a significant number of university researchers. Slightly less than half of the respondents felt that limited or no commercial application for their research area or expertise constituted an important or very important barrier to research contracts with the private sector and 19% did not see it as an important barrier. An average response of 3.3 indicates that researchers saw this barrier as only moderately important.

14.5 University overhead too expensive

It has been suggested that university overhead prevents researchers from availing of research contracts with the private sector. The respondents were divided on this issue – the biggest group (40%) had no opinion while one-fifth of the respondents thought it was important and an equal proportion did not see it as an important barrier. With an average response of 2.8, this was not considered to be an important barrier.

14.6 Inability to work on time schedule required by the private sector

The respondents were split on whether the inability to work on the time schedule required by the private sector prevented them from accepting private sector contracts. It was not an important barrier as reflected by an average response of 2.7.

14.7 Not interested

It is possible that researchers are just not interested in pursuing research contracts with the private sector. Again, the faculty members were split on this issue – for 29% it was not important and it was important for 22% of the respondents. With an average response of 2.5, lack of interest was not important in precluding private sector partnering.

14.8 Remuneration too low

The remuneration offered by the private sector being too low was considered by only 10% of researchers to be relevant in preventing their partnering with the private sector. Evidently, it is not the expected financial return that is restricting private contracts.

14.9 Other barriers to university-private sector partnering

In addition to selecting the importance that they attach to the barriers listed in Table 36, respondents were provided an opportunity to provide written commentary on any other barriers that may be relevant. A number of researchers expressed concern about being involved with the private sector. These researchers suggested that they were wary of industry and were concerned about the lack of an arms-length relationship that might develop when research is being done for the private sector. Some faculty members seemed to feel that partnering with the private sector and the commercial aspects of university research was not an appropriate activity for the university. They also seemed to think that an enhanced role for applied research with the private sector diminishes the importance of basic research.

For other respondents the legitimate function of the university was not compromised through partnering with the private sector, but the level of partnering could be enhanced if collaborative research with the private sector is recognized in the promotion and tenure decisions. Another researcher suggested that the kinds of companies that might engage his/her expertise are located outside of Newfoundland. For this researcher, geography constituted a barrier to partnering with the private sector. The time involved and the lack of intellectual stimulation were reasons offered by other researchers for not partnering with the private sector.

14.10 Summary of barriers to university-private sector partnering

The highlights to be emphasized concerning the barriers to university-private sector partnering are:

- lack of awareness of private sector partners or lack of availability of a private sector partner was an important barrier to partnering with the private sector for 44% and 39% of respondents, respectively. The close correspondence between these two responses is not surprising since they are dealing with essentially the same issue;
- their research having limited commercial application was offered as an explanation for not partnering with the private sector by 46% of researchers at Memorial University;
- twenty percent of researchers considered high university overheads as a reason for not partnering with the private sector;
- only 10% of faculty thought that the low remuneration acted as a barrier to partnering with the private sector;
- time pressure was an important factor that precluded 48% of faculty from entering into partnerships with the private sector;
- for 22% of researchers, the short time frame associated with private sector collaborations acted as a barrier to partnering with the private sector; and
- twenty-two percent of researchers were just not interested in partnering with the private sector.

15. Experience with Commercializing Research

The next section deals with the experience that Memorial University researchers have had with commercializing their research. This is illustrated in Figures 61 and 62. Figure 61 reveals that 16% of the faculty had attempted to commercialize their research and only 6% was successful. As well, only 11% of the faculty members attempted to partner with the industry to commercialize their research (Figure 50), 5% attempted to partner with the private sector and 4% replied that they were successful in their commercialization attempts.

Figure 61: Distribution of respondents by whether they attempted to commercialize their university research and whether they were successful

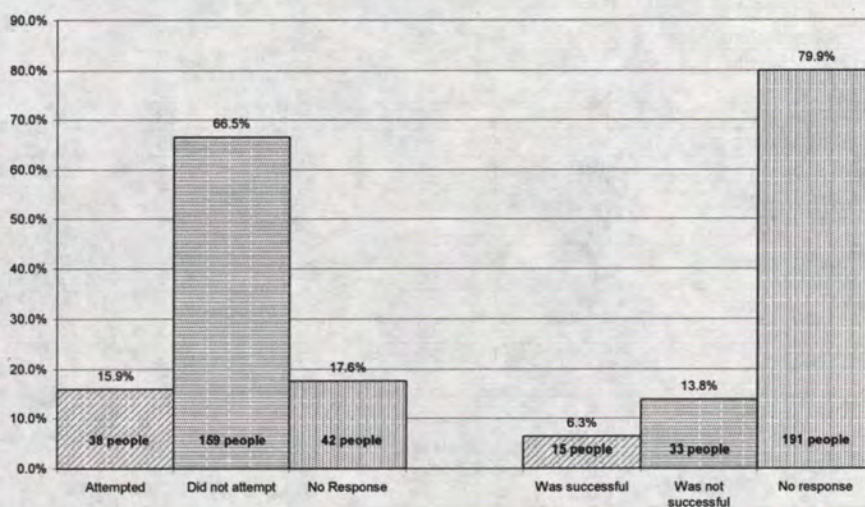
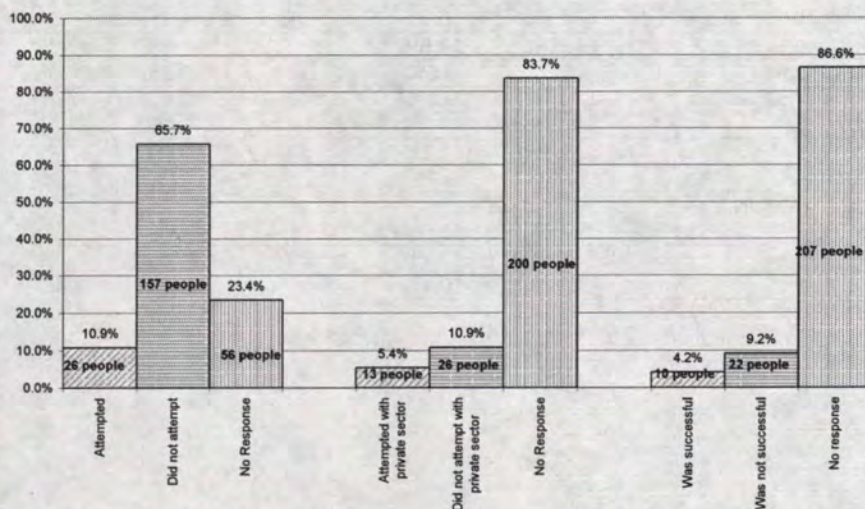


Figure 62: Distribution of respondents by whether they attempted to partner with industry or the private sector to commercialize their research and whether they were successful



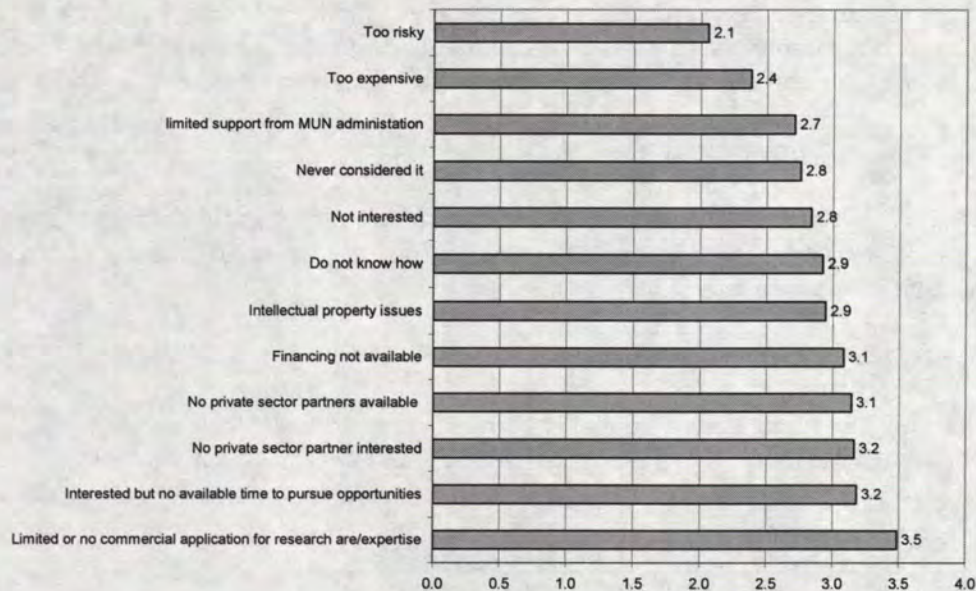
16. Barriers to Commercialization of Research

Memorial University researchers were asked to rank the importance of a number of potential barriers to commercialization of their research. Table 37 and Figure 63 present this information. As well, it is important to note that 70 to 85 people omitted these questions.

Table 37: Barriers to the Commercialization of Research

	Not Important	Somewhat Important	Moderately Important	Important	Very Important	No Opinion	No Response
Number of Respondents							
Limited or no commercial application for research area/expertise	23	15	25	28	51	23	74
Interested but no available time to pursue opportunities	24	15	26	29	28	38	82
No private sector partner interested	23	16	15	23	28	51	83
No private sector partners available	21	23	16	25	28	45	81
Financing not available	22	15	17	21	23	60	79
Intellectual property issues	32	15	18	17	28	50	79
Do not know how	35	23	20	21	31	32	77
Not interested	41	19	25	21	29	27	77
Never considered it	46	16	23	16	30	34	74
Limited support from MUN administration	29	18	23	13	17	57	82
Too expensive	37	20	17	15	9	60	81
Too risky	52	16	22	12	4	52	81
	Not Important	Somewhat Important	Moderately Important	Important	Very Important	No Opinion	Weighted Average
Percentage of Valid Respondents							
Limited or no commercial application for research are/expertise	13.9%	9.1%	15.2%	17.0%	30.9%	13.9%	3.5
Interested but no available time to pursue opportunities	15.0%	9.4%	16.3%	18.1%	17.5%	23.8%	3.2
No private sector partner interested	14.7%	10.3%	9.6%	14.7%	17.9%	32.7%	3.2
No private sector partners available	13.3%	14.6%	10.1%	15.8%	17.7%	28.5%	3.1
Financing not available	13.9%	9.5%	10.8%	13.3%	14.6%	38.0%	3.1
Intellectual property issues	20.0%	9.4%	11.3%	10.6%	17.5%	31.3%	2.9
Do not know how	21.6%	14.2%	12.3%	13.0%	19.1%	19.8%	2.9
Not interested	25.3%	11.7%	15.4%	13.0%	17.9%	16.7%	2.8
Never considered it	27.9%	9.7%	13.9%	9.7%	18.2%	20.6%	2.8
Limited support from MUN administration	18.5%	11.5%	14.6%	8.3%	10.8%	36.3%	2.7
Too expensive	23.4%	12.7%	10.8%	9.5%	5.7%	38.0%	2.4
Too risky	32.9%	10.1%	13.9%	7.6%	2.5%	32.9%	2.1

Figure 63: Barriers to the Commercialization of Research



16.1 Limited or no commercial application for area/expertise

What is the role played as a barrier to commercialization by the fact that there was limited or no commercial application of research area/expertise? About half of the respondents thought this was important or very important and 14% did not see it as important.

16.2 Lack of time

The lack of time available to pursue commercialization opportunities may act as a barrier to the commercialization of research. Thirty-six percent of Memorial University researchers reported this as relevant, while for 15% of the respondents it was not an issue.

16.3 Absence of interested private sector partners

Similarly, the absence of interested private sector partners could constitute a barrier to the commercialization of research. Again, one-third of respondents suggested this as an important barrier and 15% did not.

16.4 Lack of private sector partners

Obviously, the absence of private sector partners could prevent researchers from commercializing their research. One-third of researchers represented this as an important or very important barrier to the commercialization of research.

16.5 Lack of financing

Only 28% of faculty members indicated that the unavailability of financing was an important or very important barrier to the commercialization of their research and 14% did not consider it important to whether they commercialized their research.

16.6 Intellectual property issues

Do intellectual property issues act as a barrier to the commercialization of research? Memorial University researchers were divided on this issue, with 20% thinking it was relevant and 20% suggesting it was not relevant.

16.7 Do not know how to commercialize research

It is plausible that researchers do not know how to commercialize their research and this could account for why they do not engage in such activity. This was not important for 20% of faculty members, but it was offered as an explanation by 32% of the researchers.

16.8 Not interested in commercializing research

Twenty-five percent of researchers did not refer to the lack of interest as an important barrier to the commercialization of their research, while 31% of respondents did suggest it as an explanation for low levels of commercialization of university research.

16.9 Never considered commercializing research

People may not have commercialized their research because they had never thought of it. The respondents were split on this issue - 30% thought it was not important and 28% thought it was important or very important.

16.10 Lack of administrative support

To what extent does the lack of administrative support act as a barrier to the commercialization of their research activities? Only 19% of researchers credit this as being an impediment to the commercialization of their research.

16.11 Too costly

The cost of commercializing one's research can be prohibitive for some faculty members. For 23% of researchers, this was not the case. It was, however, important for 15% of respondents.

16.12 Too risky

Some university researchers may face more risk than they are prepared to bear in attempting to commercialize their research. Thirty-three percent of researchers did not perceive this as important while 10% thought it was.

16.13 What can be done to increase commercialization of research at Memorial University

The faculty members responding to this survey are clearly split on this issue. One group sees the commercialization of research as a disturbing pattern that should not be promoted. They see commercialization of research as being at the expense of basic research and as going against the appropriate role of the university. The second group have identified ways in which commercialization of research at the university might be enhanced. Some of their suggestions were:

- increase interaction between university and industry through a research forum or symposium;
- establish an office with the mandate to search out projects with potential for commercialization;
- provide funding for feasibility studies;
- develop a clear policy on the exclusivity of access to Memorial University resources;
- rebalance workloads to provide time for activity;
- recognize commercialization activity in the promotion and tenure process;
- enhance the awareness of industry needs and university capabilities;
- demonstrate how researchers have actually commercialized research; and
- have the university relinquish intellectual property rights.

16.14 Summary of barriers to commercialization of research

The key points to highlight from these responses were:

- faculty members were divided on whether the commercialization of research is a legitimate function for the university;
- there was no consensus on whether researchers "not having thought of it" was an explanation for the lack of commercialization of research at Memorial University. About 30% did not see it as important and approximately 30% thought it might be important;
- as well, there was no consensus on whether the lack of interest on the part of Memorial University researchers in commercializing their research explained the low level of commercialization. Thirty percent considered it did and 25% did not think so;

- about half of the researchers responded that the lack of commercial application of their research acted as a barrier to commercialization;
- one-third of faculty suggested that not knowing how to commercialize their research was an important barrier. This was counterbalanced by 22% who did not see "not knowing" as an important barrier;
- only 10% of respondents ascribed the risk associated with the commercialization process as a barrier;
- slightly more than 15% of faculty members reported the cost of commercialization as an important barrier;
- the availability of financing was referred to as an important barrier by almost 30% of respondents;
- prior time commitments prevented the commercialization of research was considered important for 36% of the faculty;
- less than 20% of the respondents listed the lack of administrative support as an important barrier to the commercialization of research;
- intellectual property issues were raised as a barrier by only 20% of the respondents;
- for one-third of the respondents the absence of private sector partners or their lack of interest acted as a barrier to commercialization; and
- no barrier stood out as being especially important in preventing the commercialization of research.

17. Results of the Statistical Analysis

17.1 Statistical tests

- ~ In addition to the descriptive analysis provided above, a number of statistical tests and bivariate logistic regressions were used to determine the statistical significance and nature of the relationships between the collaborative or commercialization activities and characteristics of faculty members in the sample.

