



McGill

MCGILL UNIVERSITY:

**DRIVING
EXCELLENCE
AND PROSPERITY
IN QUEBEC**

Final Report



SECOR



MCGILL UNIVERSITY: DRIVING EXCELLENCE AND PROSPERITY IN QUEBEC

FINAL REPORT



March 12, 2010



MONTREAL :: NEW YORK :: PARIS :: QUÉBEC :: TORONTO :: VANCOUVER

TABLE OF CONTENTS

EXECUTIVE SUMMARY	4
INTRODUCTION	6
1. MCGILL: A FLAGSHIP INSTITUTION FOR QUEBEC	7
1.1 Unparalleled international recognition among Quebec universities	7
1.2 Ability to attract some of the most talented people in the world to Quebec	10
1.3 A network of graduates and partnerships that contribute to the prosperity and profile of Quebec	13
2. ECONOMIC IMPACT OF TRAINING HUMAN CAPITAL	15
2.1 High-calibre training for innovation.....	16
2.2 Attracting human capital from outside Quebec	19
2.3 Substantial contribution to Quebec's healthcare system.....	21
2.4 Economic impact of the improvement of human capital.....	22
3. ECONOMIC IMPACT OF CREATING AND DISSEMINATING KNOWLEDGE TO ORGANIZATIONS	24
3.1 Attracting research funding to Quebec	24
3.2 Technology transfers.....	26
3.3 Economic impact generated by McGill through the creation and dissemination of knowledge.....	32
4. ECONOMIC IMPACT OF SPENDING BY MCGILL, STUDENTS ATTRACTED AND RETAINED AS WELL AS VISITORS ATTRACTED TO QUEBEC	33
4.1 Spending generated by McGill and its activities.....	33
4.2 Economic impact of spending by McGill and the students and visitors it attracts to Quebec.....	35
4.3 Net economic impact of spending by McGill, its students and visitors attracted to Quebec (net impact)	36
5. ECONOMIC IMPACT LINKED TO THE CULTURE OF INTEGRATION AND SUPPORT IN THE COMMUNITY ...	38
5.1 McGill's involvement in education.....	38
5.2 McGill's involvement in healthcare	39
5.3 McGill's social involvement	40
5.4 McGill's involvement in sustainable development.....	41
5.5 McGill's international projects.....	42
6. CONCLUSION: SUMMARY OF ECONOMIC IMPACTS.....	44
APPENDIX 1 – CALCULATING THE ECONOMIC IMPACT GENERATED BY THE ENHANCEMENT OF HUMAN CAPITAL	47
APPENDIX 2 – CALCULATING THE ECONOMIC IMPACT GENERATED BY THE CREATION AND DISSEMINATION OF KNOWLEDGE	49

APPENDIX 3 – GROSS ECONOMIC IMPACT OF SPENDING BY MCGILL UNIVERSITY AND ITS STUDENTS
AND VISITORS ATTRACTED50

APPENDIX 4 – NET IMPACT OF THE DIFFERENTIAL TUITION FEES PAID BY NON-QUEBEC STUDENTS54

“The mission of McGill University is the advancement of learning through teaching, scholarship and service to society by offering to outstanding undergraduate and graduate students the best education available, by carrying out scholarly activities judged to be excellent when measured against the highest international standards, and by providing service to society in those ways for which we are well suited by virtue of our academic strengths.”

EXECUTIVE SUMMARY

We need a highly skilled workforce and a strong capacity for innovation to build and ensure the prosperity of an increasingly knowledge-based Quebec economy. It is essential that we train our human capital and develop our capacity for innovation in order to increase productivity in our businesses, ensure they are more competitive globally and improve our quality of life. In such a context, universities are vital to our society as their mission is to educate as well as create and disseminate knowledge. Given the internationally recognized quality of its research, faculty members and teaching standards, McGill University plays an essential role in Quebec's economy and society.

McGill University is a **flagship institution for Quebec** and a pillar of knowledge and innovation. McGill is one of the most internationally renowned universities in Quebec and Canada and has been recognized as such in a number of prestigious rankings. It is the only Quebec university to be placed among the world's top 25 universities and the top 10 universities for life sciences and biomedicine by The Times Higher Education – QS World University Rankings. According to *Maclean's* magazine, McGill is also Canada's leading university with a Faculty of Medicine. On the strength of its international reputation, McGill attracts some of the world's leading professor-researchers to Quebec each year to provide training that is at the leading edge of knowledge and to conduct very high-calibre research. McGill graduates are active at all levels of Quebec society; its network of international alumni as well as its partnerships with many foreign institutions help raise Quebec's international profile.

McGill University plays an essential role in attracting and training the human capital that Quebec needs to develop a productive and prosperous economy. Each year, the University and its world-class faculty members train more than 35,000 students, approximately a quarter (21%) of who are graduate students. McGill's top-quality teaching and innovative programs, which include the latest advancements in learning, attract more than 15,000 students from outside Quebec; they also contribute to the province's economy through their living expenses and the differential tuition fees they pay. Renowned for the excellence of its Faculty of Medicine, McGill has contributed to Quebec's healthcare system in the past 10 years by attracting approximately 320 doctors and researchers combined from outside Quebec and by training new doctors. McGill contributed an estimated \$923.7M towards improving Quebec's human capital in 2008.

As an internationally renowned hub of excellence in university research, McGill University is **central to the development and dissemination of the knowledge** needed to make Quebec's economy innovative and competitive. The quality of the research conducted by thousands of its researchers enabled McGill to attract a total of \$334M in funding to Quebec in 2008. Industry funding for research contracts amounted to more than \$30.3M in 2008, up 73% in five years. In Canada, McGill is ranked second among the G13¹ universities for American patents obtained between 2004-2005 and 2006-2007. Internationally, McGill is the only Canadian university to be ranked among the 20 most innovative universities in the field of biotechnology. In the past 10 years, McGill has issued 322 licences that have generated revenues totalling \$18.2M and has supported the launch of 50 new businesses, 38 of which are still operating in the biopharmaceuticals, information and communications technologies, medical technologies and manufacturing, etc. industries. Lastly, McGill's

¹ The G13 is made up of the following universities: UBC, Alberta, Calgary, Western, Waterloo, McMaster, Toronto, Queen's, Ottawa, Montréal, McGill, Laval and Dalhousie.

contribution towards the development and dissemination of knowledge in Quebec in 2008 is estimated at \$3.2B.

Quebec's economy is based on major institutions, such as McGill University, that can generate significant **economic benefits, such as the creation of added value and top-quality jobs**. The university generates \$1.0B in added value and 13,448 job-years through its operating and capital expenditure as well as spending by the visitors and students it attracts. Its operations generate revenues totalling \$88.5M and incidental taxation (QPP, CSST, FSS) amounting to \$92.7M for the Quebec government as well as \$58.8M in revenues and \$16.5M in incidental taxation (employment insurance) for the federal government.

TABLE 1: SUMMARY OF THE ECONOMIC IMPACT OF MCGILL UNIVERSITY ON QUEBEC

IMPACT	\$MILLION
<ul style="list-style-type: none"> McGill's contribution to the increase in productivity in Quebec through improved human capital. 	923.7
<ul style="list-style-type: none"> McGill's contribution to the increase in productivity in Quebec through the creation and dissemination of knowledge. 	3,221.9
<ul style="list-style-type: none"> Added value created through spending by McGill University, international students who have stayed as well as visitors the university has attracted. 	1,011.3
Total impact	5,156.9

Besides its contribution to Quebec's economy, McGill University is actively involved in building a Quebec society that is more open, more citizen-focused and more equitable through its **work within the community**. McGill University awarded scholarships totalling \$5.4M in 2008-2009 (up 157% since 2003-2004). The University's faculties awarded \$4M in prizes for excellence in 2008-2009 (111% more than 2003-2004). McGill gives the community access to its cultural and athletics facilities and organizes cultural activities that are open to all. In addition to this, its staff, students and faculty members are involved in many programs aimed at making a concrete improvement in the lives of Montrealers and Quebecers as a whole through better education, healthcare, social integration or sustainable development. Many of the University's community programs have an impact abroad thereby raising Quebec's international profile.

INTRODUCTION

In a globalized economy, creating and retaining jobs as well as improving our living standards are increasingly dependent on our ability to attract and train a qualified workforce and to innovate². Although the availability of capital, the creation of business clusters, tax incentives or marketing assistance play a determining role in building a knowledge-based economy, nothing can replace human capital and innovation when it comes to creating new opportunities, exporting and, by extension, generating growth.

Training human capital and innovating are therefore vital elements required to increase productivity and ensure that Quebec companies remain competitive globally. In this respect, Quebec is lagging behind the other large Canadian provinces and other developed nations, and is further widening the gap in living standards³. The issue of productivity is all the more critical because, as is the case in many developed countries, Quebec is facing a growing workforce-shortage problem. “Do better and more with less” has become a priority and recurring theme among political and economic decision-makers.

In such a context, universities have an important place in our society as their mission is to train, create and impart knowledge. Renowned internationally for the quality of its research and faculty members, McGill University is important to Quebec’s prosperity. It contributes towards increasing productivity and building a knowledge-based economy by providing the job market with qualified workers as well as by creating and disseminating the cutting-edge knowledge required to boost the productivity of businesses and institutions⁴.