The first step was to establish whether statistical relationships exist between the variables representing university-private sector partnering or the commercialization of their research and other variables reflecting the key characteristics of Memorial University faculty members. Initially, this involved performing cross tabulations on the relevant survey responses to identify possible relationships between variables. The cross tabulation procedure permits the construction of two-way and multi-way tables, further facilitating the performance of a variety of statistical tests to determine the association between the variables. The actual statistical tests undertaken were contingent on the nature of the data involved. Specifically, correlation analysis can be utilized to identify the relationships between continuous variables. However, the data produced from the survey were predominately in the form of counts of categorical responses. For this type of data, Chi-Square tests on the homogeneity of proportions were used instead. This procedure enables one to determine whether the proportions of respondents answering "yes" to one of the response categories for a particular question is statistically different from the proportion of respondents indicating that a different response category is appropriate for them. From the variables identified as having statistically significant differences in the proportion of respondents who answered questions in different ways, a list of potential explanatory variables was developed for use in stage two.

The next step involved identifying, using logistic regression techniques, the nature of the relationship between private sector partnering or commercialization variables and the relevant respondent characteristics. The likelihood of, say, commercializing their research is modeled as a classification problem, where the characteristics of those faculty members involved in commercialization are separated from those who do not commercialize their research. The dependent variable is binary, where "yes" to the commercialization question is recorded as 1 and 0 is inputted for a "no" answer. To model the binary decision of whether researchers commercialize their research, the following logistic model was estimated:

$$\Pr(Y = 1 | Z) = \frac{e^Z}{1 + e^Z}$$

where: $Y=1$ is "yes" to the commercialization question and Z is a vector explanatory variables.

The probability that a researcher commercializes his/her research can be written as:

$$\text{Pr}(\text{Commercialization}) = \frac{1}{1 + e^{-Z}}$$

The vector of explanatory variables (Z) is identified through the Chi-Square testing described above. The likelihood or odds of commercialization can be calculated as the probability of commercializing one's research divided by the probability of not commercializing. This approach allows for the calculation of the odds ratio that can be used to measure how important the explanatory variables are to the commercialization process. For example, an estimated odds ratio of 3 implies that the respondents who possess the characteristic are three times more likely to commercialize their research than those who do not have that characteristic.

Six variables reflecting private sector partnering and commercialization activities of Memorial University researchers were subject to additional statistical testing and regression analyses. The results of the statistical analyses performed on these commercialization and collaboration variables are summarized below in Tables 38 through 43 and are discussed in a separate section for each variable. The commercialization and collaboration variables considered for additional evaluations are:

- Faculty members who have attempted to collaborate with private sector firms in their research;
- Faculty members who partnered or entered into a contract with private sector firms in their research;
- Faculty members who had businesses attempt to engage the researchers' expertise in private sector research opportunities;
- Faculty members who have attempted to commercialize their research;
- Faculty members who were successful in commercializing their research; and
- Faculty members who have attempted to partner with industry to commercialize their research.

17.2 Faculty members who have attempted to collaborate with private sector firms in their research.

One hundred and ninety-three respondents answered the question pertaining to whether they attempted to collaborate with the private sector in their research. There were 85 researchers who answered in the affirmative, 108 people who reported that they did not attempt to partner with the private sector and 46 faculty members omitted this question. Table 38 summarizes the results of the associated statistical analysis for this question.

Researchers who have an established track record with private sector companies are more likely to attempt to partner with private sector firms in their research. The probability of attempting to partner with the private sector is 19.7 times higher for researchers who have had an affiliation with private sector companies in Newfoundland and Labrador than for respondents who report no track record of working with local firms. When one considers those with an established relationship with firms in other provinces or outside of Canada, the likelihood of attempting to partner with the private sector falls to 11 times and 9.3 times, respectively.

Table 38
Faculty members who attempted to collaborate with private sector firms in their research

Independent Variable	Odds Ratio
Those who work with private sector companies in Newfoundland and Labrador	19.68
Those who work with private sector companies in other Provinces	10.95
Those who work with private sector companies outside of Canada	9.31
Faculty of Engineering and Applied Sciences (reference group Faculty of Arts)	8.29
Marine Institute (reference group Faculty of Arts)	6.22
Faculty of Science (reference group Faculty of Arts)	3.33
Those who work with colleagues at other local education/research institutions	2.95
Faculty of Medicine (reference group Faculty of Arts)	2.69
Those who work with colleagues at MUN other than in their own department	2.32
Tenure track (reference group tenured faculty)	0.34
Those who work with colleagues in their department	NSR
Those who work with colleagues at institutions in other provinces	NSR
Those who work with colleagues at institutions outside of Canada	NSR
Position/title at Memorial University	NSR
Highest Degree	NSR
Feel that Memorial University is a research conscious institution	NSR
Aware of MUN incentives for faculty to seek research funding	NSR
Membership on grant selection committees for SSHRC, NSERC, CIHR/MRC	NSR
Membership on other grant selection committees	NSR
Length of tenure	NSR
Faculty of Business (reference group Faculty of Arts)	NSR
Sir Wilfred Grenfell College (reference group Faculty of Arts)	NSR
School of Nursing (reference group Faculty of Arts)	NSR
Other Faculties or Institutes (reference group Arts Faculty)	NSR

* NSR – no statistical relationship could be established

Using researchers from the Faculty of Arts as the reference group, the regression results imply that researchers from the Faculty of Engineering and Applied Sciences are 8.3 times more likely to attempt to partner with private sector firms. When other faculties and institutes are considered, the probability of collaborating with private sector firms relative to that observed for researchers from the Faculty of Arts is 6.2 times higher for respondents from the Marine Institute, 3.3 times higher for those researchers from the Faculty of Science and 2.7 times higher for faculty members from the Faculty of Medicine. Surprisingly, no statistical difference could be established for attempting to

partner with the private sector between those respondents from the Faculty of Business and those from the Faculty of Arts. The same holds true for respondents from Sir Wilfred Grenfell College, the School of Nursing and the other category.

Faculty members who collaborate with colleagues in other departments and local institutions are, respectively, 2.3 and 3 times more likely to attempt to work with the private sector. Those who are on tenured track contracts are less likely (0.3) to attempt to partner with private sector firms compared to those who have academic tenure. In other words, the probability of faculty members who are already tenured being engaged in partnerships with the private sector is three times higher than those who are on tenure track contract. This latter finding is likely the combined effect of two factors – (1) researchers on tenure track contracts may not have established a significant track record in research activity that would enable them to effectively market themselves to the private sector and (2) since refereed journal publication plays heavily into the tenure decision, much of the focus of researchers on tenure track contracts would be on developing a record of research in this area, not in terms of trying to engage the private sector in contracts.

A statistical relationship could not be established between researchers who attempt to partner with the private sector and

- whether they engaged colleagues in their department in their research projects;
- whether they worked with colleagues at institutions in other provinces;
- whether they collaborate with colleagues at institutions outside of Canada;
- the position/title researchers held at Memorial University;
- their highest earned degree;
- whether they referred to Memorial University as a research conscious institution;
- whether they were aware of incentives at Memorial University for faculty to seek research funding;
- whether they acted as members on grant selection committees for SSHRC, NSERC, CIHR/MRC;
- whether they sat on other grant selection committees; and
- the period of time over which they have had tenure.

17.3 Faculty members who partnered or entered into a contract with private sector firms in their research

The number of respondents dropped dramatically for this question. Of the 239 returned surveys, only 113 answered either yes or no. Fifty-six answered yes and 57 stated no. Table 39 displays the results of the statistical analysis of this question.

Again, those faculty members who have established a relationship with the private sector have an increased probability of entering into a contract. Interesting though, those who work with the private sector in other provinces have a 4.4 times greater chance of entering into a contract or partner with the private sector. Faculty members who work

with companies outside Canada and those who work with companies in Newfoundland and Labrador, respectively, are 3.8 and 3.7 times more likely to partner or enter into a contract with private sector firms.

Table 39

Dependent Variable: Faculty members who partnered or entered into a contract with private sector firms in their research

Independent Variable	Odds Ratio
Those who work with private sector companies in other Provinces	4.33
Those who work with private sector companies outside of Canada	3.81
Those who work with private sector companies in Newfoundland and Labrador	3.67
Those who work with colleagues in their department	NSR
Those who work with colleagues at MUN other than in their department	NSR
Those who work with colleagues at other local educational/research institutions	NSR
Those who work with colleagues at institutions in other provinces	NSR
Those who work with colleagues at institutions outside of Canada	NSR
Position/title at Memorial University	NSR
Highest degree	NSR
Feel that Memorial University is a research conscious institution	NSR
Aware of MUN incentives for faculty to seek research funding	NSR
Membership on grant selection committees for SSHRC, NSERC, CIHR/MRC	NSR
Membership on other grant selection committees	NSR
Length of tenure	NSR
Faculty membership	NSR

A statistical relationship could not be established between whether the researcher entered into a contract with the private sector and

- whether they engaged colleagues in their department in their research projects;
- whether they worked with colleagues at MUN other than in their department;
- whether they collaborated with colleagues at other local educational/research institutions;
- whether, in their research efforts, they cooperated with colleagues at institutions in other provinces;
- whether they formed research alliances with colleagues at institutions outside of Canada;
- their position/title at Memorial University;
- their highest earned degree;
- whether they referred to Memorial University as a research conscious institution;
- whether they were aware of incentives at Memorial University for faculty to seek research funding;
- whether they acted as members of a grant selection committee of the granting council;
- whether they sat on other grant selection committees;
- their length of tenure; and
- their faculty/institutional affiliation.

17.4 Faculty members who had private sector firms attempt to engage the faculty member's expertise in their own research efforts

One hundred and eighty-six faculty members answered this question, with 70 responding yes and 113 replying no. Relationships matter. Those who work with private sectors companies have a higher probability of being engaged by the private sector for their expertise. Table 40 illustrates the results of the statistical analysis.

The odds ratios are 20.1 for those who work with companies in Newfoundland and Labrador, 11.2 for those who work with companies outside Canada and 7.4 for faculty members who work with the private sector in other provinces. Those who collaborate with colleagues within Memorial University, but outside of their own department are 2.9 times more likely to be engaged by the private sector and faculty members who collaborate with colleagues at local educational/research institutions have a 2.5 times higher chance of being asked by private sector firms for their expertise. The only faculty variable to show up significant was those at the Marine Institute. Compared to the Faculty of Arts, researchers at the Marine Institute have an 11.4 times higher probability of being engaged by the private sector for their expertise.

Table 40
Dependent Variable: Faculty members who had private sector firms attempt to engage the faculty members' expertise in their own research efforts

Independent Variable	Odds Ratio
Those who work with private sector companies in Newfoundland and Labrador	20.13
Marine Institute (reference group is Arts faculty)	11.36
Those who work with private sector companies outside of Canada	11.21
Those who work with private sector companies in other Provinces	7.37
Those who work with colleagues at MUN other than in their department	2.88
Those who work with colleagues at other local educational/research institutions	2.49
Those who work with colleagues in their department	NSR
Those who work with colleagues at institutions in other provinces	NSR
Those who work with colleagues at institutions outside of Canada	NSR
Position/title at Memorial University	NSR
Highest degree	NSR
Feel that Memorial University is a research conscious institution	NSR
Aware of MUN incentives for faculty to seek research funding	NSR
Membership on grant selection committees for SSHRC, NSERC, CIHR/MRC	NSR
Membership on other grant selection committees	NSR
Length of tenure	NSR

A statistical relationship could not be established between those who were engaged by the private sector for their expertise and

- whether they engaged with colleagues in their department in their research;
- whether they worked with colleagues at institutions in other provinces;
- whether they collaborated with colleagues at institutions outside of Canada;
- their position/title at Memorial University;

- their highest degree;
- whether they referred to Memorial University as a research conscious institution;
- whether they were aware of MUN incentives for faculty to seek research funding;
- whether they acted as members of a grant selection committee of the granting councils;
- whether they sat on grant selection committees; and
- their length of tenure.

17.5 Faculty members who have attempted to commercialize their research

One hundred and ninety-seven faculty members responded to this question. Of these, 38 answered “yes”, they did attempt to commercialize their research and 159 answered no. Table 41 presents the results of the statistical analysis of this question.

The odds ratios is 3.3 for those who have an affiliation with companies in Newfoundland and Labrador, 3.2 for those who collaborate with companies outside Canada and 5.7 for faculty members who work with the private sector in other provinces. Those who collaborate with colleagues outside their departments are 2.4 times more likely to attempt to commercialize their research and faculty members who work with colleagues at local education/research institutions have twice the probability of commercializing their research. The only faculty variable to show up significant was whether the respondent was a member of the Faculty of Engineering and Applied Sciences. Compared to the Faculty of Arts, researchers from the Faculty of Engineering and Applied Sciences are 5.5 times more likely to commercialize their research.

Table 41
Dependent Variable: Faculty members who have attempted to commercialize research

Independent Variable	Odds Ratio
Those who work with private sector companies in other Provinces	5.65
Faculty of Engineering and Applied Sciences (reference group Faculty of Arts)	5.5
Those who work with private sector companies in Newfoundland and Labrador	3.31
Those who work with private sector companies outside of Canada	3.21
Those who work with colleagues at MUN other than in their department	2.38
Those who work with colleagues at other local educational/research institutions	1.98
Those who work with colleagues in their department	NSR
Those who work with colleagues at institutions in other provinces	NSR
Those who work with colleagues at institutions outside of Canada	NSR
Position/title at Memorial University	NSR
Highest degree	NSR
Feel that Memorial University is a research conscious institution	NSR
Aware of MUN incentives for faculty to seek research funding	NSR
Membership on grant selection committees for SSHRC, NSERC, CIHR/MRC	NSR
Membership on other grant selection committees	NSR
Length of tenure	NSR

A statistical relationship could not be established between those who attempted to commercialize their research and

- whether they engaged colleagues in their department in their research projects;
- whether they worked with colleagues at institutions in other provinces;
- whether they collaborated with colleagues at institutions outside of Canada;
- their position/title at Memorial University;
- their highest degree;
- whether they referred to Memorial University as a research conscious institution;
- whether they were aware of incentives at Memorial University for faculty to seek research funding;
- whether they acted as members of a grant selection committee of the granting council;
- whether they sat on other grant selection committees; and
- their length of tenure.

17.6 *Faculty members who were successful in commercializing their research*

Only 48 faculty members replied to this question, with 15 answering yes and 33 no. It should not be surprising that very little can be said statistically on this question. From Table 42 the only significant result was that those who work with private sector companies in Newfoundland and Labrador are 4.1 times more likely to be successful in commercializing their research. As noted in the table, nothing else was statistically significant.

Table 42
Dependent Variable: Faculty members who were successful in commercializing their research (small sample)

Independent Variable	Odds Ratio
Those who work with private sector companies in Newfoundland and Labrador	4.13
Those who work with colleagues in their department	NSR
Those who work with colleagues at MUN other than in their department	NSR
Those who work with colleagues at other local educational/research institutions	NSR
Those who work with colleagues at institutions in other provinces	NSR
Those who work with colleagues at institutions outside of Canada	NSR
Those who work with private sector companies in other provinces	NSR
Those who work with private sector companies outside of Canada	NSR

17.7 *Faculty members who have attempted to partner with industry to commercialize their research.*

One hundred and eighty-three faculty members responded to this question, with 26 responding yes and 157 indicating no. Table 43 displays the results from the analyses.