McGill University has commissioned SECOR to analyze the economic benefits that it generates in Quebec. As outlined in the following pages, McGill’s contribution to Quebec’s prosperity comes in many forms:

1. Better positioning of Quebec’s knowledge-based economy by raising its profile, through the international recognition of McGill’s activities and, as a result, its ability to attract talented people.
2. Economic impacts associated with the training of human capital using cutting-edge knowledge.
3. Economic impacts linked to the creation and transfer of knowledge to Quebec companies.
4. Direct and indirect economic impacts generated through McGill’s operating expenditure and investments in Quebec as well as the spending of students and visitors that the university attracts.
5. A contribution to Quebec society and its image abroad through its involvement in the local community and in international issues.

² Science, Technology and Innovation Council: State of the Nation 2008 – Canada’s Science, Technology and Innovation System.

³ See Productivité et prospérité au Québec, Bilan 1981 – 2008, Centre sur la productivité et la prospérité, HEC Montréal.

⁴ Desjardins Economic Studies: Our Future Prosperity Hinges on our Universities; November 19, 2008.

1. MCGILL: A FLAGSHIP INSTITUTION FOR QUEBEC

It is essential for an economy that draws its wealth from and grows through exchanges with the rest of the world to promote the quality and dynamism of its human capital as well as its ability to develop knowledge and innovate globally.

Highlights

- *McGill University is the only Quebec university to be named one of the world's top 25 universities and one of the top 10 universities for life sciences and biomedicine in The Times Higher Education – QS World University Rankings.*
- *McGill University is also the top university in Quebec and is ranked among the 100 leading universities in the world by the Center for World-Class Universities and the Institute of Higher Education of Shanghai Jiao Tong University.*
- *Maclean's magazine has also ranked it the best Canadian university with a faculty of medicine.*
- *On the strength of its international reputation, McGill attracts some of the world's eminent professor-researchers to Quebec each year; they provide training at the cutting edge of knowledge and conduct high-calibre research.*
- *McGill graduates are active at all levels of Quebec society and its network of international alumni is a major asset in raising the province's international profile.*

McGill is a flagship institution for Quebec and a pillar of knowledge and innovation working for benefit of the entire society. It provides first-class education to more than 35,000 undergraduate and graduate students and many of its research projects have an impact around the entire world.

1.1 UNPARALLELED INTERNATIONAL RECOGNITION AMONG QUEBEC UNIVERSITIES

McGill, which has made many significant discoveries and is regularly at the top of North American rankings. It was named one of the world's top 25 universities by the prestigious Times Higher Education – QS World University Rankings for the fifth consecutive year. It is the only Canadian university to be named on the list to date. The Times Higher Education – QS World University Rankings are based on qualitative criteria (survey of academics and employers) as well as quantitative criteria, such as faculty-to-student ratios, number of citations in academic reviews, number of international students and percentage of international faculty.

TABLE 2: THE FIRST 25 UNIVERSITIES FROM THE TOP 200 WORLD UNIVERSITIES BY TIMES HIGHER EDUCATION – QS WORLD UNIVERSITY RANKING 2009

RANK	INSTITUTION	COUNTRY
1	Harvard University	United States
2	University of Cambridge	United Kingdom
3	Yale University	United States
4	University College London	United Kingdom
5*	Imperial College London	United Kingdom
5*	University of Oxford	United Kingdom
7	University of Chicago	United States
8	Princeton University	United States
9	Massachusetts Institute of Technology	United States
10	California Institute of Technology	United States
11	Columbia University	United States
12	University of Pennsylvania	United States
13	Johns Hopkins University	United States
14	Duke University	United States
15	Cornell University	United States
16	Stanford University	United States
17	Australian National University	Australia
18	McGill University**	Canada
19	University of Michigan**	United States
20*	University of Edinburgh	United Kingdom
20*	ETH Zurich (Swiss Federal Institute of Technology)	Switzerland
22	University of Tokyo	Japan
23	King's College London	United Kingdom
24	University of Hong-Kong	Hong Kong
25	Kyoto University	Japan

*Tie

**Public universities

Note: Only universities with faculties in at least two major subjects (natural sciences, biomedicine, engineering and information technologies, social sciences and human sciences) and that have undergraduate students were included in the ranking.

Source: Times Higher Education – QS World University Ranking 2009

This ranking placed McGill first among the public universities in North America, ahead of the University of Michigan, and first among Canadian universities. The ranking also places the university in 10th place worldwide and first among Canadian universities that offer life sciences and biomedicine.

TABLE 3: THE 10 LEADING UNIVERSITIES IN THE TOP 50 UNIVERSITIES FOR LIFE SCIENCES AND BIOMEDICINE BY THE TIMES HIGHER EDUCATION – QS WORLD UNIVERSITY RANKING 2009

RANK	INSTITUTION	COUNTRY
1	Harvard University	United States
2	University of Cambridge	United Kingdom
3	University of Oxford	United Kingdom
4	Stanford University	United States
5	University of California, Berkeley	United States
6	John Hopkins University	United States
7	University of Tokyo	Japan
8	Massachusetts Institute of Technology	United States
9	Yale University	United States
10	McGill University	Canada

Source: Times Higher Education – QS World University Ranking 2009

The Center for World-Class Universities and the Institute of Higher Education of Shanghai Jiao Tong University also rank McGill University among the best in the world (65th overall). McGill came in first in Quebec and third in Canada, behind the University of Toronto and the University of British Columbia which came in 27th and 36th respectively. The ranking is based on a series of indicators that measure academic and research performance, such as the number of alumni and professors who have won Nobel Prizes and Fields Medals, the number of papers published in *Nature and Science* and the weighted score of all the indicators divided by the number of full-time equivalent academic staff at the institution.

TABLE 4: ACADEMIC RANKING OF WORLD UNIVERSITIES 2009, CENTER FOR WORLD-CLASS UNIVERSITIES AND THE INSTITUTE OF HIGHER EDUCATION OF SHANGHAI JIAO TONG UNIVERSITY

RANK	INSTITUTION	COUNTRY
1	Harvard University	United States
2	Stanford University	United States
3	University of California, Berkeley	United States
4	University of Cambridge	United States
5	Massachusetts Institute of Technology (MIT)	United States
6	California Institute of Technology	United States
7	Columbia University	United States
8	Princeton University	United States
9	University of Chicago	United States
10	University of Oxford	United Kingdom
...
27	University of Toronto	Canada
...
36	University of British Columbia	Canada
...
65	King's College London	United Kingdom
65	McGill University	Canada
65	Purdue University - West Lafayette	United States
65	University of Oslo	Norway
69	Brown University	United States
70	École Normale Supérieure de Paris	France

Source: Center for World-Class Universities - Institute of Higher Education of Shanghai Jiao Tong University, *Academic Ranking of World Universities, 2009*

In Canada, *Maclean's* magazine ranked McGill the country's top university (among universities that have a faculty of medicine) for the fifth consecutive year. This ranking is based on an evaluation of the performance of students (awards and prizes of excellence, etc.), the performance of faculty members (awards, research contract funding) and resources available (dollars per student, research funding).

TABLE 5: MACLEAN'S TOP 10 CANADIAN UNIVERSITIES WITH A FACULTY OF MEDICINE, 2009

RANG	UNIVERSITY
1	McGill University
2	Toronto
3	Queen's
4	UBC
5	Alberta
6	McMaster
7*	Calgary
7*	Dalhousie
9*	Ottawa
9*	Saskatchewan
9*	Western
12	Laval
13*	Montréal
13*	Sherbrooke
15	Manitoba

*Indicates a tie

Source: Maclean's, "Canada's Best Schools", November 2009

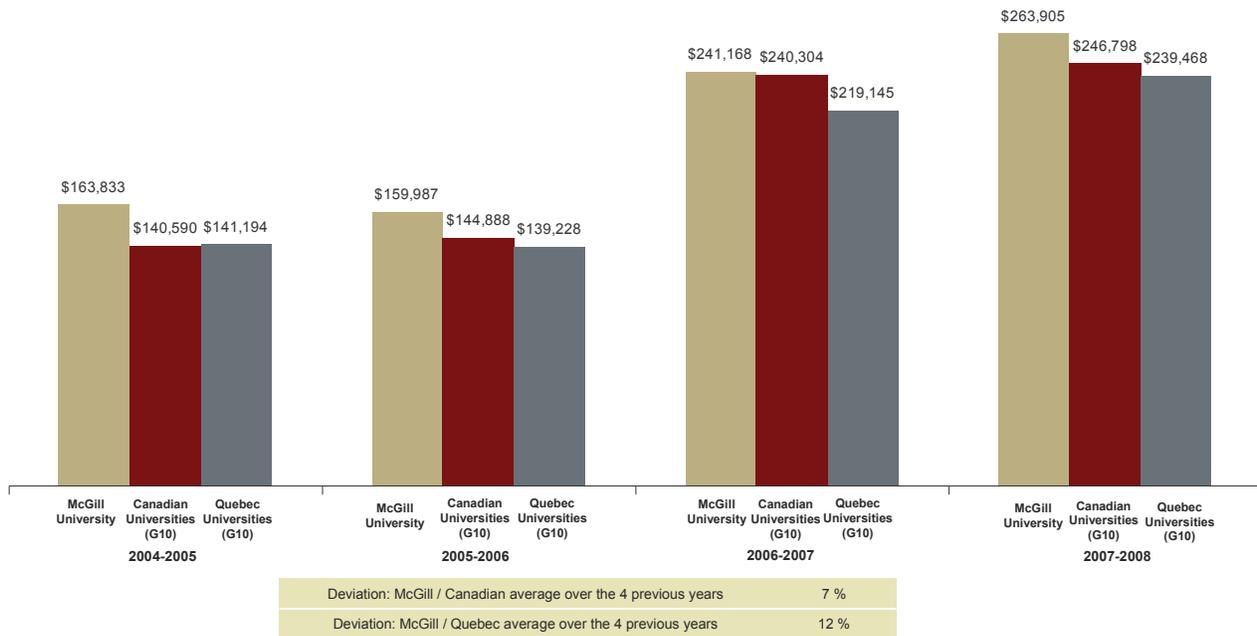
1.2 ABILITY TO ATTRACT SOME OF THE MOST TALENTED PEOPLE IN THE WORLD TO QUEBEC

McGill is internationally renowned for its faculties, research centres and for having world-class researchers who have been awarded many prestigious national and international prizes. To list but a few examples, molecular biologist Nahum Sonenberg won the Gairdner International Award in 2008; philosopher Charles Taylor became the first Canadian to win Japan's Kyoto Prize for Arts and Philosophy and in 2009, three of the five \$100,000 Killam Prizes, which are awarded in recognition of the contribution that researchers have made to science throughout their entire career, went to McGill professors (Philippe Gros, biochemistry; Wagdi G. Habashi, mechanical engineering; and François Ricard, French literature).

As a sign of its excellence in research, McGill has the highest ratio of research funding to full-time faculty members among Quebec universities. In the past four years, research funds per full-time faculty member at McGill have been 12% higher than the average for G10⁵ universities in Quebec and 7% higher than the average for G10 universities across the rest of Canada. Recently, the Canada Foundation for Innovation awarded McGill and the McGill University Health Centre (MUHC) \$100M in funding to create and equip a new medical research centre; this is the largest infrastructure investment the federal organization has ever awarded.

⁵ G10: Alberta, McGill, MacMaster, Laval, Montréal, Queen's, Toronto, UBC, Waterloo, Western, for comparison.

FIGURE 1: RESEARCH FUNDING PER FULL-TIME PROFESSOR IN CANADA

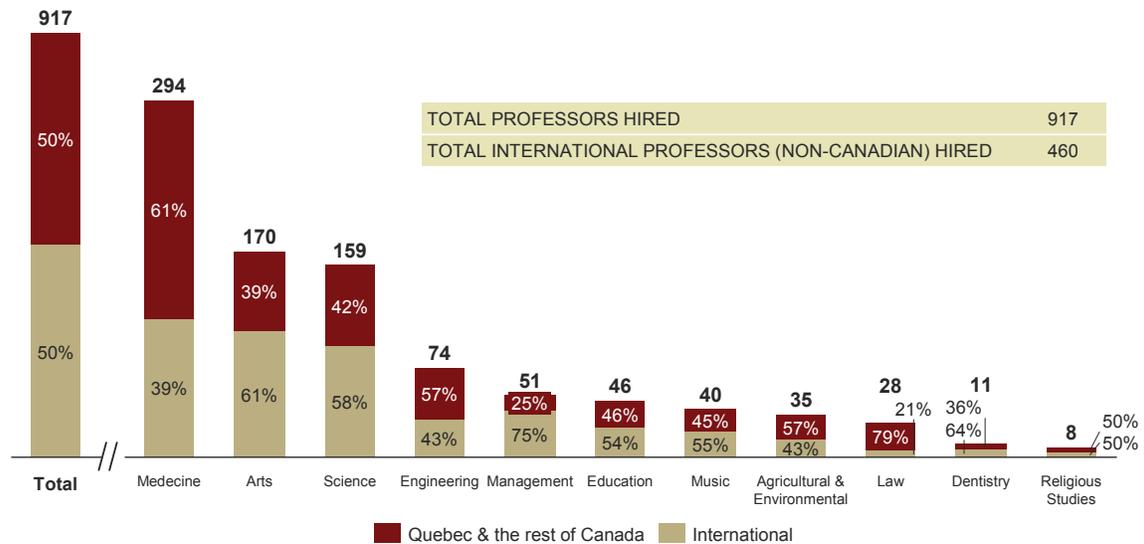


Sources: President's Fact Book, 2004-2005 to 2007-2008; SECOR

McGill has achieved this level of excellence by recruiting exceptional faculty members from a pool of highly respected experts in Canada and abroad. Over the years, McGill's international profile, which it has acquired thanks to its eminent faculty members, has served as a magnet to draw other experts whose work further raises the university's profile. In the past 10 years, McGill has hired no fewer than 917 professors, 50% of them from outside Canada. This means approximately 460 professors have immigrated to Quebec, not to mention faculty members from other Canadian provinces.

FIGURE 2: ORIGIN OF PROFESSORS HIRED BY FACULTY

Between January 1, 2000 and September 2, 2009



Sources: McGill University, SECOR

The contribution made by foreign experts has a positive impact on Quebec society and its economy. First of all, the presence of all these professors has created a pool of some of the most advanced knowledge in the world in Quebec. They provide top-quality teaching to ensure that Quebec businesses have the highly qualified workers that they need to innovate, increase productivity and, by extension, become more competitive. Their students apply and transfer the knowledge they have acquired during their university studies.

In addition to their mission to teach, McGill professors also conduct research work and the results they obtain impact the economy in the form of innovations and technology transfers. The university has recruited many international professors who specialize in the sciences or engineering as these are the strategic areas required to build a knowledge-based economy.

1.3 A NETWORK OF GRADUATES AND PARTNERSHIPS THAT CONTRIBUTE TO THE PROSPERITY AND PROFILE OF QUEBEC

In the course of its 185-year history, McGill has educated artists, scientists, world business and political leaders as well as renowned sportspeople. No fewer than 6 Nobel Prizes winners, nine Oscar winners, two Canadian prime ministers and three astronauts have studied at McGill. Two McGill alumni – William Boyle and Jack Szostak – won Nobel Prizes in 2009. *McGill alumni who have won Nobel Prizes:*

- **Rudolph Marcus**, B.Sc. 1943, Ph.D. 1946, received the **1992 Nobel Prize in Chemistry** for his theory of electron transfer.
- Endocrinologist **Andrew Victor Schally**, B.Sc. 1955, Ph.D. 1959, D.Sc. 1979, was the co-recipient of the **1977 Nobel Prize in Medicine** for his research on hormones.
- American particle physicist **Val Fitch**, B. Eng. 1948, was co-recipient of the **1980 Nobel Prize in Physics** for an experiment conducted in 1964 that disproved the long-held theory that particle interaction should be indifferent to the direction of time.
- **David Hubel**, B.Sc. 1947, M.D., C.M. 1951, was co-recipient of the **1981 Nobel Prize in Medicine** for his groundbreaking work on visual perception.
- **Willard Boyle**, B.Sc. 1947, M.Sc. 1948 and Ph.D. 1950 from McGill University was co-recipient of the **2009 Nobel Prize in Physics** for his role in the invention of the CCD sensor.
- **Jack Szotak**, a 1972 undergraduate in cell biology was co-recipient of the **2009 Nobel Prize in Medicine** for his research on chromosomes.

Source: McGill University

McGill University currently has a network of 200,000 alumni. Most of them play a leading role in all areas of Quebec's economic and social life. Some also live abroad where they help raise the profile of the university, and by extension Montreal and Quebec, around the world.

A testament to the excellent education offered at McGill, many of the university's alumni are currently helping to grow and strengthen Quebec's economy and society through the leadership positions they hold in both the private sector and public administration. McGill graduates have created or manage companies in industries that shape our economy and society, such as the information technologies, life sciences, aerospace, the media, culture and retail.

In addition to being fully involved in the Montreal and Quebec communities, McGill University is international and open to the world. It works with many international organizations, such as the United Nations Environment Program (since 2003) and the Foundation for Educational Exchange between Canada and the United States of America (since 2004).

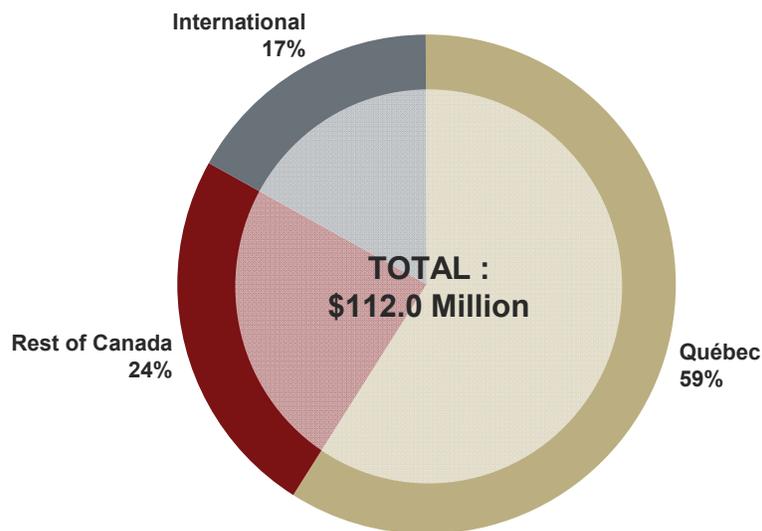
The university has established partnerships with many other university institutions worldwide, primarily through the consortium Universitas 21 – a group of 21 universities that are renowned for the quality of their research and teaching. Universitas 21 is a new kind of university network that helps its members establish operational links and assists them in developing policies in respect of student and staff exchanges. It also provides international benchmarks relating to quality, funding levels, research outcomes and student support services.