The odds ratios are 4.4 for those who work with companies in Newfoundland and Labrador, 3.2 for those who collaborate with companies outside Canada and 5.7 for faculty members who provide their expertise to the private sector in other provinces. The only faculty variable to show up significant was the Faculty of Engineering and Applied Sciences. Compared to the Faculty of Arts, those in the Faculty of Engineering and Applied Sciences are 8.8 times more likely to attempt to partner with industry to commercialize their research

Table 43

Dependent Variable: Faculty members who have attempted to partner with industry to commercialize their research

Independent Variable	Odds Ratio
Faculty of Engineering and Applied Sciences (reference group Faculty of Arts)	8.33
Those who work with private sector companies in other Provinces	5.68
Those who work with private sector companies in Newfoundland and Labrador	4.19
Those who work with private sector companies outside of Canada	3.15
Those who work with colleagues in their department	NSR
Those who work with colleagues at MUN other than in their department	NSR
Those who work with colleagues at other local educational/research institutions	NSR
Those who work with colleagues at institutions in other provinces	NSR
Those who work with colleagues at institutions outside of Canada	NSR
Position/title at Memorial University	NSR
Highest degree	NSR
Feel that Memorial University is a research conscious institution	NSR
Aware of MUN incentives for faculty to seek research funding	NSR
Membership on grant selection committees for SSHRC, NSERC, CIHR/MRC	NSR
Membership on other grant selection committees	NSR

A statistical relationship could not be established between those who attempted to partner with industry to commercialize their research and

- whether they engaged colleagues in their department in their research projects;
- whether they worked with colleagues at MUN other than in their department;
- whether they collaborated with colleagues at other local educational/research institutions;
- whether, in their research efforts, they cooperated with colleagues at institutions in other provinces;
- whether they formed research alliances with colleagues at institutions outside of Canada;
- their position/title at Memorial University;
- their highest earned degree;
- whether they referred to Memorial University as a research conscious institution;
- whether they were aware of MUN incentives for faculty to seek research funding;
- whether they acted as members of a grant selection committee of the granting council; and
- whether they sat on other grant selection committees.

17.8 Summary of regression analysis

As indicated by Table 44, an affiliation with the private sector is important in establishing partnership with the private sector and for facilitating the commercialization of research. As well, researchers from the Faculty of Engineering and Applied Sciences appear to be more willing to engage in partnerships with the private sector and to attempt to commercialize their research. Collaboration also appears to be important in promoting partnerships with the private sector and for researchers who try to commercialize their research.

Table 44: Summary of Regression Results

Hypothesis tested	Attempted to partner with the private sector	Partnered with the private sector	Private sector attempted to engage expertise	Attempted to commercialize research	Successfully commercialized research	Private sector to commercialize research
Independent Variable	Odds Ratio					
Affiliation with local private sector	19.68	3.67	20.13	3.31	4.13	4.19
Affiliation with national private sector	10.95	4.33	7.37	5.65	NSR	5.68
Affiliation with international private sector	9.31	3.81	11.21	3.21	NSR	3.15
Faculty of Engineering and Applied Sciences	8.29	NSR	NSR	5.50	NSR	8.33
Marine Institute	6.22	NSR	11.36	NSR	NSR	NSR
Faculty of Science	3.33	NSR	NSR	NSR	NSR	NSR
Collaborate with other local institutions	2.95	NSR	2.49	1.98	NSR	NSR
Faculty of Medicine	2.69	NSR	NSR	NSR	NSR	NSR
Collaborate within university	2.32	NSR	2.88	2.38	NSR	NSR
Tenure track contract	0.34	NSR	NSR	NSR	NSR	NSR
Collaborate within department	NSR	NSR	NSR	NSR	NSR	NSR
Collaborate nationally	NSR	NSR	NSR	NSR	NSR	NSR
Collaborate internationally	NSR	NSR	NSR	NSR	NSR	NSR
Position/title	NSR	NSR	NSR	NSR	NSR	NSR
Highest Degree	NSR	NSR	NSR	NSR	NSR	NSR
Memorial University research conscious	NSR	NSR	NSR	NSR	NSR	NSR
Aware of MUN incentives to seek funding	NSR	NSR	NSR	NSR	NSR	NSR
Grant selection committees for granting councils	NSR	NSR	NSR	NSR	NSR	NSR
Other grant selection committees	NSR	NSR	NSR	NSR	NSR	NSR
Length of tenure	NSR	NSR	NSR	NSR	NSR	NSR
Faculty of Business	NSR	NSR	NSR	NSR	NSR	NSR
Sir Wilfred Grenfell College	NSR	NSR	NSR	NSR	NSR	NSR
School of Nursing	NSR	NSR	NSR	NSR	NSR	NSR

Conclusion

Given the information presented above, what are the key findings of this study? For observable characteristics, the distribution of the respondents was very similar to the true population of Memorial University researchers from which the sample was drawn. As best as can be determined, the survey respondents were representative of the actual population. For instance, the majority of respondents had obtained the rank of full professor, had academic tenure and possessed substantial amount of research experience. The allocation of their time to teaching, research and administration were consistent with that outlined in the collective agreement. Most of their research activities were directed to basic and applied research. Only 4% of the faculty members indicated that any significant amount of their research time was devoted to policy or social research. Less than 10% of the faculty reported spending any time attempting to commercialize their research.

When looking at private sector and university partnerships, one observes that the amount of association between university researchers and the private sector is relatively low and, consequently, the level of contracts between university researchers and the private sector is correspondingly low. However, once contact had been established between the private sector and university researchers more than two-thirds of those relationships evolved into research contracts. Moreover, very little university research included collaborating with the private sector. Only 9% of faculty members reported that more than 20 percent of their research involves the private sector.

An interesting finding that comes out of the written comments on university-private sector partnering is that the faculty was divided on whether it is even an appropriate activity for the university to be undertaking. Those opposed to enhanced collaboration with the private sector see applied research as detracting from basic research, the pursuit of which is the true function of the university. Moreover, the perceived loss of control and independence of their research agenda is seen as a threat to the legitimate role of the university within society. On the other hand, other researchers do not appear to perceive enhanced collaboration with the private sector as undermining the legitimacy of the university. Instead, they offered a number of proposals that, if implemented, could further expand the partnerships and collaboration between the university and the private sector companies.

Researchers report that the lack of awareness of private sector partners and lack of availability of private sector partners were important barriers to partnering with the private sector. Their research having limited commercial application was offered as an explanation for not partnering with the private sector by 46% of researchers at Memorial University. As well, time pressure was an important factor that precluded nearly half of faculty from entering into partnerships with the private sector. Very few researchers suggested that high university overheads or low remuneration were reasons for not partnering with the private sector. It is also interesting to note that the lack of interest and the inability to work on time schedules required by the private sector were not considered

to be important barriers to partnering with the private sector. However, it is clear that those researchers wishing to collaborate further with the private sector would prefer to see the incentive structure for promotion and tenure modified to reflect the value that the university attaches to this activity.

When the barriers to commercialization of research were considered, no barrier stood out as being especially important in preventing the commercialization of research. Yet, the level of commercialization of research at Memorial University is low. As well, the internal conflict between faculty members associated with university-private sector partnering is more intensely manifested when it comes to this issue. One group sees the commercialization of university research as a disturbing pattern that should not be promoted, while the other group has offered suggestions about how to increase the level of research commercialization at Memorial University. Again, to provide incentives for expanded emphasis on the commercialization of research, there needs to be some explicit recognition of its value to the university through its inclusion in the criteria utilized for promotion and tenure at Memorial University.

The results of the statistical tests and the logistic regressions indicate that the statistically significant parameters that influenced whether a faculty member attempted to partner with the private sector were:

- having an affiliation with private sector firms – either locally, nationally or internationally;
- belonging to the Faculties of Engineering and Applied Sciences, Science, or Medicine or being a member of the Marine Institute;
- collaborating with colleagues in other departments or in other local education/research institutions; and
- having academic tenure.

An examination of the statistically significant characteristics that influenced whether the private sector attempted to engage a faculty member's expertise reveals that with the exception of academic tenure and the Faculties of Engineering and Applied Sciences, Science and Medicine, the same set of factors are important. The only statistically significant variable explaining successful partnerships is whether the faculty members had an affiliation with private sector companies.

The statistically significant variables that explain whether a faculty member attempted to commercialize his/her research were:

- private sector affiliations;
- belonging to the Faculty of Engineering and Applied Sciences; and
- collaborating with colleagues in other departments or in other local education/research institutions.

For those researchers who attempted to partner with industry to commercialize their research, the only statistically significant characteristics are private sector affiliations and belonging to the Faculty of Engineering and Applied Sciences. The only statistically significant variable that explains successful commercialization is whether researchers have an affiliation with the local private sector.

Memorial University researchers indicated that the relationship between research and teaching is complex. Research and teaching interact through a variety of avenues - some reinforce each other, while others result in diminished effectiveness. The survey respondents suggested that research, rather than reducing teaching quality, is integral to the effective teaching of both graduate and undergraduate students. They also report that time allocated to teaching reduces time for research and research productivity. However, they acknowledged that new ideas were stimulated in the process of teaching and, as such, contributed to research output. Whether one effect outweighs the other could not be determined from the information contained in the survey responses.

When asked about the internal research environment, Memorial University faculty members suggested that Memorial University is a research conscious institution. Even so, a significant portion (43%) of the faculty reports being unaware of internal incentives to seek research funding. Further, researchers exhibit a high degree of willingness to collaborate with academic colleagues, locally, nationally and internationally. Yet, very few researchers collaborated with people in local institutions outside of Memorial University or with the private sector, either locally, nationally or internationally.

In terms of research track record, the vast majority of research is in the form of refereed publications. Very few researchers indicated that contract reports show up in their research track record. The low response rate pertaining to the questions on track record indicates a reluctance of respondents to answer these types of questions.

Memorial University researchers reported that a number of factors were important in influencing their research activity. The important drivers that were identified were:

- external research funding grants;
- teaching loads;
- library resources;
- travel funds;
- graduate students;
- graduate/doctorate programs;
- conference participation;
- critical mass of researchers;
- technical support;
- seed funding;
- equipment;
- facilities and labs; and
- internal research funding.

There was no consensus on the role of salary, mentoring or research chairs in influencing research activity. As well, most researchers were neutral with respect to the role that internal recognition of research plays in enhancing research activity at Memorial University. From the perspective of the hypotheses considered in this study, it is important to note that the majority of researchers suggested that private sector research collaboration and private sector contracts were not important in influencing their research activity.

With respect to the status of research drivers at Memorial University, researchers were more or less satisfied with:

- library resources;
- conference travel;
- facilities and labs;
- the graduate program; and
- external research funding.

They were dissatisfied with:

- administrative support;
- internal research funding;
- the critical mass of researchers; and
- seed funding.

There was no consensus on the level of satisfaction attached to:

- teaching loads;
- salary;
- internal recognition of research;
- graduate students;
- equipment;
- travel funds; and
- technical support.

Researchers were neutral with respect to their satisfaction with:

- mentoring;
- research chairs;
- private sector collaboration; and
- private sector contracts.

The research drivers for which their importance and satisfaction are most out of line are:

- external research funding;
- teaching loads;
- travel funds;
- critical mass of researchers;
- seed funding; and
- internal research funding.

These probably represent some of the more productive areas where research productivity might be enhanced at Memorial University.

When one examines the key findings concerning external research funding at Memorial University, one observes that Memorial University researchers appear to be relatively innovative in pursuing different external research funding sources. When one controls for eligible disciplines, Memorial University researchers reported a high propensity to apply to the relevant granting council for research funding. For those who actually applied for funding, they reported very high funding success rates. The proportion of Memorial University researchers that applied for research funds outside of the granting councils is low. This is another area where further consideration might pay dividends in terms of enhanced research funding and elevated research productivity in the future.

In terms of internal grant funding, the take-up rate on these programs was relatively low. The lack of awareness of the actual programs or the eligibility of researchers to apply for the programs suggests that a more effective communication/information strategy by the Office of Research might be worth considering.

Summarizing the key inferences that can be drawn from the responses on what constitutes a barrier to the application process, one can conclude that the important barriers were:

- the lack of match between programs and research initiatives;
- past research successes required to leverage new funds;
- lack of time to prepare a competitive bid; and
- inability to obtain matching funds.

As well, there was no consensus for whether the lack of researchers to support initiatives; the lack of administration support; the availability of support staff during the application process; the availability of development funds and the difficulty to collaborate due to geography acted as a barrier to the application process.

An examination of the barriers to external funding identified by Memorial University researchers reveals that none of the suggested barriers stood out as particularly important. In particular, the respondents were mixed on their responses to the importance of:

- policies of the granting agency;
- match between the funding program(s) and the research proposal; and
- the lack of a track record as a researcher.

For some researchers these were important and for others they were not important barriers. In addition, the researchers indicated that, in their opinion, no grants in the past, the lack of a competitive application and limited ability to collaborate/network with other researchers due to geography were not important barriers to research funding. Finally, it is important to note that the majority of researchers chose not to answer this question.

The messages to be drawn with respect to ways to increase external research funding are:

- the most important incentives identified were:
 - provide seed funding for new researchers;
 - improve faculty renewal;
 - provide incentives for "above-normal" research; and
 - reduce teaching loads and committee work;
- other incentives considered important were:
 - explicit recognition of faculty members who seek external funding;
 - commence a mentoring program to assist with grant applications;
 - assist faculty to re-tool for research;
 - improved physical infrastructure and facilities;
 - bridge research funding for faculty between grants;
 - publicizing the unique strengths of the university;
 - contribute to equipment grant applications;
 - encourage and reward collaborative research initiatives;
 - replenish Faculty Research Education Trust accounts; and
 - improved liaison activities with the granting council; and
- the initiative that seemed to garner the least support was improved liaison activities with industry.

The overall message that comes out of this research is that enhanced collaboration between university researchers and the private sector should pay dividends in increased partnerships and an improved record for the commercialization of research.

Appendix A

Introduction: It has been well established that innovation activity has accounted for the majority of economic growth that has occurred in developed countries within the last 100 years. Equally well documented are the concerns that Canada is falling behind other G7 countries in terms of R&D, innovation, productivity and competitiveness. Consequently, innovation, and the performance of research and development in particular, is a key priority of the Government of Canada.

The objective of this survey is to identify the factors that contribute, either positively or negatively, to the ability of researchers/faculty at Memorial University of Newfoundland to conduct research, to access research funding from national programs, and to collaborate with the private sector in performing R&D or in commercializing university research. The results of this survey will be analyzed to assist the Atlantic Canada Opportunities Agency and Industry Canada plan and implement strategies to increase research at Memorial University and to increase the commercialization of that research for the benefit of Newfoundland and Labrador.

Confidentiality: All responses will be kept in strict confidence. Only research staff will have access to your answers. There are no identifying codes on the returned surveys so it will be impossible to identify individual respondents from them. As a further protection of confidentiality and anonymity, all data will be summarized for analysis: no individual survey responses will be provided in the final report.

The Questionnaire: This questionnaire should take approximately 20 minutes to complete. If you have any questions about the study, please telephone Wade Locke, at 745-1564 or send an email to wlocke@roadrunner.nf.net. The survey should be returned in the addressed postage paid envelope by **March 18th** to Wade Locke Economic Consulting, 53 Harrington Drive, St. John's, NF, A1E 5Y1

Thank you for taking the time to complete and return this survey.

SECTION I: ABOUT YOU

1. **Your Position/Title at Memorial University of Newfoundland (MUN):**
 - ☐ Full Professor
 - ☐ Associate Professor
 - ☐ Assistant Professor
 - ☐ Lecturer
 - ☐ Session Employee
 - ☐ Other: _____
2. **Your Highest Degree Held:**
 - ☐ Earned Doctorate
 - ☐ Masters Level
 - ☐ Bachelor
 - ☐ Other: _____
3. **What year did you obtain your highest degree?** _____
4. **Number of years employed at education/research institutes?** _____
5. **Employment status with Memorial University:**
 - ☐ Tenured Faculty Member
 - ☐ Tenure Track
 - ☐ Short Term Contract
 - ☐ Per Course Employment
 - ☐ Other _____
6. **If tenured, please indicate how many years ago you received tenure:**
 - ☐ 0 to 5 years
 - ☐ 6-10 years
 - ☐ More than 10 years
7. **Your Faculty, School, or Institute?** _____

8. From the list below, please check the activities in which you are engaged, and, in the appropriate column, please indicate the percentage of your time allocated to each.

	0%	1-25%	26-50%	51-75%	76-100%
<input type="radio"/> Teaching	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/> Basic Research	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/> Applied Research	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/> Policy/Social Research	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/> Commercialization of Research	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/> Administration	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/> Other _____	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

9. The following statements describe the relationship between research and teaching.

Please indicate whether or not you agree or disagree with each statement, using a scale of 1 to 5 where 1 indicates you strongly disagree and 5 that you strongly agree.

There is no (or limited) relationship between research and teaching.
 Research reduces time for teaching and teaching quality.
 Teaching reduces time for research and research productivity.
 Teaching and research reinforce each other.
 Research is important to effectively teach graduate students.
 Research is important to effectively teach undergraduate students.
 Teaching stimulates new ideas for research.

Strongly Disagree	Disagree	Moderately	Agree	Strongly Agree	No opinion
1	2	3	4	5	9
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

10. Please indicate:

	Yes	No
(a) In your opinion, is Memorial University research conscious?	<input type="radio"/>	<input type="radio"/>
(b) Are you aware of MUN incentives for faculty to seek research funding?	<input type="radio"/>	<input type="radio"/>
(c) If yes to (b), please specify: _____		

If you do not conduct research or do not intend to conduct research in the future, you may stop here. Thank you for your time and for returning this survey.

SECTION II: RESEARCH ACTIVITIES & FUNDING

11. In your research activities, do you work with:	Yes	No
Colleagues in your Department?	<input type="radio"/>	<input type="radio"/>
Other colleagues at MUN?	<input type="radio"/>	<input type="radio"/>
Colleagues at other local education/research institutions?	<input type="radio"/>	<input type="radio"/>
Colleagues at other institutions in other provinces?	<input type="radio"/>	<input type="radio"/>
Colleagues at institutions outside of Canada?	<input type="radio"/>	<input type="radio"/>
Private Sector Companies in Newfoundland and Labrador?	<input type="radio"/>	<input type="radio"/>
Private Sector Companies in other Provinces?	<input type="radio"/>	<input type="radio"/>
Private Sector Companies outside of Canada?	<input type="radio"/>	<input type="radio"/>
Other (please specify) _____	<input type="radio"/>	<input type="radio"/>

12. In the last ten years, have you been a member of:

	Yes	No
(a) A grant selection committee for SSHRC, NSERC, CIHR/MRC?	<input type="radio"/>	<input type="radio"/>
(b) Other grant selection committees?	<input type="radio"/>	<input type="radio"/>

13. Please indicate the extent of your research output, in the following areas, over the last 5 years.

	0-2	3-5	6-10	> 10
Refereed journal publications	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Non-referred publications	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Monographs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Chapters in Books	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Contract reports	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Book reviews	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Articles in conference proceedings	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Magazine/Newspaper articles	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Unpublished Working Papers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Plays, short stories & artistic work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Books	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other: _____	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

14. The following lists external research funding sources. Please indicate in column A the number of grants for which you applied (or were involved in the proposed research e.g. NCE) over the last ten years. In column B, please indicate the number of applications that were funded.

	A: Applied For				B: Funded			
	0	1-2	3-4	> 5	0	1-2	3-4	> 5
Social Science and Humanities Research Council (SSHRC)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Natural Sciences & Engineering Research Council of Canada	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Canadian Institutes of Health Research (CIHR)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Canadian Foundation for Innovation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Networks of Centres of Excellence	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tri-Council Grants	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Canada Council	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Atlantic Canada Opportunities Agency	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Foundations (e.g. Johnson Foundation)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Non-Profit Organizations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other _____	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

15. If you have applied for external grants, please indicate whether or not you applied for the following types of grants, whether or not you received funding, and your role in the application.

	Applied?		Funded?		Principal Investigator	Co-Investigator	Other?
	Yes	No	Yes	No			
Individual Operating Grants	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Team operating Grants	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Equipment Grants	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Partnership Grants	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Special Strategic Grants:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	

16. In addition to grants available from the main granting agencies, there are external grants available to MUN researchers from many other sources. Please indicate whether or not you (a) were aware of, (b) eligible for, and (c) applied for the following examples of other external grants.

	A. Aware?		B. Eligible?			C. Applied?	
	Yes	No	Yes	No	Don't know	Yes	No
Heart and Stroke Foundation of Canada	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Canadian Foundation for Climate & Atmospheric Services	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
SSHRC Initiative on the New Economy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Nfld. & Lab. Arts Council	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
World Wildlife Fund Canada	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Banting Research Foundation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
NSERC Collaborative Research and Development Program	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Imperial Oil Limited	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CIHR Research Based Pharmaceutical Companies (Rx&D) Health Program	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fisheries & Oceans Canada Science Subvention Program	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Literacy Development Council of Nfld. And Lab.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Canadian Health Services Research Foundation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

17.

If you did not apply for research funding from external sources, why not?
Using a scale of 1 to 5, please indicate the importance of the following potential barriers, where 1 is not important, or not a barrier, and 5 indicates the factor is a very important barrier.

Funding programs do not match research initiatives
Past research success required to leverage future research funding
Insufficient time to prepare a competitive application
Inability to obtain matching funds required for research initiative
Lack of researchers to support research initiative
Lack of support by MUN Administration
Lack of support staff to prepare grant application
Lack of development funds to prepare for successful application
Difficulties collaborating with other researchers due to geography
Other: _____

Not important	Somewhat	Moderately	Important	Very Important	No Opinion
1	2	3	4	5	9
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please provide any comments you wish to share on research funding in the space below:

Policies of the granting agencies
 Funding program(s) do not match type of research proposed
 Lack of track record as a researcher
 Have not been a grant recipient in the recent past
 Non-competitive application
 Application not sufficiently developed
 Limited ability to collaborate/network due to geographic location
 Other:

[illegible]

(a) In column A, the importance you attach to each of the following in influencing your research activity.

- Teaching Loads
- Library Resources
- Salary
- Administrative Support
- Internal Recognition
- Internal Research Funding
- Conference Participation
- Mentoring
- Equipment
- Facilities/labs
- Graduate/Doctorate Programs
- Graduate Students
- External Research Funding Grants
- Critical Mass of Researchers
- Seed Funding
- Travel Funds
- Technical Support
- Research Chairs
- Private Sector Research Collaboration
- Private Sector Research Contracts
- Other:

[illegible]

20. Please indicate whether or not you (a) were aware of, (b) eligible for, and (c) applied for the following internal grants or award programs available to MUN researchers:

	(a) Aware?		(b) Eligible?			(c) Applied?	
	Yes	No	Yes	No	Don't know	Yes	No
SSHRC/VP Research Grants	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Salary-based Research Grants	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
University Research Professorships	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
President's Award for Outstanding Research	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Artistic/Creative Grants Program	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Publications Subvention Program	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Petro-Canada Young Innovator Awards Program	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
SSHRC Travel Grants	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ISER Grants	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Smallwood Centre Grants	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

- (b) If you were aware of, and eligible for, any of the grants or awards programs listed in question 20 (a) and did not apply, please indicate why not:

21.

How can Memorial University increase the amount of external funding available for research at MUN by faculty? Please indicate the importance of the following activities, using a scale of 1 to 5, where 1 is not important, or not a contributor to increased funding, and 5 indicates the activity is a very important contributor in your opinion.

	Not Important	Somewhat	Moderately	Important	Very Important	No Opinion
	1	2	3	4	5	9
Recognize faculty who seek external funding	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Institute a mentoring program to assist research grant applications	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Assist faculty to re-tool for research	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Provide incentives for "above normal" research	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Replenish Faculty Research Education Trust accounts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Improve faculty renewal	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Improve physical infrastructure & facilities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Provide bridge funding (between grants) for faculty research	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Provide seed or start-up funding for new researchers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Publicize the unique strengths of the university	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Contribute to equipment grant applications	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Encourage & reward collaborative research initiatives	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reduce teaching loads & committee work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Improve liaison with research granting bodies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Improve liaison with industry	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

22. What could you do, and what do you need, to increase your research activity and the amount of funding available for it?

SECTION III – Public-Private Partnerships

23. Please indicate the number of contracts, in the last 5 years, that you have undertaken as targeted research for:

	0	1-2	3-4	> 5
Industry/the private sector	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Government departments/agencies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other agencies or institutes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

24. Academic-Private Sector Research Contracts and/or Collaboration

	Yes	No
(a) Have you attempted to partner with private sector in your research?	<input type="radio"/>	<input type="radio"/>
(b) If yes to (a), did you partner or enter contract?	<input type="radio"/>	<input type="radio"/>
(c) Have private sector firms attempted to engage your expertise in their efforts?	<input type="radio"/>	<input type="radio"/>
(d) If yes to (c), did you partner or enter contract?	<input type="radio"/>	<input type="radio"/>
(e) What percent of your research involves the private sector?	_____ %	

25. The following provides a list of potential barriers to engaging in research contracts with the private sector. Please indicate the importance of each using a scale of 1 to 5, where 1 is not important or not a barrier, and 5 is a very important barrier.

	Not Important	Somewhat	Moderately	Important	Very Important	No Opinion
	1	2	3	4	5	N/A
Unaware of interested private sector partners	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
No private sector partners available	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Limited or no commercial application for research area/expertise	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
University overhead too expensive for industry	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Remuneration offered by private sector too low	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Insufficient time available to engage in research for industry	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Inability to work on time schedule required by private sector	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Not interested	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other: _____	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

26. What could be done to increase research contracts with the private sector?

Commercialization is the process of adapting research for commercial application and introducing it into the marketplace.

27. Commercialization of University Research

Yes No

- (a) Have you attempted to commercialize your research? ☐ ☐
- (b) If yes to (a), were you successful in commercializing your research? ☐ ☐
- (c) Have you attempted to partner with industry to commercialize your research? ☐ ☐
- (d) If yes to (c), did you partner with the private sector? ☐ ☐
- (e) If yes to (d), was the partnership successful in commercializing the research? ☐ ☐

28. The following provides a list of potential barriers to commercializing the research conducted at MUN. Please indicate the importance of each using a scale of 1 to 5, where 1 indicates the factor is not important, or not a barrier, and 5 indicates that it is a very important barrier.

	Not Important	Somewhat	Moderately	Important	Very Important	No Opinion
	1	2	3	4	5	N/A
Never considered it	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Not interested	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Limited or no commercial application for research area/expertise	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Do not know how	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Too risky	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Too expensive	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Financing not available	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Interested but no available time to pursue opportunities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Limited support from MUN Administration	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Intellectual property issues	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
No private sector partners available	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
No private sector partners interested	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other: _____	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

29. What, in your opinion, could be done to increase commercialization of the research conducted at Memorial University?

Thank you again for taking the time to complete and return this survey.

Appendix B
Academic Survey Comments

8(g) – Activities in which you are engaged and % of time allocated to activities. Other:
Artistic/creative work
Form filling
Community (K-12 education)
Preparation
Patient care
Clinical (patient care)
Service
Endless committee work
Dept obligations, ie. Committee work
Clinical medicine
Service
Clinical practice
Editing journal
Curriculum development
Committees
Clinical medicine
Patient care
Clinical
Counseling
Professional organizations
Medical practice
Committee meetings
University competitions for funding within science faculty and within university
Brainstorming
Service/patient care
Committee work
Clinical
I work 1/2 time for health reasons
Clinical/admin

10(c) – If yes to (b) [MUN is research conscious], please specify:
Effective Office of Research; Dean contributions to research networks
Eg. The SSHRC grant program is regularly explained and promoted
Internal research grants, research professorships, provision of research space, library resources
The Dean of Science will give some research funding to faculty who apply for, but fail to be awarded, NSERC funds. Some teaching loads can be reduced for top-level funded researchers.
Assistance with NSERC applications, support for CFI funds.
Cadigan's institute, Bornstein's old one
Funds (small amount) available to "B" list SSHRC applicants
Encouragement and support of Research Office Internal grants program
MUN artistic grants
Much too research oriented, teaching is taking a backseat
Research grants

Poster and newsletters announce programs
Support to assist with application to CFI
Office of research aids ????
But they do not work!
Earlier promotion/tenure for successful researchers
Teaching load
Dean of Science gave extra 10% to successful NSERC equipment grants
I have internal grants as a result of applying for external ones
Eligibility to get university grants depends on having sought external funds and letting Dean's office preview
All I require is NSERC funding, and MUN seems very supportive of this
P&T criteria for promotion and tenure
Not really
In our department research is balanced against a slight teaching load reduction. Dean of Science assists/supports grant writing.
Teaching relief for successful/productive researchers
Promotion & tenure require research; research professorships provide incentive.
Internal grants if public or external applications fail
Promotion, notoriety
There used to be some internal R&D money. Now internal money is usually from Medical Research Foundation and Cox award.
Office of research
There are very few; eg. If you are really lucky, you can have reduced teaching load.
Grants for faculty who apply to NSERC and are subsequently rejected by NSERC
Incentive is a strong word, but the Collective Agreement provides remissions for research
I am active in committee work through MUN's Office of Research
Having a research office
Vice-presidents Grant - I did receive one of these.
Seed grant from SSHRC applications rated fundable but not funded
Seed funding & support can be available if the case is made
Dean's Enrichment Fund and current versions of it
associate dean research, office of research have both been very helpful.
I read the notices from the Office of Research, MUNFA newsletter & MUN Gazette. Also, material is routed to one from admin office in Library.
Need more pro-active Office of Research, etc.
Information about funding availability is circulated
P&T in our dept is heavily weighted toward research productivity therefore P&T is an incentive
Faculty of Science offers additional financial support to successful NSERC applicants
We do receive occasional notices of research funding.
The incentive for non-tenured faculty is clearly stated in the collective agreement - attracting funding is an understood condition of tenure in this faculty.
CFI, VP's Research Fund
Various grants available; help provided for grant seeking (eg. NSERC visits; review of proposals, etc.)
Internal research grants, research professor awards, etc.
RPP
VP's (Research) grant for new faculty, and monitoring of whether they are applying.
SSHRC funding
Involved with res/res funding promotion

Institutional seed grants; Research office bulletins & updates; contract incentives for salary/research conversions
Required for P&T, reduced teaching, research professorships.
I am aware some funds are available for the department
I receive info circulated to faculty; I don't read it because it does not apply to sessionals.
Office of Research info.
AIF, CFI
(1)Faculty of Med. Always supported research and gave time and funding. Lately this support has decreased.
I see memos and circulars from time to time
Promotion and tenure
Very limited - basically through P&T committees, but it is possible to be a professor without doing any work in this university
Science offers small grant for submission to external funding sources, medicine has grad student funding and small development grants.
Encourage grant applications
Office of research
MUN had administrative offices and people set up to handle the process
Dean of Science office provides incentives
Communications with MUN's Research Office
Limited teaching load
Research centre
VP Award, Partial funding of 1st student
Fliers, notices distributed, etc.
In-house grants, Office of Research, structural support
Dean of Science review of grants, Office of Research initiatives, etc.
NSERC,SSHRC,CIHR,Health Canada, etc.
Eg. President's research fund - formerly Dean of Science research fund
I ran the programs in science so I know about them
Research productivity (which requires funding) is required for promotion & tenure.
Most of my incentives have come through support, but on a personal level, dean, etc.
\$5000 from Faculty of Science for submitting NSERC grant application (unsuccessful)
Bulletins of info are distributed
Policy/health initiatives
Assistance with research proposals, some "consolation" grants (in case of NSERC), internal grants
We receive info about it 2 or 3 times a year
The clinical orientation at Med School is to patient care; research is a distant thought for most
There are plenty of threats but no incentives. Clause 3.2.3. is a farce
But the incentives are for Science and Engineering incentives
Teaching load reduction
Support of research office, research chairs, VP research and travel funds, "pressure" of P&T reviews
Very limited opportunities at SWGC. Lip service only paid to researcher support, especially in sciences.
Funding to supplement CFI. Funding for bridging between grants
Internal research and travel grants - both within university and within faculty
VP research fund, etc.
Yes, although MUN assumes research must be externally funded when such is not always the case
Internal awards, logistic support