McGill also has bilateral relationships with the Université de Paris-Sorbonne, Université de Zurich, Université de Valladolid and the Institut supérieur d'architecture Saint-Luc de Bruxelles in Europe; Yale University and University of Miami in the United States of America; Osaka University, China Medical University and Indian Institute of Technology in Asia as well as the Weizmann Institute of Science and the Institut agronomique et vétérinaire Hassan II in Africa and the Middle East.

McGill's alumni association operates in approximately 100 countries. Alumni living abroad are genuine ambassadors of the education and cultural of excellence at McGill. The university's alumni, who hold management positions in foreign governments, international organizations and non-governmental organizations, also contribute to position Montreal and Quebec as major centres for the development of learning and knowledge.

McGill alumni living abroad and in other Canadian provinces are also a significant source of funding as demonstrated by the donations the university has received from outside Quebec. In the 2007-2008 academic year, 41% of the \$112M donated to the university came from other Canadian provinces and foreign countries.

FIGURE 3: SOURCE OF DONATIONS
2007-2008



Source: McGill University

2. ECONOMIC IMPACT OF TRAINING HUMAN CAPITAL

A highly qualified workforce is essential in order to grow the economy, develop state-of-the-art industries, attract foreign investment and promote the development of internationally recognized centres for excellence.

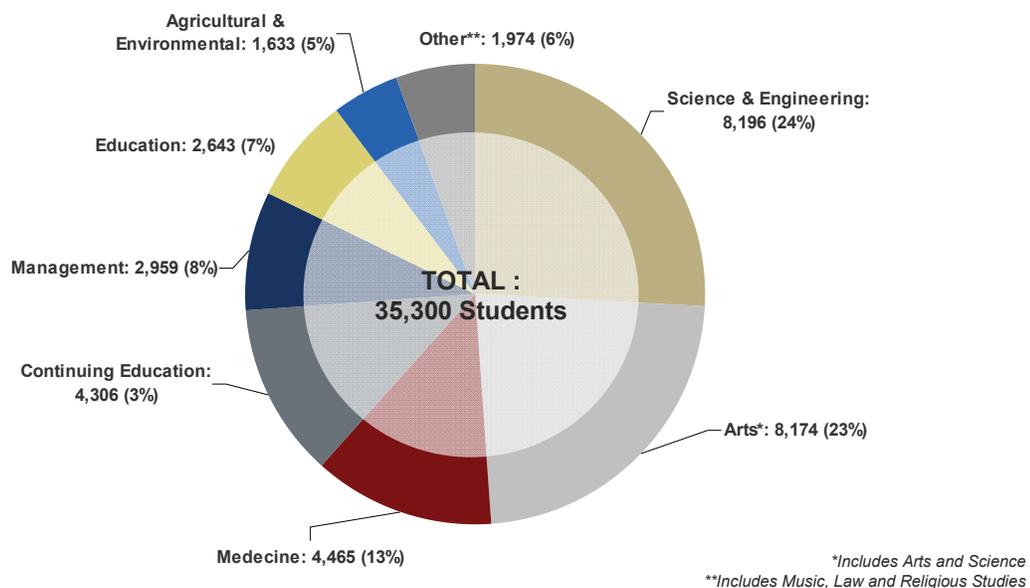
Highlights

- *As a top-ranking university institution, McGill plays an essential role in attracting and training the human capital that Quebec needs to develop a productive and prosperous economy that is increasingly knowledge based.*
- *McGill and its world-class faculty educate over 35,000 students each year; almost a quarter of the student body are in graduate programs.*
- *McGill also contributes to Quebec's prosperity by attracting more than 15,000 students from outside the province who boost the economy through their living expenses and differential tuition fees.*
- *McGill also contributes to Quebec's healthcare system. In the past 10 years, it has attracted nearly 320 doctors and researchers combined from outside Quebec and trained new doctors.*
- *The economic impact generated by McGill's improvement of Quebec's human capital was estimated at \$923.7M in 2008.*

McGill may be known internationally as a university research institution; however, teaching is still its core mission. It is committed to providing its 35,300⁶ students – 24,731 undergraduates and 7,975 graduates – with a high level of education. The university has a large number of students in medicine, the sciences and engineering; these faculties account for approximately 40%, or 13,000, of its student body. McGill University is therefore training the qualified professionals that are currently in short supply in industries deemed to be the flagships of Quebec's economy.

⁶ Registered for Fall 2009.

FIGURE 4: NUMBER OF STUDENTS PER FACULTY
Fall 2009



Source: McGill University

2.1 HIGH-CALIBRE TRAINING FOR INNOVATION

McGill's programs are designed to provide students with the knowledge and skills they will need to succeed in an increasingly competitive and knowledge-based global economy.

The development of new technologies is primarily driven by new knowledge acquired from a combination of traditional disciplines, information and communications technologies as well as fields that have emerged as a result of new scientific and societal challenges, such as environmental issues.

Thanks to its internationally renowned faculty members and research centres, McGill is able to offer its students programs that emphasize this multidisciplinary approach as well as cooperation among universities. For instance, it offers programs that combine computers and sciences, such as computer science and biology, computer science and mathematics, computer science and physics; multidisciplinary programs in the Faculty of Engineering, such as biotechnology engineering and environmental engineering, bioresource engineering; or multidisciplinary programs in the Faculty of Music, such as musicology and technology. McGill is making a tangible contribution towards the building of a knowledge-based economy in Quebec by training students in these new knowledge areas.

TABLE 6: EXAMPLES OF INTERDISCIPLINARY PROGRAMS OFFERED AT MCGILL UNIVERSITY

The **bioresources engineering** program integrates engineering, design and biological sciences. The program includes the design, construction, operation, maintenance, remediation and upgrading of systems that contain biological components. Specialities such as *waste management and environmental protection, artificial intelligence, ecological engineering, mechatronics and robotics* or *water management* are offered.

The **musicology and technology** program encourages the interaction between musical creativity, technology and research. The teaching objective is to provide students with professional-calibre training in music with a focus on the intensive programming of highly advanced music technologies. The training includes computer music courses, new media, the interaction between human beings and the computer, psychoacoustics and acoustics.

Bioinformatics is at the crossroads between biological diversity, medical and mathematical sciences, computer sciences and engineering. The objective of the program is to train students to become researchers in this interdisciplinary field. This includes the development of strategies for experimental design, the construction of tools with which to analyze series of data, the application of modelling techniques, the creation of bioinformatics data manipulation tools, the integration of biological databases and the use of algorithms and statistics.

Source: McGill University

Moreover, McGill's Faculty of Management offers many programs for students who want to hone their entrepreneurial spirit and their ability to understand the complex realities of today's primarily globalized world. Economic growth in Quebec does not rely solely on technological discoveries; it is also increasingly linked to our companies' ability to compete globally and on the entrepreneurial strength of our society.

TABLE 7: EXAMPLES OF MCGILL PROGRAMS FOCUSING ON THE GLOBAL MARKET AND ENTREPRENEURSHIP

The undergraduate and Master's programs offered at the **Dobson Centre for Entrepreneurial Studies** prepare students to face corporate management challenges primarily by presenting case studies and concepts developed through research to company leaders. Students acquire the skills required to carry out entrepreneurial or intrapreneurial initiatives successfully in the corporate world or in non-profit organizations.

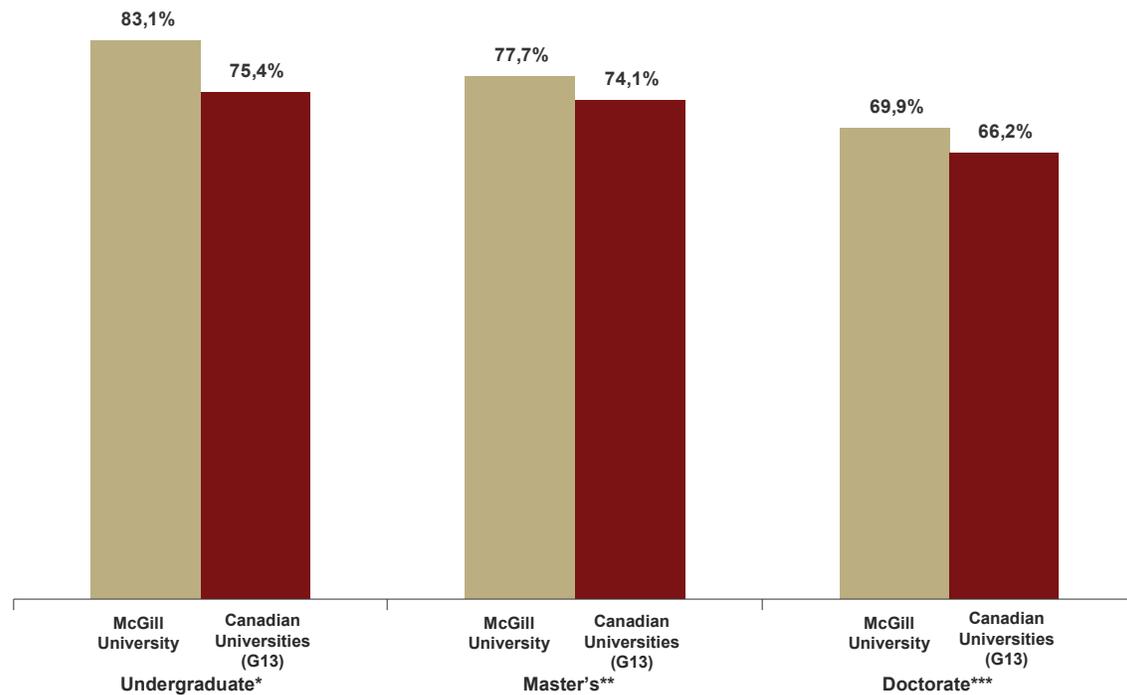
The **Desautels Faculty of Management's international management** program is a unique interdisciplinary program that offers students the opportunity to explore global business issues, learn an additional language or two, and receive an education in a variety of fields ranging from history to literature, politics and economics. These courses help in understanding other cultures and permit students to gain the necessary perspective for an international business career.