Various Gazette announcements, etc
\$ to support CFI applications
Promotion
Familiar with interdisciplinary initiatives

11(i) – In your research activities, do you work with: Others (specify)
Provincial governments in several provinces
Non-profit agencies
Government
Health Care Boards in NF & hospitals
Unions, economic zonal boards
Government agencies
Public, private not-for-profit agencies
Other musicians in Canada
Government agencies
Professional arts community
Other libraries, concert venues, publishing houses.
Government department staff
Some non-profit organizations
NGO's (environmental)
Colleagues with federal and provincial government agencies
Public sector
Colleagues in provincial education dept
Honours students
Crown Corp.
Government roles
Not interested in research at present

13(I) – Please indicate the extent of your research output, in the following areas, over the last five years. Other:
Patents
Conference Papers
Discovery channel interview
Invited lectures/presentations
Abstracts in conference presentations
Edited books
Course development
Maps
Ph.D. thesis
Conference abstracts
1 edit publications; 1 publish on internet
Dissertation
Conference abstracts
Research proposal ongoing for Ph.D.
Papers given at conferences

Performances
Government websites
Software, website, bibliographies
Abstracts at scientific meetings
System reviews
Editorials, TV appearances
Study Guide for Can. Ed. Of an intro Psych. text
Patents applied for

14(k) – grants applied for and/or funded: Other
NLTA Millennium Grant
DFO
FCAR
Laidlaw foundation
Heart & Stroke Foundation
Heritage Canada
Private sector (eg. Imperial)
Internal
Canadian Space Agency, Petroleum Research Fund, Imperial Oil University Grants
Rick Hansen Neurotrauma; CIHR (MRC) funded outright 2, in CIHR-partnership (ACOA) funded 5
Genome Canada; Provincial Fisheries
Office of Learning Technology; Economic Renewal Agreement; new Practices in Learning Technologies
ACPI; PERD; Government departments; MUN; companies
Industry/government
Foreign Grants
Smallwood Foundation
Industry sources (grants)
Government agencies, CCAF
US Off. of Naval Research
(1) CBC Commissioning grants (2) NF Arts Council
Health Canada Atlantic Region
Genome Canada
Internal university awards
NF Arts Council
Private industries
R&D / medicine
NF&LAB Arts Council
Local industry
Health Canada, HRDC
NATO Research Collab. Grants
Canadian Wildlife service, Parks Canada
Federal government department
Private companies or municipalities
Government
CIDA/AUCC

Canadian Health Research Foundation
DFO Subvention Research Grant
Canadian Assoc. of ____
DFO Subvention Research Grant
Chiang Ching-Kuo Research Fellowships, Republic of China Research Fellowships
Multiple Sclerosis Society
MUN administered SSHRC funds
Newtel, Paragon, OLIN, Stem-net
Environment Canada Contracts
Health Canada
Fed Govt TSRI, Northern Affairs, DFO
Green Plan (maybe Tri Council)
Aliant R&D fund (Canadian Centre for Marine Communications)
Model for(CAN'T READ RESPONSE)

17(j) – If you did not apply for research funding from external sources, why not? Other:
Only at MUN for 18 months
Federal/provincial political agencies
Shift in priorities (editing, admin duties, responsibilities to scholarly organizations)
Once you get rejected 2x or 3x, lethargy and stupor set in; this prevents one from extending oneself further.
I find there is a clash between teaching, research and administrative responsibilities. I feel that the administrative responsibilities I have as a new scholar far outweigh the time and support I should have for research. It makes me wonder about staying on this career path. I want to teach and research - that's why I pursued a position at a university. I didn't complete a PhD to then [sic] administrative and committee meetings.
Didn't need much money for my project
Too busy; disagree with principle of external grants to university
Heavy admin duties
No funding required for my research activities; thus, 16 & 17 are N/A.
Term contract makes it impossible
NFI 60/40 Rule
Other sources of financing
No research space or facilities
Work is teaching & web related
Just haven't got on the research track (yet)

Additional comments on research funding:
Research is more difficult to conduct at MUN than many of the large research universities in Canada. We are isolated from established researchers, it is difficult to attract good students, we are short on active researchers, the salary stinks, the province provides less matching funds than Ontario & Quebec, and the physical plant is rapidly deteriorating. I have begun interviewing at other universities. Very little funding available in performing arts!
Granting agencies stress fewer, larger grants. Smaller grants encourage faculty to remain research active and to hire undergraduates to assist in research. This recruits them into the discipline and encourages post-secondary and post-graduate study by them. A selected number of large grants and numerous smaller ones would thus be beneficial.
I expect to have greater need for support in the future.

As a new professor the teaching load is very heavy
I strongly disagree with and object to government policies and consequent policies of funding agencies that expect "innovation", meaning commercialization.
Wish there was more for hiring people (post docs, grad students)
The growing tendency of research output to be tied to industrial partners and the need for matching fund (ie. CFI) makes application for funds difficult.
Would like to have more support as a new researcher, ie. support in preparing budgets, writing proposals, targeting the right funding agencies also less teaching time (I have 6 courses) per year in order to concentrate on research.
Strong support for basic research must be maintained (actually increased). Increased emphasis on application and potential application does not serve society in the long run!
When I was hired I was told that Research was "a hobby". I have many colleagues at my same rank who have never published a single refereed paper; they routinely receive teaching remission. Where is there any incentive at MUN to do research? "It's just a hobby."
I have been active in applying for research funds from lots of sources. I have had a lot of success in getting \$. I find, though, that there is no support for success. That is, my work load simply increases with every new grant. I would like to see faculty colleagues share in the work load more fairly.
NSERC has been for me a great let down. The old boys network and complex and slow response time has made progress through normal channels difficult. The university mantra that NSERC=promotion is completely counter to building a business sense and to responding quickly to research needs. For most, NSERC is nothing more than high end wharf building.
Lack of a doctoral program in my area weakens my SSHRC proposal, especially in the Training of Future researchers. Also, in my Faculty, teaching work load is 6 courses - this lessens time available for research.
My research doesn't require funding beyond occasional travel funds.
"Time" is the most significant factor. I don't apply for many possible grants because I don't have "free & available" time to think and develop "new" ideas that merit funding; and not enough time to do the actual lab work if funds were awarded.
With respect to question 17. I have applied for and received external funding however that does not imply that there are not issues related to infrastructure; administration support, etc.
I have benefited from the regional partnership program with MRC (now CIHR). Having some input of provincial monies has been very helpful.
Not enough info about other potential funding sources. MUN should be able to provide a list & description of funding sources in each area. We the researchers cannot keep on top of this & we rely on the office of research to do this.
Getting the necessary match funds for a CFI grant is almost impossible in my discipline as most grants available will not cover capital costs!!!
MUN admin and support staff are not a problem because they provide good support.
Lack of basic equipment and laboratory space because of historic emphasis on teacher preparation hurts us as does the inequity in collective agreement teaching loads!
Funding in recent years mainly through contracts with government agencies and departments.
I am aware of funding opportunities within my field of study, however, as I am currently only a Ph.D. candidate I have not looked into the possibility of applying for research grants. I anticipate looking more in depth into research funding this year as I anticipate completion of my dissertation. I am ware, however, of many complaints raised by faculty members regarding their dealings with individuals associated with the MUN administration.
I am probably not appropriate for this survey since I just started my position Jan 2002. I do have a pending CIHR operating grant in for the Mar 1, 2002 date.
Most of these kinds of grants are not available, as far as I know, to sessionals, or they are not related to my area of research.
The peer review process seems to influence research grants both ways; sometimes it assists (when you are known or young or a new entrant) and at other times it detracts (when you are less known or are not

doing research in a leading area or you do not know how to politicize your work).
Most provinces have research funds available to help leverage greater grants from large agencies/companies or government - we have none of that. We pay our grad students very poorly so how can we expect to recruit excellent students to stay here or to come here.
I have indicated MUN is not research conscious because I don't believe we do enough to support research. We need research active faculty as heads of departments. We need the community to recognize and be proud of the excellent fundamental research that occurs at MUN.
1. One can spend too much time preparing applications that have only a moderate chance of success, unless one uses a cookie-cutter formula for preparing applications. The system works well for some people but most fall off the curve. 2. Granting institutions tend to initiate "new" programs and starve "established" programs. This is a "no-brainer" but they don't do it.
Funding opportunities in many cases are hampered by lack of matching money.
Your questions do not relate to the kind of "humane" research of central importance in Liberal Arts at Sir Wilfred Grenfell.
One person to assist and review application would be nice. Someone to ensure all the pieces is there before committees review the application.
-MUN already receives \$45 million/year of research money. What happens to that money? How much is spent on research? Where are research outcomes? Does MUN need more research money? More than \$50000 per faculty member, yet only 60% of faculty receives grants!! - What MUN does with the research facility it already has? (worth tens of millions of \$, eg @ Fisheries and Marine Inst.) Are the facilities for rent to generate funds for MUN?
Most of what I do doesn't cost much - I could use a new horn but it would definitely not qualify anywhere.
Major issue for basic research is that funding for non-mainstream topics is a crap-shot
Some R&D involves utilizing IRAP funds as well as other industry related pots. These are not mentioned.
The facilities to do the research in my field are lacking for last 15 years. I have a 7x16 ft research lab with no _____ or space to set up equipment for the research I do. Most faculty in Biology have inadequate space and have had for decades. This is a major impairment and ___ for both research and graduate education.
Although I applied and have been successful in obtaining research funding, this question is not applicable to me, but I offer my opinion on barriers against research anyway. I feel that administrator who is not a researcher has no clue on how to apply for funding and how to appreciate the hard work associated with grant application and subsequent conducting research. Administrator refuses granting teaching release to those who have major grants and refuses to sign research application unless his/her name is on it! Another big barrier in NF: lack of matching fund!
From my perspective, the opportunities are improving but MUN needs to focus more on maintaining and recruiting the kind of researchers and grad students to make this work.
I did apply
You have throughout this questionnaire confused research and funding, they are not the same thing.
Only 30% of applications are funded by SSHRC, compared to 70% of applications funded by NSERC. Social Science research needs concrete help infrastructure.
No time or assistance at SWGC to adequately prepare grants. No encouragement to do so. Any research space I have managed to obtain is later taken away for teaching purposes by head of science.
Obtaining matching funds is a major problem here. Another problem here is the province established a centre for applied health research. This is the only provincial funding agency we have and yet it does not fund basic biomedical research. Every other "have-not" province (Man, Sask, NS, PEI) has a similar body but they provide funding for all areas of health research (as CIHR now does). Funding from provincial source for post-doc fellows would help us to be much more competitive at the national level.
Lack of sufficient seed money for generating pilot data
I find little balance among MUN administrators between assigned teaching work load and expected research work load.

Lack of research assistants or potential collaborators in the field locally. Therefore no grounds upon which to justify research expenses

Didn't need much financial support in the past but current plans will require substantial funding. I have just completed and submitted a \$275000 application to the "Aliant Wireless R&D Fund" managed by the Canadian Centre for Marine Communications.

18(h) – If you applied for funding from external sources and did not receive it, why, in your opinion did you not receive the funding? Other:

Only proposals in last 10 years were not funded

Lack of access to necessary facilities over the last several decades

1)Lack of extensive preliminary results.2)Hard to compete with productivity of peers in institutes or protected positions (<2h teaching/year) or with that of large groups with several large grants!!

I do not know why I did not get it

NSERC referees have noted that they do not believe significant productivity could be achieved given high teaching load and lack of internal \$.

Insufficient bridging funding to support bridging research to make proposal more competitive.

I've been unsuccessful in several applications. I guess I just lost out or had respectively poor applications in those cases

There is usually very little feedback for unsuccessful candidates

The Byzantine bureaucracy of NSERC & the university make actions very difficult to achieve

-Lack of doctoral program (to train future res.) - Lack of admin. Support - Lack of time (too much teaching)

We needed a 4 yr grant commitment & they provide yearly grants of 1 yr scope

I am waiting to hear if I have received funding

I have been in NF less than a year, have applied for only 1 external grant, for which the decision is not known yet.

During the last 4 yrs, one of my applications was ranked either second or first; yet the application was not funded.

I have received funding when I've applied

Geographic location important

Publication record

Too many other university duties, heavy teaching load, heavy admin load.

Teaching load=insufficient time for grant development

I am still waiting for the results of my first 2 applications.

Track record is single most important factor

SSHRC does not support pedagogical applications of basic research

Difficulty in supporting grad students at SWGC (important component of NSERC application)

NSERC is poor at funding interdisciplinary work

Only fund not received was Genome Canada

19(u) – The importance you attach to/satisfaction with conditions at MUN regarding the following. Other:

Administrative demands (very heavy for senior/faculty active in research

* I am moderately satisfied with my own load, but am not impressed with the heavy loads in some other departments cross campus. **I am dissatisfied with respect to the extent to which the new chairs have gone to internal candidates (should be used to construct programs, not just profit taking)

Sabbatical recognition for research time

Difficult to imagine private sector in my areas of research.

Links with researchers in other provinces
Post-doctoral program

20(b) – If you were aware of, and eligible for, any of the grants or awards programs listed in question 20 (a) and did not apply, please indicate why not:
I thought you had to be nominated for Univ. Res. Prof
Was involved & administration & could not have put forward a competitive application (humility)
Hopeless conditions
No time
While formally "eligible", in fact have no chance of being successful.
(Refer to 20a(3,4): One should not apply for these awards. I have received the PAOR; I believe I have been nominated for the URP.
Others more qualified than myself eligible.
Other alternatives available for funding
(1) I have not taken at sabbatical; (2) My publication costs do not fit the program description
In theory, sessionals maybe eligible, in reality I think not.
Timing of travel grant applications is not appropriate. Once my participation as established, deadlines had passed. Happened on 2 occasions
My salary is already uncompetitively low. I'm not about to do anything that will worsen the situation.
Did not have reason to apply
One doesn't apply for VRP or President's Award. One is nominated.
No point
Not applicable to discipline
These require nomination
I thought I would wait to apply for the Un. Res Prof and/or Outstanding Res award, give my research time to mature/develop.
My research needs writing-up not writing grant applications to do more research to put off the dreaded writing up
Salary-based, not valuable
Too busy to apply for everything. Teaching loads and administrative duties in addition to ongoing research is all I can manage.
Either not worth the time (not enough \$) or did not have a strong case.
Travel covered by collective agreement and research...
Already 2 URP's in Dept. and would not apply without nomination
No relevant proposal developable in time available
Salary-based grants not worth the effort
Adequate funding from external sources
- Salary-based awards: \$ I could designate would buy 1 chemical only. Not worth it. - President's Award: I have not held external funding - unlikely to be successful. - Publication Subvention: I received a generous advance on royalties for my co-authored book. The publisher did not require funding.
No need to
I think I've been nominated for the Petro-Canada Award this year. I declined a nomination last year (I was too busy to apply) the amount is relatively small.
I had funding from elsewhere
Subvention grant - 1st application planned for 2002
Applications are time-consuming for SSHRC and the chance of success very small. Salary-based grants are of no benefit - you're just spending your own money and doing a lot of paperwork to account for it.
Without a PhD there would be little point

Not very relevant to my research activities
-Didn't want to go through hassle of applying. - haven't needed to travel much.
Other commitments preclude taking salary as research funds
Publication costs are normally covered by NSERC operating grants.
I meant to apply for help with paying for a color image in one paper but received help from my collaborator. No need since.
I have only become aware of ISER grants (last month). Administration makes no attempt to educate or encourage new faculty to learn about grant possibilities. It's a "sink or swim" policy here.
For Research Professorship & Award for outstanding research - not a good enough record yet.
Too much work and not enough time; my costs for doing research are low.
Had an NSERC grant by the time I was aware of them.
I've only been here 8 months - give me a break. I've done 3 external grants & a start-up & been added as co-investigator on 4 existing grants
Presently have sufficient research support & insufficient research to merit awards/recognition
Time; appropriate match with research activity
Too senior for President's Awards
Not competitive for outstanding research or Res Prof.
These are probably not available to sessionals
I have enough funds from NSERC, NCE
I had enough funding to do my research
Nature of current research
There seems to be no point in even applying for research professorships
No need
Circumstances did not allow
Either not competitive or seen as not useful
Salary-based research grants: not interested in this form of support. URP & Outstanding Research: Initiative should be from Dean of Faculty
Process is so ugly, personalized & politicized that I wouldn't bother
Received a large Canada Council grant this year, so I did not apply for Creative grant. The CC grant covers expenses for my work.
VP research grant is only \$5000 that is not worth applying. I am not eligible for others.
Would not be successful
Too busy; President Award for outstanding research is political.
(a) not enough time at deadlines (b) policy not appropriate (c) swamped with teaching
One does not apply for University Research Prof. without a lot of nerve.
1,2: already go other large grants. 3: too difficult. 7: not relevant
No need and funds were too small
I did not qualify for the first and my salary is too low to divert monies from living expenses to my research program. If it meant a dollar for dollar reduction in my taxes like contributions to a political party I might consider it.
Again, difficulties in applying and eligibility as term contract
Because, in general, they do not apply to my research
Felt unlikely to be competitive
Not relevant to my present research agenda
Had other external sources of funding
AIE - my contribution was absorbed into a larger "picture". CFI - Infrastructure funding could transform my workplace into a contemporary research-intensive facility. I have tried this for 10 years.
No time to prepare application

I already have NSERC grant \$, start-up funds.
Time
Applied for Principal's Research Fund at SWGC (was successful)
Application unlikely to be successful
Small odds of success vs. time to apply, eligibility does not equate with likelihood!
At the time that I was aware and eligible, I was busy with other research projects.
Haven't needed subvention grant
Not feasible mainly for health reasons
Not the track record to attract support. My impression is that post success is almost a threshold issue for someone with my years of experience.
Salary-based research grant does not suit me
Didn't need thus far but may use in the future depending on clarification on how pension basis may be affected.
Mainly involved in theoretical work.
ISER grants, in particular, require too much prep time for relatively small award value.