McGill University recently launched a new **international development** program. The cross-disciplinary M.A. program is unique in Canada, if not the world, because it is designed to provide students with a strong practical and theoretical foundation for engaging in genuinely cross-disciplinary research on development issues and within international organizations.

Source: McGill University

McGill places a great importance on its students succeeding as demonstrated by high graduation rates recorded for undergraduate and graduate students; this graduation rate is higher than the average for G13 Canadian universities.

FIGURE 5: GRADUATION RATE PER LEVEL



*Graduation rate after 6 years, for students enrolled in full-time studies in a 4-year program

**Master's programs with dissertations, 2002 cohort, graduation rate after 15 semesters

***1998 cohort, graduation rate after 27 semesters

Sources: McGill University, G13

As a further proof of McGill's ability to train excellent students and to offer innovative programs at the cutting edge of learning, the university has a large proportion of full-time graduate students (an average of 21% over the past four years), higher than the average for Canadian G10 universities (average 18% in the past four years). By training and attracting a large number of graduate students, McGill provides Quebec businesses with highly qualified workers, who have acquired the most advanced knowledge in the world, and who will be responsible for future innovations in its state-of-the-art technology industries.

FIGURE 6: PERCENTAGE OF GRADUATES PER LEVEL 2008-2009

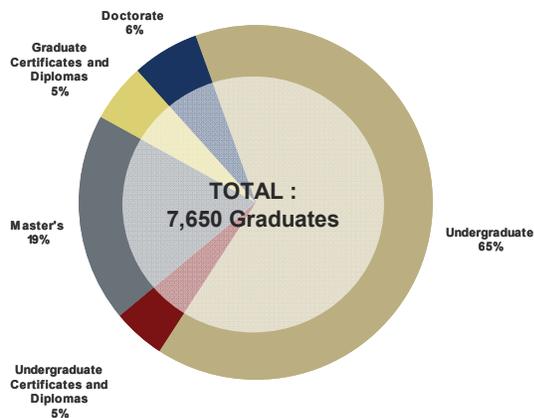
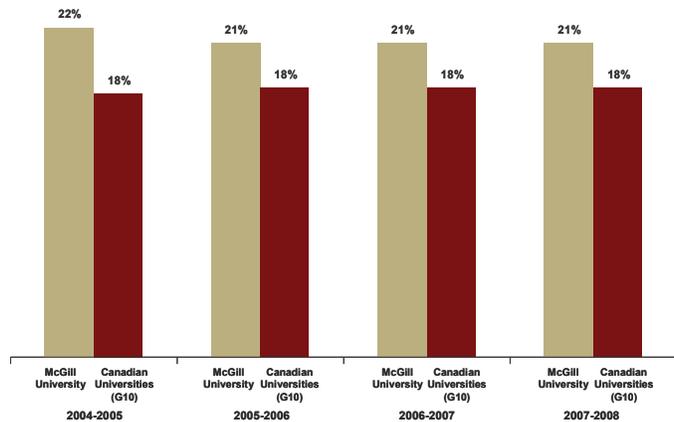


FIGURE 7: PROPORTION OF FULL-TIME MASTERS AND DOCTORATE STUDENTS



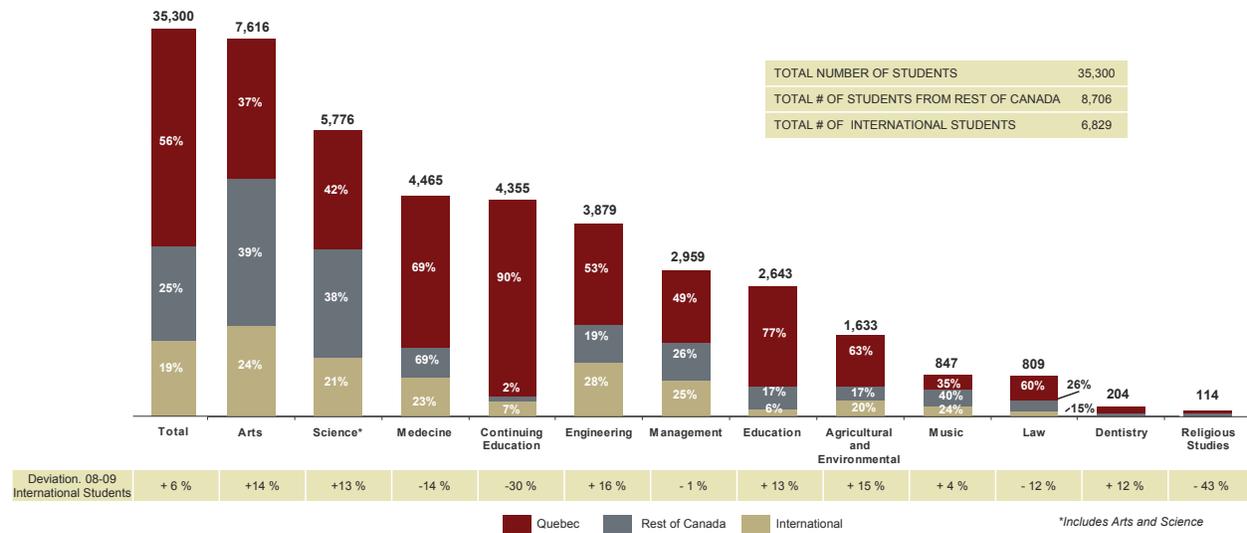
Source: McGill University

2.2 ATTRACTING HUMAN CAPITAL FROM OUTSIDE QUEBEC

McGill contributes to the development of Quebec's human capital by attracting international students and by providing excellent training for students in the strategic fields (engineering, sciences and medicine) that feed the pool of highly qualified workers that the province's economy needs to prosper.

The university's international reputation, its ability to attract professors from among leading experts and its innovative programs are incomparable tools that draw and are used to train students from outside Quebec. Thus, excluding the 25% of students from other Canadian provinces, approximately one in five of its students come from outside Canada. Approximately 45% of McGill's student body come from outside Quebec. The proportion of international students is particularly high in the faculties of arts (24%), sciences (23%), engineering (25%) and management (23%).

FIGURE 8: CANADIAN AND INTERNATIONAL STUDENTS BY FACULTY
Fall 2009



Source: McGill University

International students and those from other Canadian provinces, who are attracted to McGill, enrich Quebec’s human capital with highly qualified workers. This contribution is becoming increasingly recognized, especially given the current demographic context in Quebec. Approximately 20%⁷ of McGill’s international students are currently opting to stay and work in Quebec after their studies. Stakeholders in the province, including McGill University, are making additional efforts to increase this percentage. Thus, many measures, primarily with regard to loosening and simplifying the permanent immigration and work permit application process, have been implemented in order to encourage international graduates to enter the job market and to give them incentive to stay in Quebec.

McGill students who come from outside of Quebec also pay differential tuition fees that are returned to the provincial government and then redistributed among Quebec universities. This differential amounted to \$57.6M in 2008⁸. The students also generate added value and jobs for the economy through their living expenses and tuition fees (see chapter 4).

⁷ CRÉ Montréal, 2006.

⁸ The engineering, pure sciences, law, management, veterinary sciences and pharmacy programs have been subject to a tuition fee deregulation. McGill no longer receives government funding for students registered in these programs. McGill retains all the deregulated tuition fees paid by these students. The net impact for the Quebec government (differential – government subsidy granted for non-Quebec students) is detailed in appendix 4.

TABLE 8: TUITION FEES PAID IN 2008 ACCORDING TO STUDENT CATEGORY

	AMOUNT (IN THOUSANDS OF DOLLARS)
Tuition fees – Quebec students	26,831
Canadian students	
Base tuition fees	14,820
Differential	23,018
Total tuition fees – Canadian students	37,838
International students	
Base tuition fees	3,984
10% supplement	985
Differential (including 10% supplement)	10,061
Total tuition fees – international students	15,030
Self-funded students	
Differential	24,500
Other	19,113
Total tuition fees – self-funded students	43,613
TOTAL	123,312
TOTAL DIFFERENTIAL	57,579

Sources: McGill University, SECOR analysis

2.3 SUBSTANTIAL CONTRIBUTION TO QUEBEC'S HEALTHCARE SYSTEM

McGill University is a vital institution for Quebec's society. There is a serious shortage of healthcare personnel in the province and, as we all know, this is having an impact on the system's ability to meet demand and provide the quality care required.

McGill's Faculty of Medicine has a solid reputation in Quebec and worldwide and is therefore in a position to train a large number of students from within and outside Quebec. It is also able to attract the best healthcare professionals, who work with hospitals and clinics affiliated with the university across Quebec, to join its faculty. International faculty represent 39% of the university's recruitment in the industry; in other words, it has recruited 115 more faculty members in the past 10 years.

The box below contains data illustrating the major role that McGill University plays in Quebec's healthcare system.

- In fall 2009, 13% of McGill students were registered in the Faculty of Medicine; this represents approximately **4,500 future medical sciences professionals** (nurses, doctors, psychiatrists, biochemists, radiologists, physiotherapists, etc.).
- Since 2001, McGill has more than **doubled the number of new family-medicine residents** in its program (from 31 to 65).
- In 2008, **91% of students, or 159 individuals, admitted and registered** in McGill's **undergraduate medical program** came from **Quebec**.
- McGill has retained and/or attracted **90%** of the doctors originally trained by the university.
- In the past 10 years, **320 doctors and researchers combined** were recruited to McGill's Faculty of Medicine from other provinces or countries.
- Of all the doctors recruited outside North America in the past 10 years, **77%, or 105 out of 137, have stayed at McGill**.

Source: McGill University

Thanks to its affiliated hospitals and the many faculty members and students in its Faculty of Medicine, McGill is in a position to support and improve Quebec's healthcare system significantly. For instance, as a member of the Réseau universitaire intégré de santé (RUIS), the government has placed the university in charge of the central and western regions of the island of Montreal, the western part of the Montérégie region, the Outaouais region, Abitibi-Témiscamingue as well as the Cree territories of James Bay and Nunavik. McGill's RUIS is in charge of coordinating tertiary healthcare services as well as the teaching and research offered by each faculty of medicine and their associated teaching hospitals within these territories. These areas have a total of 1.7 million inhabitants (22.8% of the Quebec population) living on 953,500 km² (63.2% of the geographic area of the province).

Réseau universitaire intégré de santé (RUIS): The government of Quebec's Réseau universitaire intégré de santé (RUIS) has divided Quebec into four regions, each covered by a different university healthcare network. The network is made up of all the institutions on the territory that operate a university hospital centre, a university institute or affiliated university centre and that are affiliated with a university linked to the network as well as any establishments that operate a rehabilitation centre. The hospitals associated with McGill are in charge of providing care to residents on half the island of Montreal, in the Outaouais region and the entire north of Quebec. McGill is therefore in charge of healthcare for the largest part of the Quebec territory.

Sources: Ministère de la santé et des services sociaux, McGill University

2.4 ECONOMIC IMPACT OF THE IMPROVEMENT OF HUMAN CAPITAL

In order to quantify the impact that McGill University has had on increased productivity through the enhancement of human capital, SECOR focused on Fernand Martin's study on the economic impact of Canadian universities, which has been cited by many researchers⁹, and on the study conducted by Walter Sudmant on the economic impact of the University of British Columbia¹⁰.

The methodology used is based on the calculation of the salary differential between university graduates (undergraduate and graduate degrees) and people with no university training¹¹, as well as on the university's share in the cost of training the students¹². The portion of the differential generated by graduates who underwent part of their training outside Quebec¹³ has also not been taken into account.

In 2008, McGill contributed an estimated \$923.7M towards increased productivity in Quebec through the enhancement of human capital (see details in appendix 1).

Through its training of human capital, McGill is making a vital contribution towards ensuring that Quebec's economy grows, is more productive, more prosperous and is based on the knowledge, innovativeness and

⁹ See also Our Future Prosperity Hinges on our Universities, Desjardins – Economic Studies, François Dupuis, Yves St-Maurice and Fernand Martin, November 19, 2008.

¹⁰ The Economic Impact of the University of British Columbia, Walter Sudmant, Planning and Institutional Research, UBC, September 2009.

¹¹ The total salary differential between McGill alumni with undergraduate degrees and people with no university training is estimated at \$1.7B, the salary differential between graduates with higher degrees from McGill and individuals with no university training is estimated at \$1.3B.

¹² Estimated at 35% by Fernand Martin.

¹³ Estimated at 25% by Fernand Martin.

excellence of its leading-edge industries. The high-level education that McGill offers its students is also coupled with extensive research activities that are recognized worldwide. This research also generates value for Quebec's economy and society as demonstrated in the next chapter.

3. ECONOMIC IMPACT OF CREATING AND DISSEMINATING KNOWLEDGE TO ORGANIZATIONS

Advancing fundamental and applied research thanks to world-class research centres thereby generating knowledge and innovations is a fundamental driver and decisive competitive advantage for the leading industries in our economy and for Quebec society as a whole.

Highlights

- *As an internationally recognized centre of excellence in university research, McGill is a key player in the development of an innovative and competitive economy in Quebec.*
- *The quality of the research conducted by the thousands of McGill researchers attracted funds totalling \$334M to Quebec in 2008.*
- *Industry contributions towards research contracts amounted to over \$30.3M in 2008, up 73% in five years.*
- *In Canada, McGill is ranked second among the G13 universities for American patents obtained between 2004-2005 and 2006-2007. Globally, McGill is the only Canadian university to be named among the 20 most innovative universities in the field of biotechnology.*
- *In the past 10 years, McGill has issued 322 licences that generated a total of \$18.2M in revenues.*
- *In the past 10 years, the university has helped launch 50 new businesses, 38 of which are currently still operating in the biopharmaceutical, information and communications technologies, medical technologies and manufacturing, etc. sectors.*
- *The knowledge developed and transmitted by McGill contributed an estimated \$3.2B to Quebec's economy in 2008.*

The university's mission to achieve excellence and raise its profile is demonstrated by the key role it plays in the field of research in Quebec. It has made a continuing commitment to advance knowledge and innovations either by implementing innovative and multidiscipline teaching programs or entering into original partnerships with other universities, research centres worldwide and major industrial players.

The quality of the thousands of researchers that McGill has been able to attract from countries around the world, the approximately 50 specialized centres that it operates and the network of international collaborators that the university has developed all contribute to improve the quality, scope and international recognition of its research activities.

The research conducted by the university's faculty, research professionals and students allows for the development of new knowledge and inventions that are then further enhanced by companies and society as a whole.

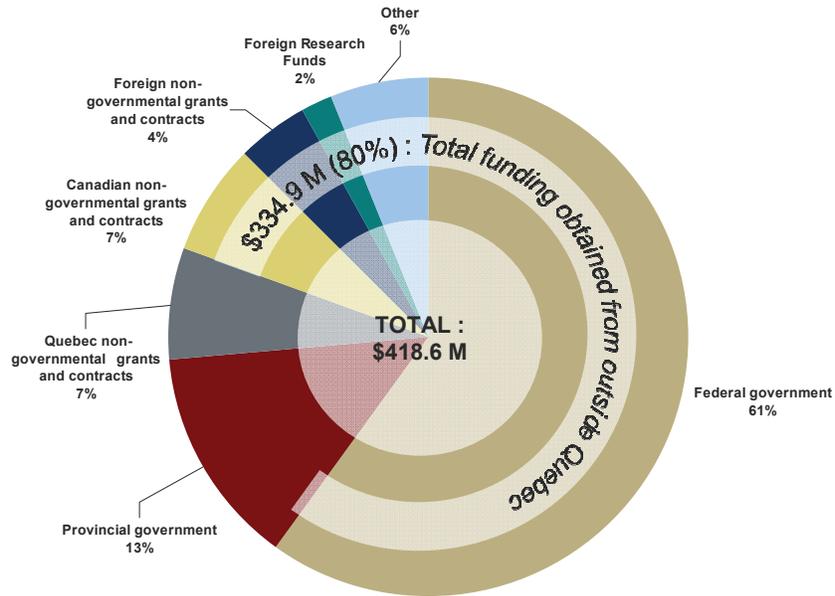
3.1 ATTRACTING RESEARCH FUNDING TO QUEBEC

Each year, McGill contributes to Quebec's economy by attracting research funds from governments and businesses in other parts of Canada and abroad that are spent locally. In 2008, 80%, or \$334.9M, of the funds that McGill allocated to sponsored research were obtained from external sources. Funds from the provincial

government as well as non-governmental subsidies and contracts from Quebec represented 20%, or \$83.7M, of the funds allocated to research.

FIGURE 9: SPONSORED RESEARCH BY SOURCE OF FUNDING, MCGILL

Millions of dollars, F2008

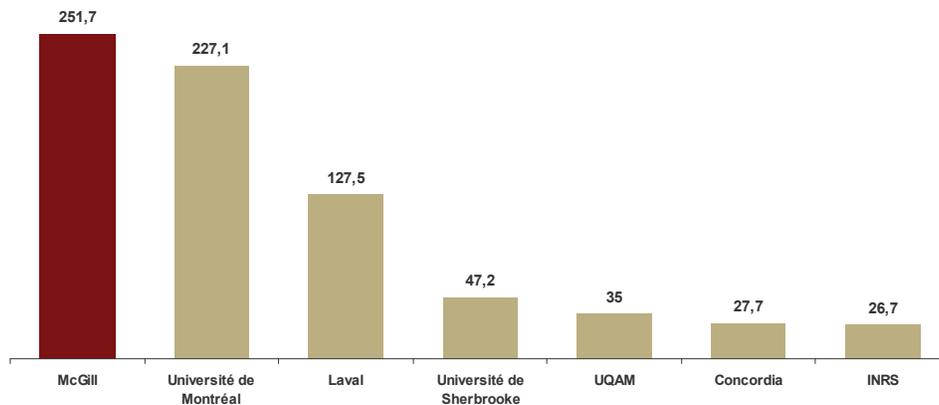


Sources: CAUBO, McGill University, SECOR analysis

McGill attracts more research contracts and grants from the federal government to Quebec than any other university in the province.