21(p) – How can MUN increase the amount of external funding available for research at MUN by faculty? Other:
Provide more graduate student support
Reinvigorate and support CERR
Form research groups and provide them with additional resources.
Provide matching funds where needed.
Provide matching funds for CFI
Improve liaison with communities & community groups
Improve/increase size of etc. both the Office of Research & International Office.
Should be able to find out about programs to fund research that are not well-known, MUN should facilitate this.
This can't happen when we are expected to provide clinical medical services 80% of the time, take on senior admin schedules, teach & be on-call
Many of these listed above don't work well for Arts-Humanities research
More money must be available to support research in the province.
Tours for administrators, so they know what they have
Research administrative specialists who are aware of the new external funding initiatives, with good skill and able to provide constructive advice, how to prepare grant applications for these new initiatives.
Strengthen grad programs. Strengthen undergrad science program for great students
End war between faculty and admin.
We need CFI matching funds. This is an extremely important long-term issue. Without these funds our infrastructure will lag terribly behind other universities.
Rigorous tenure and promotion criteria and adherence to them.
Research space at SWGC
Research has never been given the status it deserves at this university. Until the recent administration change our prime purpose was undergrad teaching and research was viewed as a "hobby" to be pursued in the summer months. To some extent this is still the view in some departments, including Medicine.
Reduce administrative cost rate off
Do similar things to facilitate excellent teaching

22 – What could you do, and what do you need, to increase your research activity and the amount of funding available for it?
Spend less time repairing and maintaining decaying infrastructure.
Performing artists need operating grants similar to NSERC grants that allow flexible travel to consult with colleagues, study with master teachers, etc. We also need a level playing field where we compete with the university faculty, not with full time performing artists under professional management.
Increase amount of publication and apply for more grants in collaboration with others
Teach a bit less, travel a bit more
I could move to another university!
Reduced administrative demands: Too much committee work and involvement in program administration
Primary barrier to recent federal initiatives (like CFI) is the lack of provincial matching dollars. This puts us at a grave disadvantage vis a vis Quebec, Ontario, B.C. and Alberta.
Fewer 1st year sections of 75 students, ie. Fewer than 3 per term.
*Reduce teaching load. Education is overloaded with teaching compared to other faculties, yet we have the same responsibility for research. *publicize RFP's!! Always & often - spend the \$ on photocopying & put these in our mail.
Reduced teaching loads!!
1) I could ignore my students and devote more time to research; 1) Reduced teaching loads would be nice, and would be an appreciated form of recognition for the several grants that I have been awarded. 2) A competitive salary, so that I am relieved of the mental distraction of worrying about my financial situation. 3) A larger office and/or place in which to meet and work with graduate students.
Complete my Masters degree work
More time for research. More support in applying for funds. More ease in applying for programs with matching funds, e.g. MUN direct support or/and "NF Science Council" funding - ie., a Provincial source of research funding
Increase technical support so that I don't have to waste time completing non-research related tasks
Less administrative type duties. We have too many committees, too many studies, too many plans that are useless and ignored!
*Time *grad students
I need to be able to teach the same course more than one year in a row.
Change in attitude from governments and administrators who go along with them.
Additional sources of internal funding and provincial funding support is needed. This allows development of projects beyond mere "incubation" so that larger external granting agencies can be pursued 2-3 years after development.
More grad students
I need more TIME! And governments need to invest in research in the Humanities. The Trudeau Fellowships: GREAT.
Activity already fills my time. Could apply for more industry grants, but organizational assistance needed (eg. An active CERR)
24 hrs a day is not enough for what I do or plan to do. I have a team but mostly outside MUN. To work with them I need more funding.
40 hr days, desire, Prozac. External funding agencies fund successful, established projects. Money for development of ideas, pilot projects, etc. would help increase funding
The assumption (presumption) of this research is that the only valid research is funded research so the institution spends countless hours and dollars in the competition for quantifiable research and in the process demeans other scholarship which is less dollar-dependent - and demeans those whose research feeds their teaching.

Need access to shared DNA analysis equipment.
Reduced teaching loads and reduced admin. I am an active researcher but this not taken into account in my teaching/committee work. There is only 24 hrs in a day.
More quality grad students - need \$ to support - more time - better administrative support (secretarial)
Seed money and support funding from industry
1. Have doctoral program in every dept./school/institute. 2. Quality local/national/international students
Technical assistance
Extra help with publications and teaching at the clerical level - immense amount of time used in preparation for different journals & teaching, ie. References, graphics, slides, etc. We do not use our clerks to their full potential, mainly because they lack training in using many different computer programs/software. - Improved core facility - equipment and technical support. - Move "in house" R&D funding.
Much of my work is for Newfoundland Heritage for which there is no remuneration or credit
I need more time. I need more good graduate students. I am always applying for funding from various sources; I need to figure out how to be more successful. My NSERC funding is stable and relatively generous but I need more money to do the things I want to do.
I need adequate lab space. My graduate students need adequate lab & study space
Availability of online testing, technical support staff, collaboration with other universities and ACMC
Have more money available for grad students.
More mentoring, reduced teaching and service load. Recognition from Promotion and tenure committee of research grants applied for - not received - mostly individual in faculty assigned to assist in applying for grants.
I simply need more money. I could submit more proposals, but this is very time consuming. Teaching remission in recognition of research productivity would go a long way to providing the time needed to do this.
-Choice to do administrative work is main impediment. - self-inflicted
Seek private sector/corporate/non-profit support and leverage that contribution with public sector partners such as ACOA, NSERC, etc
We need a Science bldg. All available lab space is dedicated to teaching. I would need some teaching remission, but that is impossible. My research inactive colleagues are also not competent to teach courses beyond 2nd yr level.
Funding is insufficient for grad students in my dept. Therefore I must lecture to earn necessary funds for living. This takes away drastically from my research time and my ability to publish, thereby hindering my chances of garnishing exterior funding via NSERC
I got over \$1 million in this past year. I need support in the form of everyone else doing their bit. There's one thing: get the comptroller's office at MUN to do their job. They are slow, obstructive, frustrating. So do something about that and I'll be happier.
1. Good grad students who could perform many time-consuming tasks. 2. Reduced undergrad teaching for successful researchers
Amount of available funding is not a problem. The single largest barrier to increased research activity is TIME - need some relief from teaching & administrative/committee work - 16 weeks in the summer and no time in the remainder of the year is not sufficient
I have done it. My academic activities are balanced against an outside business built without government interference and largely free of university bureaucracy. Before moving to the next step in growth, government policy and taxes have to change to make working here profitable.
Additional funding would help
1. Fewer course sections - smaller classes. 2. I do not know about funding, since my area of research has little application outside of the humanities and promotion of knowledge
We need regional archives in Western NF, more administrative support for history/heritage research, a

greater appreciation of its social and cultural value, less teaching and fewer administrative duties, and better funding.
More time for research. Less admin, committee work, and above all, a reasonable teaching load. Absolutely no more than 5 TU's per year.
Protected time - for days/weeks - away from teaching/graduate thesis supervision and committee work - to write proposals, conduct research, write up findings. Too many demands are made on me by administrators and Master's students, making my work day too fragmented for productive writing. I have plenty of data that I have not used as effectively as I could and should.
Less teaching
Graduate students who could act as research assistants. Most study part-time and hold full-time jobs.
Need more time, ie. Less time spent on committee busy work, less basic-level teaching
(1) I need more time available to develop quality ideas and projects. (2) University funding for lab and technical support to assist with collecting data for projects
-Would appreciate advice on how to get a large work published - have not had much luck dealing directly with publishers - practical, specific info is need. - More money for assistants/typists would help.
More time, fewer administrative-related departmental duties. More pro-active administration, Office of Research, Int'l Office.
This would require a substantial reorientation of my activities at present; increased funding and recognition for graduate students and supervision of grad students; flexibility increased for Research Prof account matters; numerous other details. I would increase my research activity if it was better funded, better supported and if other competing commitments were altered without adverse financial consequences.
Reduced teaching load or balancing to free more continuous time. Support f CERR as a research model.
Better technical support in design of custom electronics and computer software.
If there were the possibility of conducting collaborative research with investigators at other (international as well as Canadian) institutions in terms of having support in terms of time and possibly travel funds to engage in such joint ventures outside of sabbatical opportunities, my research activity could be increased significantly. Facilities and expertise not available at MUN could be accessed raising research output in terms of quality as well as quantity. Such opportunities would increase my ability to attract additional funding as well. I have had several invitations to engage in such collaborations. Increased assistance with funding for grad students would also increase the number of students I could train and engage in research.
I would need: my teaching load reduces by one course, mentoring from experienced researchers, a little encouragement and recognition for what I've done already. I have more research done in the past 2-5 yrs than most of the faculty I'd say but it is not recognized or encouraged.
I need information about granting sources other than the major ones. Better grad student recruiting & money support.
I need \$0.5 million for equipment - but who will provide this level of funding to new, untenured faculty?
This year I have applied for 10 external grants & 2 internal. I cannot do much more. I need more lab space & capital purchase funding. I would also like a reduction in teaching load by at least 1 course.
Although teaching complements research and vice versa both are very time consuming. If I could reduce my teaching by one or two courses I would still get the benefits but would have more time to devote to research, writing, etc.
At his point I'm still finding out who is good to work with. A faculty mentor (a good one) would be very beneficial.
I am already one of this country's most productive composers, I think. In order to be more productive, or to at least continue at the current rate, I think it would help to a) reduce my teaching load (currently mine is the heaviest in the school of music) and b) have more marking assistance.
Presently satisfied with support
Time to get established in this new province & school. Workload consideration (especially reduction of admin. Work)

I need time away from teaching & graduate supervision...which hopefully will come next year with sabbatical
I need time. Less committee work, more assurance that I'll be replaced during a sabbatical leave. Funding is less critical than time.
Need relatively small amounts of money on a regular basis for travel, copying, and student assistance. Existing granting programs are not designed for this, other than salary-based grants.
(1) time for research - less teaching/busy work. (2) \$ to attract top Grad students. (3) Decent facilities/equipment for life sciences.
It would probably help if I completed my doctorate.
Publish more
Modernize lab space. Facilities are dated and in disrepair. Basic building infrastructure, so that space and lab conditions do not inhibit the ability to do the research.
There is no incentive whatsoever for per-course instructors to undertake research, despite the fact that they are vital to the university (and presumably the university might want an active & engaged workforce)
I do not know. I can only supervise students successfully, publish their findings, write good proposals and hope I succeed in getting grants. Sometimes being a researcher and getting onto the admin. area seems to help your research funding.
Experienced help with grant applications. Clinical support to protect time (ie. Health Board support)
Time, energy, encouragement, money, equipment
More time
Research training efficacy & retention, Mentoring, Direction on suitable/likely sources.
I have to get work published that is completed but not written. I need well educated grad students. Most MUN undergraduates are not trained to work in a laboratory.
I could hire research assistants to help with the most time-consuming parts of research and provide training to them I would need more internal funds. Increase in MUCEP or setting up parallel program.
1. Less committee work. 2. Become involved with/find mentor. 3. Find funding sources that are supportive of non-traditional creative approaches to social science research.
I would need incentive from the university to increase my research activity in true nature of salary incentive and release from full teaching loads.
I need to have more understanding from the administration as to what wastes my time and what I do best and by that save me time so I can spend more of it on research. More funds for the Arts are very important. The university does not understand the life of a performer!!!
Technical support in the form of skilled research assistants and science technicians
Increase the opportunities for conversation/research discussions of an informal nature with the university
Need modern equipment. Need a source of funds to maintain the research program during lean times. Work in an environment that has balanced approach to teaching and research. ie. Must value research and grad teaching
Improve infrastructure - find money to improve apparent productivity so that MUN competitive with individuals in other provinces.
Finish dissertation
Need more collaboration & explore provincial funding sources. Difficult to attract grad students, we need to make students aware of the opportunities after obtaining Master's, Ph.D. degrees.
Teaching remissions
Needed: strong Post-Doc Fellowship Program - very important as link between Ph.D. students and faculty. MUN: set up program and funding.
1. A further progress in changing n attitude toward "hard-core" research within university administration & local government. 2. Local funds for research - new research initiative grants, provide bridge funding, establish local research foundations. 3. improve core research facilities - or rebuild; money for basic equipment...4. grad students - everything what can improve their material conditions & status at MUN. 5. new faculty - only with research/teaching interests (not just teachers: college vs. university)
Research assistant

Lower teaching load = more time for writing grants and doing research
Some encouragement would have been nice.
A clear website. Emails that give deadline dates one month in advance. HELP! Improving my applications (eg. For SSHRC)
We need: 1. Qualified, collegially appointed administrators. 2. Administrators with research qualification and experience. 3. Lower teaching load, more time for research, manage our own research. 4. Grad students and research assistants. 5. Access to research facilities/labs/computers, etc. 6. recognition and appreciation of research efforts and results.
Apply for other grants as time permits.
Time is the crucial factor. Funding is not a problem.
My research is fairly cheap vis a vis equipment but time consuming. One half time research assistant would quadruple my output. But...requests for small money are rarely viewed favourably.
Reduced teaching load; improve senior undergrad students (our undergrads are intelligent and well-motivated, and usually write well; but high school education in __ is a total __; and this makes our work much more difficult); more travel funds; and a systematic encouragement, support, __, and __ procedure for faculty going on sabbaticals (who should be regarded as valuable intelligence agents).
Be 20 years younger!
Time, support, resources, funding and incentive (internal and external)
Have time to write proposals
I am now bringing in a fair bit of money and must have a reduced teaching load. Otherwise, it could be difficult staying at MUN.
A reduced teaching load as new faculty would help. Criticism has arisen for spending too much time teaching (a new course) when first starting at the university. Not wanting to do anything poorly is a drive for anyone who desires success; this applies for teaching and research.
Once I have an operating grant I will be able to supervise students and pursue more research activities. First year of teaching is always a lost year for research.
Time
Complete several projects through the writing stage in order to become more competitive in grants competition.
Grant to travel in Europe and to buy books in French
1) MUN admin support for research in the arts, 2) far less emphasis on corporate partnerships and corporate directed research
(1) more funds. (2) better access to quality grad students. (3) more seed/bridging funds; more faculty support. (4) Post-doc fellowships (5) more access to equipment - we just don't have enough state-of-the-art equipment
Again the same confusion! Recognize the relationship between funded research and classroom applications
At the moment outside funding is more than adequate. Support within university for data and infrastructure (equipment) would be helpful.
Build an R&D lab to focus on Web-based animated pedagogical agents (passive & active). Provide start-up funding, support partnership initiatives.
Hepatitis C Clinic, interested clinicians. Less teaching requirements.
Decrease teaching load at SWGC (currently 6 teaching units per year) and supply some research space for faculty (space dedicated to research, not just teaching space)
Too much time devoted to committee work and meetings in the School of Nursing
1) Funds for post-doc fellows, at MUN we work with grad students, technicians, and undergrads (all fine to a point). At other comparable institutions (have-nots or comprehensive universities) there are many more post-doc fellows. Lack of a provincial source of funding is a major handicap for us.
Time
Do: work the equivalent of 2 full-time jobs. Need: 1/2 research assistant or more hours per day

Do: reduce teaching preparation time, restrict academic service time. Need: increased travel funds for conference participation, mentoring/coaching available for preparing grant proposals, decreased teaching work load.
Reduced teaching load, facilities for research (space that is not teaching space 8 months/year)
Probably not relevant at this point in my career and health
Need time more than funding, although ___ to more than one annual conference - which itself requires a personal subsidy - is a threshold item. To encourage research and grad teaching and restrict travel/conference presentation appears, to me, to be contradictory.
Not much funding was previously required but this will now change. Plans include the increased submission for funding applications.
I need mentoring from our research chair - none at present.
More space, less teaching demands. As is small office plus no space for grad students (offices, etc.) limits my use of grad students since I do a lot of work from home.