FIGURE 10: FEDERALLY SPONSORED RESEARCH

Millions of dollars, F2008



Source: CAUBO

3.2 TECHNOLOGY TRANSFERS

News of McGill's discoveries, primarily from life-sciences research, regularly makes the headlines. Recent news items include the discovery by researchers at McGill and the affiliated Lady Davis Institute for Medical Research that viruses can be used to target and destroy cancer cells. This discovery could have significant and rapid implications for new experimental treatments for forms of the disease that are currently resistant to virotherapy, such as breast, prostate or colon cancers. Many of the drugs currently prescribed were developed from the results of research or discoveries made at McGill.

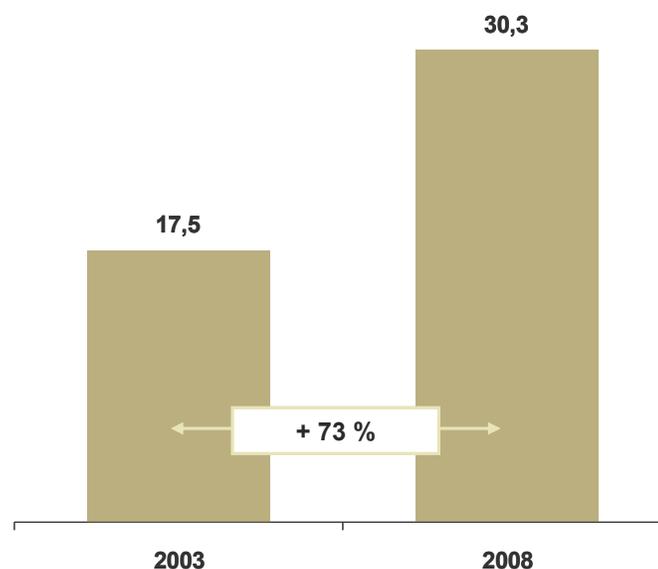
McGill's research results are applied by different players in Quebec's economy through further research conducted in conjunction with industry and the technology transfer of discoveries made at McGill to existing companies (through licences granted) or new businesses.

INDUSTRY-PARTNERED RESEARCH

Part of McGill's research is conducted in partnership with industry. Industry-partnered research is one of the most efficient methods of bringing together the knowledge developed by the university and the expertise acquired through the possible applications of the research.

In the past few years, McGill has seen an increase in research conducted in partnership with companies that are based primarily in Quebec or that have operations in the province. Research contracts granted by industries in 2008 amounted to \$30.3M, up 73% in five years.

FIGURE 11: CHANGES IN RESEARCH CONTRACTS AWARDED BY INDUSTRY, MCGILL
2003 – 2008



Source: AUTM

McGill's research partners for 2009 include:

- Many biopharmaceutical companies such as Pfizer Canada, Merck Frosst Canada, Aventis Pharma, Novartis Pharma, Astra Zeneca and Sanofi Aventis.
- Aerospace companies such as CAE and Pratt & Whitney.
- Other major companies such as Bell Canada, Hydro-Québec and Air Liquide.
- The Pulp and Paper Research Institute of Canada, a centre created to formalize the research partnership between McGill and companies in the pulp and paper industry.
- And young companies in various high-tech industries.

TECHNOLOGY TRANSFER OF DISCOVERIES MADE AT MCGILL

Innovations made at McGill impact the life-sciences sector as well as a large number of other industries, such as the environment, agriculture, engineering, telecommunications, IT and health services. In the past 10 years, McGill has reported more than 1,000 inventions, submitted 2,078 patent applications and been granted 474. In 2007-2008 alone, the university submitted 113 patent applications and was granted 26.

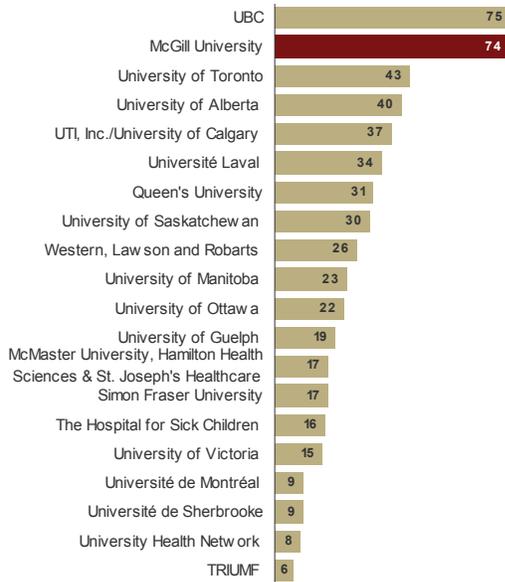
TABLE 9: INVENTION DISCLOSURE, APPLICATIONS FOR PATENTS AND PATENTS GRANTED
1998-2008, McGill

	Invention Disclosures	Applications for Patents	Patents Granted
2008	101	113	26
2007	115	130	50
2006	129	117	57
2005	94	125	45
2004	103	168	51
2003	99	284	56
2002	145	246	43
2001	81	246	46
2000	102	210	33
1999	95	230	44
1998	104	209	23
Total	1,168	2,078	474

Note : Statistics from the Douglas and Jewish General hospitals are included in the 2001 and 2002 cohorts only; other hospitals are excluded.
Sources: AUTM, McGill

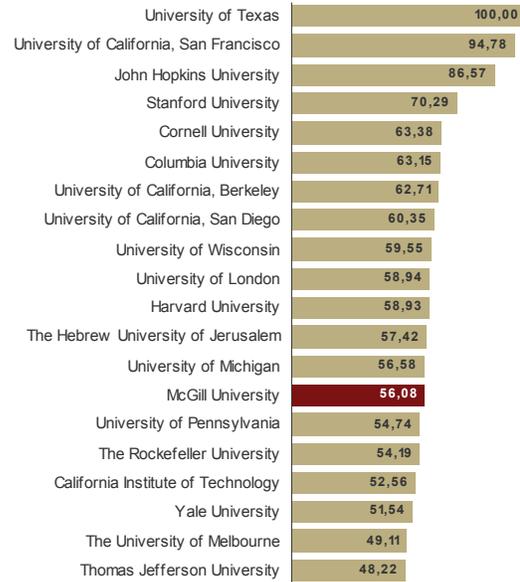
McGill is one of the most prolific universities in Canada and worldwide in terms of patented biotechnology inventions. In Canada, McGill ranked second among the G13 for American patents issued between 2004-2005 and 2007-2008. Internationally, McGill is the only Canadian university to be named among the 20 most innovative universities in the field of biotechnology.

FIGURE 12: AMERICAN PATENTS GRANTED BETWEEN 2004-2005 AND 2007-2008



Source : AUTM

FIGURE 13: UNIVERSITY RANKINGS IN TERMS OF BIOTECHNOLOGY PATENTS ISSUED ACCORDING TO THE MILKEN INSTITUTE'S 2000-2004 COMPOSITE INDEX



*The factors taken into account are number of patents, potential impact, quality of the scientific research and the technology cycle time.
Source: Milken Institute

McGill succeeds in converting many of these patents into licences; in other words, many local and foreign companies want to use these patented discoveries in exchange for royalties. In the past 10 years, McGill has granted 322 licences that generated \$18.2M in revenues.

TABLE 10: LICENCES GRANTED AND LICENCE REVENUES
1998-2008, McGill

	Licences Issued	Licence Revenues
2008	23	\$2,585,027
2007	37	\$1,458,954
2006	37	\$1,311,280
2005	31	\$1,304,111
2004	40	\$1,164,230
2003	38	\$1,460,601
2002	21	\$973,375
2001	28	\$6,404,573
2000	28	\$485,566
1999	24	\$547,846
1998	15	\$461,535
Total	322	\$18,157,098

Sources: McGill, AUTM

It is difficult to determine the real value that these licences have for the Quebec economy, however, there is no doubt that it exceeds the amount paid. Depending on how the intellectual property is used, the acquisition may result in the development of a new pharmaceutical product, a new production process, a new telecommunications technology, etc. In terms of the impact on Quebec's economy, this could mean revenues (including exports) from the new products or increased productivity for local businesses. In both cases, this will increase the competitiveness of businesses and create high-level jobs in Quebec.

Another economic impact is the number of new businesses created as a result of discoveries made at McGill. In the past 10 years, the university has been involved in launching 50 new businesses, 38 of which are still operating in the biopharmaceutical, information and communications technologies, medical technologies and manufacturing, etc. industries.