25(i) – Potential barriers to engaging in research contracts with the private sector. Other:
Not relevant to performing arts
My research of no interest to private sector
I will work on my interests as long as someone will pay me to.
No strings attached funding (where the industry partner requires no upfront funding commitment). See U.S. SBIR program!
I do work with private
Lack of arms-length relationship
My most promising opportunities would be with pharmas - but they're not here - makes it difficult
Concern with commercial aspects of univ research
Wary of industry, discount/no accounting in P&T. Young I'll advise to engage in industry research (CAN'T READ response)
Disgraceful abuse of the university
MUN uses research to generate funds for its operation
Failure to recognize importance of basic research.
University admin have always made collaboration with industry difficult; they talk business but know nothing about it.
Contract work can be too time consuming and is often not very stimulating intellectually.
Private sector contracted funding dried up!

26 – What could be done to increase research contracts with the private sector?
Increase number of people in Office of Research contracts. Contracts eat up time, they require sufficient resources in Office of Research
Although it obviously brings in funds, I feel close co-operation with the private sector has its dangers. At least part of the university activity should be learning/research for its own sake, not to improve companies' profits.
Advertise skills available at university and facilitate university industry interaction
I am not sure it should be increased. Private sector research is applied research --> development and testing. Industry should do that. Universities should be attacking basic, fundamental problems.
Get them to put their \$\$ where their mouths are!
Get them interested in women & children (as opposed to oil & gas)
Mentoring programs
Turn the university into a company - abolish its academic aspects. Why should we be required to do this?
There needs to be a liaison that actively seeks out partnerships for faculty when their research is deemed appropriate for private sector contracts. The individual faculty member rarely pursues this avenue on

his/her own.
Reactivate CERR - these umbrella organizations are important!
I do not know.
I work in health research - few private sector partners interested except pharmaceutical companies and this has strings attached - no thanks!
Reduce university overheads
1. Patents and publications. 2. Supervision of Ph.D. research
-more direct financial benefit to researcher - more "boiler plate" agreements for PPP - resolution of public tender act & PPP requirement for exclusivity
Don't know. Must want to work for industry
Quit university & forego posing my own questions. Why is private sector stressed here, while government agencies and other community sponsors are omitted?
Provide more info and support
Build a working relationship based on a genuine "value proposition" for industry. Then deliver on time with respect for Industry's needs and a corporate timetable. Don't expect Industry to fund research based on an Academic agenda and academic timetable.
Local firms would award more contracts if we paid them. Otherwise they are not interested.
Create a directory of University expertise and a liaison office to proactively match expertise and private sector demand.
1. Better liaison with industry. 2. Better information about research done at MUN that would be easily available (eg, on the web)
1. The province has to be much more proactive in seeing that research and contract activity established in the Can/NF Offshore Agreement is enforced and that work and industry moves into and stays in NF. 2. The university has to begin to think like a business with areas identified as having high growth potential developed.
1. Decrease overhead. 2. Improve HIC process!!
Local administrative initiatives.
Liaisons tailored to need
More opportunities to meet face-to-face.
(1) make more time available to engage them with ideas, and to do the needed work. (2) provide tech. Support staff to help to deliver the results.
Communication and recognition by admin of department and faculty.
Workload balancing to open up more continuous time to be able to meet industry time frames.
Some research facilities can be devoted on a 10-20% time basis to providing services for a fee to private sector companies without seriously compromising the basic research goals of the facilities.
Increased contact and communication with relevant private sector representatives might help to spark ideas. My own research could intersect with pharmaceutical companies and such companies will often support grad students in a co-supervision role. This is of interest but it seems related to purely fortuitous events at present. Such collaborative research could then lead to contracts. Our campus at Harlow is situated next to two giant neuroscience pharmaceutical companies for example with which such collaborations might occur.
Provide links between industry and my field.
Provide time!! Reduced teaching and admin.
May not apply much for my field.
Don't know
In fields such as mathematics there is little that could be done to increase private sector contracts. Contracts with private sector companies in areas such as engineering, etc. should be encouraged with some funding from the university itself to supplement the funding offered by the company
It is difficult to imagine how to interest the private sector in areas such as Literature and language.
I am focusing my established research towards solving some of the problems the industry faces.

Provide info about expertise and equipment
More \$\$, easier access to private sector.
Making the widest variety of private and NGO groups possible aware of all faculty expertise, including arts departments.
Developing opportunities through liaison, etc.
In the performing arts: more contacts with managers and promoters. Promote concerts outside the university.
Increase contact at informal levels
Department must value this
Awareness to MUN researchers re: private sector and available partnerships
Conduct needs assessment as to what they want & distribute results to faculty
Provide financial support to (develop or) consolidate the existing facilities/expertise to insure their continuity between research contracts - provide a "solid base" that can be immediately utilized when the contract/offer arises.
This should not be done
Liaison, publicity
-Focus should be the research and not generating money. - Have qualified administrators and faculty contacting the private sector. - Establish close relationship between MUN and private sector Re: compensation to faculty, IP, recognition, etc.
Introduction to the private sector for new faculty
Change the world. Not all research is appropriately funded by private parties. Nor does all research involve technology transfer.
Speaking as a former consultant for ICE Engineering Ltd of St. John's (1979-1985) and as a cofounder and co-owner of Consolidated Technologies Ltd, a St. John's hi-tech company, I would say a) that consulting should be viewed positively for appointment, tenure, and promotion (and it is not) b) the university should forget its dreams of ___ and butt out of industry-faculty arrangements.
Create research ___ for critical mass and visibility
I am trying to work in partnership with a private software development firm. Getting development money is a problem.
Nothing
I don't know
I don't believe we should - they can hire people to do work for themselves rather than free-loading off a public university whose resources they are whittling away at and often misdirecting.
Support Social Science research with more funding, project management staff, overtures to business
Need adequate time to finish contracts - cannot do this while teaching full-time with no dedicated research space.
Marketing our talents' expansion of the type of research we want supported (eg. Drug companies focus only on clinical trials, not basic research but this is done at other Canadian universities and institutions around the world.
Decrease % overhead when research belongs to investigator despite private funding.
Guidance for faculty to become aware of opportunities and to take advantage of them.
Private sector agency could be more interested and thus supply funding. Economy could improve.
The private sector should have no place in funding academic research.
Not really sure

28(m) – Potential barriers to commercializing the research conducted at MUN. Other:
Irrelevant to performing arts
Don't want to
-Very few good models.-Genesis group too slow!!

Do more to facilitate faculty/industry linkages
I don't think my research lends itself to commercialization at this point.
Research does not lend itself well to commercialization
P&T issue
A sense of ethics
Clearance re IP, who owns it?
When I wanted to do industrial research I went into industry.
Not in an area that is commercial

29 – What, in your opinion, could be done to increase commercialization of the research conducted at Memorial University?
Perhaps it shouldn't be increased
Better matching of university researchers with industry in research symposiums
Stay out of the commercialization business
Tax incentives offered by province/Canada. This is done to encourage economic development in private enterprise, why not encourage parallel efforts from the creative sources?
Same as number 26
An office needs to be setup to search out potential research projects with commercialization potential. Individual researchers rarely make "the leap" forward in thinking for such avenues.
My research does not lead to commercial products
I do not know
Time/funding to undertake feasibility studies.
Collaboration with product/services
-Set up under the VP (research) an admin. Officer to advise. - need clear policy on exclusivity of access to Memorial resources
I had such a bad experience with #27 that I have no interest & have not given this sufficient importance. In general, I think that science and industry are in conflict with each other, but I am not opposed to research contracts/commercialization for those who wish to pursue this avenue. However, those who are not interested should not be pushed towards commercialization of their research.
Make faculty aware of opportunities besides with potential clients.
Cut academic funding for serious research and force researchers to dance to the corporate tune.
Make researchers aware of the opportunity. Define or address the sources of anxiety and fear. And most importantly - recognize commercialization activity as valid - at least as valid as "publications" and credit researchers with commercialization for promotion and tenure purposes. At Stanford U. and at the University of Waterloo, commercialization of technology carries the academic credit equivalent of writing a book.
If we pay local firms to use improved technology, undertake new processes they might agree to consider the effort.
Greater awareness of needs in the marketplace for university community. More private sector awareness of university capabilities and strengths.
1. Better interaction with industry. 2. More industry-stimulated research at MUN.
1. Properly promote and reward entrepreneurship. 2. Make it clear to the province that without a research community business is loath to set up shop in an isolated outport
Promotion of the Arts and Humanities at all levels of education; pursuit of endowments for research in humanities areas; conversion of research into media products, TV, computer software, etc.
Greater imagination and full support when needed.
foster better quality research and the market will come to them.
More exposure to how other researchers have commercialized their research. Face-to-face demonstration would be ideal.

Difficult in health care where all the money comes from government
no time to even bother thinking about it - I work 50 hrs per week just to keep my current university "life" afloat. To break out of the status quo would require more free time to develop new ideas, propose new projects, develop new contacts, develop new analytical facilities.
Communication with accessible partners - application and partnerships might not be obvious.
The local industrial base is inadequate in general. Better links with national and continental companies would be of benefit to the physical sciences.
TIME
Lots of reciprocal involvement: MUN active in the private and public community and MUN bringing people from those spheres into school committees, advisory groups, committees, classrooms. Putting students into the field for experiential learning for themselves, and contribution to the field. Cross pollination for mutual long term benefits.
A forum must be provided by the Office of Research where the industrialists will present some of their potential research areas and the university researchers will be given a chance to consider and choose.
This is a slanted survey-Humanities research especially in literature, history, religion, etc, rarely of interest to commerce. And to MUN admin it would appear.
Educate and encourage faculty
If I can get a funding support from CIHR, Heart & Stroke Fdn or other agencies I will not apply for research funding from private companies which control and dictate my research. Doing independent applied research is very important to me.
University makes no claim on intellectual property like Simon Fraser University. Encourage everyone to form a business with university involvement only if asked by the researcher.
Sell it more -> provide incentives for groups with common interests to get together and form companies.
1. Technology transfer of individual research. 2. Set up a technology service centre facing to society. 3. Incorporation with industries in research.
Promote commercialization of research as desirable; reduce MUN's overhead, encourage faculty participation.
1. Have more connection between the private sector and the university. 2. Make faculty aware of private sector opportunities and vice versa.
Increase ____ & curriculum development
Provide facilities/equipment to conduct research in a competitive fashion.
Availability of local private sector partners or Canadian partners - "a bank of information" - who is or could be potentially interested in support of a discovery.
Liaison officer
Hire more administrators who have no understanding of the role of the university as an independent scientific body.
Clear guidelines
-Publishing research findings. - faculty/researchers to attend conferences and workshops. - faculty be active in their field of expertise/profession.
Invite private sector. Arrange visits for faculty members to local private market/industry.
How about first SHOULD commercialization of research be conducted???
Why should we? This action comes at expense of basic research.
Memorial faculty have shown strong commercial interests over the years and have been successful (collectively) for much business activity in St. John's. What is all-important in this is lots of time and a hands-off attitude by Memorial's administration.
a) recognize and support faculty who reach out to industry in some positive way and establish research liaisons. b) Find a better balance between teaching-research-administration for faculty with to be successful in research liaisons. c) promote the idea that "applied" is not a dirty word!
Funding for research that could lead in that direction.
Inform people of its availability, advantages and challenges.

Not sure - improving research capacity might help and new initiatives linking partners-researchers would help too.
Commercialization of research and especially commercialization of the university is a very disturbing pattern. Universities should be funded for research in its own right, not because applications to private sector. The private sector should be using research as staff, not contracting university faculty and students.
Commercialization and research are separate. Universities should remain havens of non-commercialization.
Nothing at all
The abandonment of the corporate mode ___ and the development of much better relations with not for profit community based groups
Why would university researchers want to commercialize research?
Make Social Science important too. Recognize Soc. Sci. & Soc. Scientists with more funding, more links, recognition for effort in a natural science & engineering environment.
Incentives, financial, tech support, teaching relief. Short-term incentives.
Less MUN overhead charges. More support (staff, etc.) to faculty on how to commercialize research.
Not a major interest because of the type of research I do.
Main barrier is available time.
Make it more profitable for the researchers without undermining MUN's non-commercialized researchers.
Reduced teaching, admin responsibilities.
The benefits of research should be freely and widely available to everyone; not limited by the market place.
Nature of my profession minimizes opportunities as well as preference for collaboration.

Additional Comments
I resent the attitude and assumed ideas in this survey and its production.
MUN is missing out on a huge amount of money because NF does not routinely provide matching funds for CFI grants. AIF does not do this. A provincial/regional source of matching funds is urgently needed.
You should consider doing a survey on university, government, community research possibilities too - or is private sector the main focus?
Survey too long
CFI matching funds!!!!

Appendix C
Academic Survey Number of Responses by Question

Table C1: Survey Respondents by Position/Title at Memorial University

Full Professor	Associate Professor	Assistant Professor	Lecturer	Session Employee	Other
95	70	32	7	8	27

Table C2: Survey Respondents by Highest Degree Held

Earned Doctorate	Masters Level	Bachelor's Level	Other	No Response
187	35	7	8	2

Table C3: Survey Respondents by Year Highest Degree Earned

1970 or Earlier	1971 - 1980	1981 - 1990	1991 - 2000	Since 2000	No Response
22	62	63	77	7	8

Table C4: Survey Respondents by Number of Years Employed
at Educational/Research Institutes

10 Years or Less	10 - 20 Years	20 - 30 Years	More Than 30 Years	No Response
57	60	78	36	8

Table C5: Survey Respondents by Employment Status at Memorial University

Tenured	Tenure Track	Short Term Contract	Per Course Employment	Other	No Response
169	27	20	9	12	2

Table C6: Survey Respondents by Number of Years Since Tenure Received

0 - 5 Years	6 - 10 Years	More Than 10 Years	No Response
27	35	113	64

Table C7: Survey Respondents by Faculty, School or Institute

Arts	Business	Education	Engineering	Marine Institute
41	10	16	13	14
Medicine	Nursing	Other	Science	Sir Wilfred Grenfell College
32	13	18	68	14

Table C8: Survey Respondents by Time Allocation to Various Activities

	0%	1-25%	26-25%	51-75%	76-100%	No Response
Teaching	2	57	90	54	22	14
Basic Research	10	66	56	24	5	78
Applied Research	17	71	25	4	4	118
Policy/Social Research	31	17	7	1	1	182
Commercialization of Research	31	15	2	0	2	189
Administration	10	111	27	7	6	78
Other	6	24	9	4	2	194

Table C9: Survey Respondents by Opinion Concerning the Relationship Between Teaching and Research

	Strongly Disagree	Disagree	Moderately Agree	Agree	Strongly Agree	No Opinion	No Response
No relationship between teaching & research	129	73	13	12	2	2	8
Research reduces time for teaching & teaching quality	40	61	38	67	15	4	14
Teaching reduces time for research & research productivity	12	26	42	87	57	3	12
Teaching and research reinforce each other	2	9	19	83	109	6	11
Research important to effectively teach graduate students	2	2	5	43	170	10	7
Research important to effectively teach undergraduate students	2	25	35	85	83	2	7
Teaching stimulates new ideas for research	5	11	47	89	70	4	13

Table C10: Survey Respondents by Opinion on Internal Research Environment

	Yes	No	No Response
Is Memorial University research conscious?	167	55	17
Are you aware of MUN incentives to seek research funding?	127	96	16

Table C11: Survey Respondents by Collaboration Activities

In your research activities, do you work with:	Yes	No	No Response
Colleagues in your Department	149	51	39
Other colleagues at MUN	129	65	45
Colleagues at other local education/research institutions	74	118	47
Colleagues at other institutions in other provinces	142	53	44
Colleagues at institutions outside of Canada	121	72	46
Private sector companies in Newfoundland and Labrador	50	136	53
Private sector companies in other Provinces	35	147	57
Private sector companies outside of Canada	21	160	58

Table C12: Survey Respondents by Membership on Grant Adjudication Committees

	Yes	No	No Response
Member of adjudication committee for granting councils	38	163	38
Other grant selection committees	69	128	42

Table C13: Survey Respondents by Research Output
Disseminated Through Various Sources in the Last Five Years

	0 - 2	3 - 5	6 - 10	More than 10	No Response
Refereed journal publications	66	50	37	38	48
Non-refereed publications	74	44	22	24	75
Monographs	120	9	2	1	107
Chapters in books	118	32	3	1	85
Contract reports	100	20	6	12	101
Book reviews	110	13	5	11	100
Articles in conference proceedings	71	53	23	12	80
Magazine/Newspaper articles	109	16	4	6	104
Unpublished working papers	70	49	14	10	96
Plays, short stories & artistic works	109	3	1	7	119
Books	120	10	2	0	107

Table C14: Survey Respondents by Number of Grants Applied for in the Ten Five Years

		0	1 - 2	3 - 4	> 5	No Response
SSHRC	Applied for	98	41	16	1	83
	Funded	57	36	3	0	143
NSERC	Applied for	69	42	27	15	86
	Funded	40	31	24	11	133
CIHR	Applied for	101	19	14	6	99
	Funded	50	22	10	0	157
Canadian Foundation for Innovation	Applied for	90	41	4	0	104
	Funded	46	24	1	0	168
Networks of Centres of Excellence	Applied for	114	20	2	0	103
	Funded	52	12	0	0	175
Tri-Council Grants	Applied for	121	13	0	0	105
	Funded	51	9	0	0	179
Canada Council	Applied for	118	10	1	0	110
	Funded	53	5	1	1	179
Atlantic Canada Opportunities Agency	Applied for	97	34	9	0	99
	Funded	41	24	9	0	165
Foundations	Applied for	103	22	2	1	111
	Funded	49	15	1	1	173
Non-Profit Organizations	Applied for	91	26	5	2	115
	Funded	42	20	4	1	172

Table C15: Survey Respondents by Type of Grant Applied for
and Whether it was Funded

	Applied for			Funded		
	Yes	No	No Response	Yes	No	No Response
Individual operating grant	125	33	81	106	28	105
Team operating grant	62	65	112	47	33	159
Equipment grant	65	62	112	55	32	152
Partnership grant	30	82	127	23	39	177
Special strategic grant	41	75	123	29	36	174

Table C16: Survey Respondents Type of Grant Applied for
and Role of Applicant

	Role		
	Principal Investigator	Co-Investigator	Other
Individual operating grant	118	20	0
Team operating grant	21	42	2
Equipment grant	34	38	2
Partnership grant	13	19	2
Special strategic grant	18	24	0

Table C17: Survey Respondents by Awareness of, Eligibility for & Application to Various External Grants

		Yes	No	Don't Know	No Response
Heart and Stroke Foundation of Canada	Aware of	91	82		66
	Eligible for	21	91	51	76
	Applied to	7	124		108
Canadian Foundation for Climate & Atmospheric Services	Aware of	43	124		72
	Eligible for	12	82	55	90
	Applied to	3	119		117
SSHRC Initiatives on the New Economy	Aware of	72	99		68
	Eligible for	25	73	52	89
	Applied to	5	119		115
NF & Lab. Arts Council	Aware of	79	91		69
	Eligible for	12	94	47	86
	Applied to	4	118		117
World Wildlife Fund Canada	Aware of	61	105		73
	Eligible for	16	78	60	85
	Applied to	2	119		118
Banting Research Foundation	Aware of	60	110		69
	Eligible for	16	74	60	89
	Applied to	6	117		116
NSERC Collaborative Research and Development Program	Aware of	102	75		62
	Eligible for	52	47	55	85
	Applied to	11	126		102
Imperial Oil Limited	Aware of	42	129		68
	Eligible for	18	54	74	93
	Applied to	7	118		114
CIHR Research Based Pharmaceutical Companies (Rx&D) Health Program	Aware of	61	109		69
	Eligible for	20	75	58	86
	Applied to	5	120		114
Fisheries and Oceans Canada Science Subvention Program	Aware of	58	116		65
	Eligible for	29	63	60	87
	Applied to	16	111		112
Literacy Development Council of NF and Lab.	Aware of	49	122		68
	Eligible for	13	69	59	98
	Applied to	7	110		122
Canadian Health Services Research Foundation	Aware of	59	112		68
	Eligible for	19	71	63	86
	Applied to	5	120		114

Table C18: Survey Respondents by the Importance of Reasons for Not Applying for
Research Funding from External Sources

	Not Important	Somewhat	Moderately	Important	Very important	No Opinion	No Response
Funding programs do match research initiatives	12	12	12	19	52	11	121
Past research success required to leverage future research funding	25	10	14	23	26	14	127
Insufficient time to prepare a competitive application	18	19	20	29	23	4	126
Inability to obtain matching funds required for research initiative	25	7	20	21	23	15	128
Lack of researchers to support research initiative	30	18	20	15	13	15	128
Lack of support by MUN administration	37	16	16	11	22	9	128
Lack of support staff to prepare grant application	31	16	18	21	21	7	125
Lack of development funds to prepare for successful application	26	19	19	17	17	13	128
Difficult collaborating with other researchers due to geography	41	14	12	17	11	14	130

Table C19 Survey Respondents by the Importance of Reasons for Not Receiving Funding
from Grants Applied for from External Sources

	Not Important	Somewhat	Moderately	Important	Very important	No Opinion	No Response
Policies of the granting agencies	23	16	14	21	16	16	133
Funding program(s) do not match type of research proposal	31	14	11	23	11	17	132
Lack of track record as a researcher	28	12	21	16	13	12	137
Have not been a grant recipient in the recent past	39	12	13	11	12	14	138
Non-competitive application	22	21	12	14	9	21	140
Application not sufficiently developed	17	22	21	12	10	18	139
Limited ability to collaborate/network due to geographic location	32	18	14	12	6	17	140

**Table C20 Survey Respondents by the Importance of Attached to Various Drivers of
Their Research**

	Not Important	Somewhat	Moderately	Important	Very important	No Opinion	No Response
Teaching loads	6	14	26	67	87	1	38
Library resources	11	14	26	67	80	1	40
Salary	55	24	36	49	33	2	40
Administrative support	17	28	51	60	41	1	41
Internal recognition	28	36	53	49	26	4	43
Internal research funding	21	21	40	66	43	5	43
Conference participation	6	17	43	83	39	8	43
Mentoring	44	29	25	49	31	13	48
Equipment	27	17	26	60	61	7	41
Facilities/labs	32	14	21	51	58	12	51
Graduate/Doctorate programs	24	10	22	59	69	11	44
Graduate students	22	11	21	59	71	12	43
External research funding grants	6	7	17	53	105	5	46
Critical mass of researchers	20	15	26	66	55	14	43
Seed Funding	19	13	37	65	48	12	45
Travel funds	5	13	44	83	46	2	46
Technical Support	20	14	30	70	50	10	45
Research chairs	55	28	31	29	26	22	48
Private sector research collaboration	58	25	33	28	17	32	46
Private sector research contracts	59	27	33	26	13	35	46

Table C21 Survey Respondents by the Satisfaction Attached to Various Drivers of Their
Research

	Not Important	Somewhat	Moderately	Important	Very important	No Opinion	No Response
Teaching loads	20	45	64	54	10	2	44
Library resources	3	15	39	90	46	3	43
Salary	18	45	68	54	9	4	41
Administrative support	13	61	59	49	9	6	42
Internal recognition	21	37	60	61	2	16	42
Internal research funding	28	62	49	33	2	22	43
Conference participation	3	22	65	71	13	21	44
Mentoring	12	38	45	40	4	47	53
Equipment	17	42	70	39	4	25	42
Facilities/labs	15	31	54	43	4	40	52
Graduate/Doctorate programs	14	28	63	52	4	31	47
Graduate students	8	43	60	47	4	31	46
External research funding grants	10	38	56	54	10	25	46
Critical mass of researchers	17	56	51	30	4	34	47
Seed Funding	26	49	43	29	4	40	48
Travel funds	19	56	63	39	3	13	46
Technical Support	11	37	66	44	7	28	46
Research chairs	17	28	46	26	2	73	47
Private sector research collaboration	7	37	33	19	2	87	54
Private sector research contracts	8	33	29	18	4	95	52

Table C22: Survey Respondents by Awareness of, Eligibility for and Application to
Various Internal Grants

		Yes	No	Don't Know	No Response
SSHRC/VP research grants	Aware of	152	34		53
	Eligible for	74	72	37	56
	Applied to	47	107		85
Salary-based grants	Aware of	159	34		46
	Eligible for	125	11	49	54
	Applied to	56	123		60
University research professorship	Aware of	164	27		48
	Eligible for	83	41	54	61
	Applied to	14	155		70
President's award for outstanding research	Aware of	163	26		50
	Eligible for	73	58	49	59
	Applied to	16	147		76
Artistic/creative grants program	Aware of	54	130		55
	Eligible for	14	72	75	78
	Applied to	6	141		92
Publications subvention program	Aware of	113	73		53
	Eligible for	74	16	84	65
	Applied to	17	147		75
Petro-Canada Young Innovator award	Aware of	71	118		50
	Eligible for	10	81	71	77
	Applied to	4	139		96
SSHRC travel grants	Aware of	141	45		53
	Eligible for	63	81	32	63
	Applied to	41	114		84
ISER grants	Aware of	92	90		57
	Eligible for	35	49	86	69
	Applied to	16	131		92
Smallwood Centre grants	Aware of	68	114		57
	Eligible for	29	43	89	77
	Applied to	9	137		93

Table C23 Survey Respondents by the Importance Attached to Various Incentives to
Increase External Research Funding

	Not Important	Somewhat	Moderately	Important	Very important	No Opinion	No Response
Recognize faculty who seek external funding	12	16	40	61	62	6	42
Institute a mentoring program to assist research grant applications	11	19	35	69	59	5	41
Assist faculty to re-tool for research	12	14	44	65	42	17	45
Provide incentives for "above normal" research	4	13	27	69	78	7	41
Replenish Faculty Research education Trust accounts	8	5	23	39	50	69	45
Improve faculty renewal	1	4	25	55	96	15	43
Improve physical infrastructure and facilities	9	17	32	61	65	12	43
Provide bridge funding (between grants) for faculty research	5	14	42	66	50	19	43
Provide seed or start-up funding for new researchers	1	6	17	66	96	11	42
Publicize the unique strengths of the university	18	15	39	52	61	8	46
Contribute to equipment grant applications	10	12	26	62	56	29	44
Encourage and reward collaborative research initiatives	8	17	37	60	59	15	43
Reduce teaching loads and committee work	5	10	40	68	70	6	40
Improve liaison with research granting bodies	3	19	40	70	49	17	41
Improve liaison with industry	19	19	35	57	38	27	44

Table C24: Survey Respondents by Research Contracts in the Last Five Years

Contract with	0	1-2	3-4	5 or More	No Response
Industry/the private sector	120	31	12	10	66
Government departments/agencies	111	42	18	8	60
Other agencies or institutes	124	27	6	3	79

Table C25: Survey Respondents by Academic-Private Sector Collaboration

	Yes	No	No Response
Have you attempted to partner with the private sector in your research?	85	108	46
If yes, did you partner or enter into a contract?	56	57	126
Have private sector firms attempted to engage your expertise in their efforts?	73	113	53
If yes, did you partner or enter into a contract?	47	57	135

Table 26: Survey Respondents by the Percent of their Research
Involving the Private Sector

Percent of Research	Number
0%	78
1 – 10%	26
11 – 20%	12
21 – 40%	8
41 – 60%	4
61 – 80%	5
81 – 100%	5
No Response	101

Table C27 Survey Respondents by the Importance Attached to Various Barriers to
Engaging in Research Contracts with the Private Sector

	Not Important	Somewhat	Moderately	Important	Very important	No Opinion	No Response
Unaware of interested private sector partners	24	19	25	41	37	30	63
No private sector partners available	25	18	15	30	35	44	72
Limited or no commercial application for research are/expertise	32	18	15	38	40	28	68
University overhead too expensive for industry	34	11	22	17	19	68	68
Remuneration offered by private sector too low	51	19	12	11	6	71	69
Insufficient time available to engage in research for industry	21	12	20	44	38	35	69
Inability to work on time schedule required by private sector	38	19	13	27	19	54	69
Not interested	45	16	16	20	15	43	84

Table C28: Survey Respondents by Commercialization of Research

	Yes	No	No Response
Have you attempted to commercialize your research?	38	159	42
If yes, were you successful in commercializing your research?	15	33	191
Have you attempted to partner with industry to commercialize your research?	26	157	56
If yes, did you partner with the private sector?	13	26	200
If yes, was the partnership successful in commercializing the research?	10	22	207

Table C29 Survey Respondents by the Importance Attached to Various Barriers to
Commercializing Research at MUN

	Not Important	Somewhat	Moderately	Important	Very important	No Opinion	No Response
Never considered it	46	16	23	16	30	34	74
Not interested	41	19	25	21	29	27	77
Limited or no commercial application for research expertise	23	15	25	28	51	23	74
Do not know how	35	23	20	21	31	32	77
Too risky	52	16	22	12	4	52	81
Too expensive	37	20	17	15	9	60	81
Financing not available	22	15	17	21	23	60	81
Interested but no time available to pursue opportunities	24	15	26	29	28	38	79
Limited support from MUN administration	29	18	23	13	17	57	82
Intellectual property issues	32	15	18	17	28	50	79
No private sector partners available	21	23	16	25	28	45	81
No private sector partners interested	23	16	15	23	28	51	83

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