TABLE 11: EXAMPLES OF BUSINESSES CREATED AND STILL OPERATING AND NUMBER OF JOBS IN QUEBEC
(1998-2008, McGill)

COMPANY	YEAR CREATED	OPERATIONS IN QUEBEC (PRODUCT DEVELOPED, PRODUCT MARKETED OR SECTOR)	LOCATION (QUEBEC FACILITIES)	NUMBER OF EMPLOYEES IN QUEBEC
Open Text Connectivity Solutions Group	1984	Information technologies.	Montreal	50 employees in Montreal, 1,500 in Canada
Exogen Neuroscience (today Aegera Therapeutics, Inc.)	1997	Biotech company that is developing a molecule to be used in the field of oncology.	Montreal	50 employees
MethylGene Inc.	1997	Biopharmaceutical company working on cancer treatments and antifungal agents.	Montreal	50 employees
Stellate Systems Inc.	1986	Manufacturers medical devices used in encephalography.	Montreal	45 employees
Resonant Medical Inc.	2000	Image-guided radiotherapy products to treat cancer.	Montreal	25 employees
LMS Medical Systems Ltd.	1993	Computer software for obstetrical management.	Montreal	22 employees
SCIREQ Scientific Respiratory Equipment Inc.	1997	Equipment for pre-clinical research into respiratory illnesses.	Montreal	18 employees
DFT MicroSystems Inc.	2001	Equipment to test the productivity of semi-conductor manufacturers.	Montreal	16 employees
MISPRO Biotech Services Inc.	2003	Provides animals for biopharmaceutical research.	Montreal	14 employees
Reflex Photonics Inc.	2003	Telecommunications.	1 office in Montreal	13 employees
MicroPharma Ltd	2003	Nutraceuticals, biotherapeutics.	Montreal	12 employees
Gemin X Biotechnologies Inc.	1998	Cancer drugs.	Montreal	10 employees
KCLM Research in Nutrition inc.	1999	Markets a natural pain-relief product.	Candiac	4 active people / 1 full-time employee
Molecular Biometrics Inc.	2007	Diagnostic tests for the in-vitro fertilization market.	Montreal	3 employees
Mimetogen Therapeutics Inc.	2005	Biotechnology used in ophthalmology.	Montreal	3 employees
REPLIcor Inc.	1998	Biotechnology company at the clinical trial phase for hepatitis treatments.	Laval	3 employees
Plastic Knowledge Inc.	2004	Video posters on plastic materials.	Montreal	2 employees
MEMS Vision Inc.	2009	Micro-electronics.	Brossard	1 employee
WideSail Technologies	2008	Product to correct errors in telecommunications.	Montréal	1 employee
Oncozyme Pharma Inc.	2001	Biopharmaceutical currently at phases 1 and 2 of clinical research for cancer treatments.	Montreal	1 employee
RealContact Inc.	2004	Surgical simulators	Montreal	N/A
Osta BioPharma Inc.	2002	Pharmaceutical products for the treatment of Alzheimer's, osteoporosis, arthritis, etc.	Dollard-des-Ormeaux	N/A.

Below are a few examples of the commercial successes notched by the above companies:

Resonant Medical

Resonant Medical was created by Dr. Tony Falco, Frédéric Francis, Luc Sirois and François Perraton. The project was set up to develop an image-guided platform based on innovative ideas provided by Dr. Tony Falco from the McGill University Health Centre (MUHC). Dr. Falco is the current CEO, senior manager and chief technician of the company. Since 2000, the company has been developing, manufacturing and marketing 3D imaging systems for medical research and cancer treatment. The company's head office is located in Montreal; it employs more than 25 people and sells its products in Canada, Europe and the United States.

Stellate Systems

Dr. Jean Gotman, a professor at the Montreal Neurological Institute and hospital, has been researching computerized applications for encephalography since 1972. In 1986, he created Stellate Systems. The company manufactures medical devices for research and diagnostics in encephalography. Stellate was acquired by the Californian company Alpine Biomed in January 2009, and, as a result, has become one of the most important companies in the neurodiagnostics market. Stellate's products are sold in over 30 countries. Its offices are located in Montreal and it employs more than 45 people.

LMS Medical Systems

Dr. Emily Hamilton, obstetrics and gynaecology professor at McGill University's Faculty of Medicine, founded LMS Medical Systems. The company, which began to grow in 1997, provides software solutions to obstetrics departments in over 100 hospitals across North America. It has 22 employees working in its Montreal offices. The company has been owned by PeriGen, based in Princeton, New Jersey, since July 2009.

Reflex Photonics

Tomasz Maj, Co-founder and Vice-President, Engineering and David R. Rolston, Co-founder and Vice-President, Technological Development, both have Ph.D.s in electrical engineering from McGill University. In 2000, they created Reflex Photonics, a company that has developed opto-electronic technology for broad-based digital transfer applications. The technology was under licence from McGill University; funding from MSBI Capital in 2003 enabled it to grow. The company recently started selling its products in the United States, Europe and Australia.

3.3 ECONOMIC IMPACT GENERATED BY MCGILL THROUGH THE CREATION AND DISSEMINATION OF KNOWLEDGE

As with the calculation of the economic impact that McGill has generated by improving human capital, SECOR used the study conducted by Fernand Martin on the economic impact of Canadian universities, which has been cited by many researchers¹⁴, and the study conducted by Walter Sudmant¹⁵ to quantify the impact that McGill University has had on the increase in productivity attributable to other production factors, namely the creation and dissemination of knowledge.

The methodology, which is similar to that of Sudmant, is based on calculating the university's contribution to the increase in total factor productivity minus R&D imports¹⁶. In order to avoid counting twice, the share of the creation and dissemination of knowledge attributable to graduate students has also been deducted¹⁷ as it was included in the calculation of the impact generated by the improvement in human capital (section 2).

Thus, the economic impact generated by McGill through the creation and dissemination of knowledge for 2008 is valued at \$3.2B (see details in appendix 2).

¹⁴ See also Our Future Prosperity Hinges on our Universities, Desjardins – Economic Studies, François Dupuis, Yves St-Maurice and Fernand Martin, November 19, 2008.

¹⁵ The Economic Impact of the University of British Columbia, Walter Sudmant, Planning and Institutional Research, UBC, September 2009.

¹⁶ The contribution of total factor productivity to GDP growth is estimated at \$40.2B, R&D imports at \$6.1B, Quebec universities' contribution to R&D at 35.5% and McGill's contribution to university R&D at 29.3%.

¹⁷ This stage is different from the Sudmant approach which did not include graduate students in its calculation of the impact on increased human capital.

4. ECONOMIC IMPACT OF SPENDING BY MCGILL, STUDENTS ATTRACTED AND RETAINED AS WELL AS VISITORS ATTRACTED TO QUEBEC

Quebec's economy depends on major institutions that are able to generate significant economic benefits in terms of creating added value and top-quality jobs.

Highlights

- *The economic impact of spending associated with McGill University's activities is estimated at \$1.0B in added value and 13,448 job-years.*
- *The impact on the Quebec government's revenues is \$88.5M and \$92.7M in incidental taxation (QPP, CSST, FSS).*
- *The impact on the federal government's revenues is \$58.8M and \$16.5M in incidental taxation (employment insurance).*

In order to calculate the economic impact of spending directly attributable to McGill (that could not have been generated otherwise), the following three types of spending were taken into account:

- McGill's operating expenditure and investment spending.
- Spending by McGill students from outside Quebec.
- Spending by visitors who are attracted to Quebec specifically by McGill's activities, namely delegates attending conventions and conferences organized by the university, trips by prospective international university students and/or family members, visits by researchers from other universities.

This economic impact is measured using the Institut de la statistique du Québec's input-output model. Quebec's input-output model is a tool used to simulate the effects of certain actual, potential or hypothetical changes in the province's economy. These changes consist of various projects involving investment, operating or current consumption expenditures, such as those made by McGill and the visitors and students it attracts. The economic impact assessed is translated into workforce, added value, imports, taxation and incidental taxation. The model is used to calculate these effects and to classify them depending on whether they impact the sectors directly affected by the initial expenditures (direct impact) or impact the suppliers of the sectors in which the initial effects were felt (indirect impact).¹⁸

4.1 SPENDING GENERATED BY MCGILL AND ITS ACTIVITIES

Each year, McGill spends many millions of dollars on operations and investments in Quebec. These expenditures amounted to \$921.0M¹⁹ in 2008 and consisted primarily of salaries and benefits paid to staff and faculty members, services rendered by contractors hired to renovate and maintain buildings, various professional services, cost of IT equipment and research material, travel or the acquisition of books for the libraries.

¹⁸ Source: Institut de la statistique du Québec

¹⁹ Source: McGill University

McGill University creates a number of important and top-quality jobs through its activities. As of January 31, 2009, the university employed 13,493 people, 41% of whom are full-time employees; part-time staff consists of lecturers, student research assistants, demonstrators or postdoctoral fellows, as well as non-academic part-time staff. Professional level positions account for 40% of the non-academic positions (26% of the total)²⁰.

McGill has approximately 15,000 non-Quebec students. They are consumers in Quebec and their living expenses generate spinoffs for the economy. Their spending, which can be broken down into accommodation, leisure, educational supplies, food or transportation costs, were estimated at over \$255M in 2008²¹. In addition to living expenses, non-Quebec students also pay higher tuition fees²². Tuition fees paid by Canadian students (from outside Quebec), international students and self-funded students total \$96.5M, or 78%, of all tuition fees paid to McGill University. More specifically, non-Quebec students at McGill paid a differential of \$57.6M in 2008. This differential is submitted to the Ministère de l'Éducation and is then redistributed to all Quebec universities. The differential paid by non-Quebec and self-funded students is therefore added to the living expenses of non-Quebec students. Living expenses of students attracted to McGill therefore totalled \$312.9M.

Each year, McGill hosts many events that attract visitors from outside the province. These visitors are convention and conference delegates who come to attend meetings organized by the university or academic visitors who come to take part in research projects. An estimated 8,000 delegates came to Quebec in 2008-2009. The university also attracts students from other Canadian provinces and abroad as well as their parents and friends who come to attend various open houses, orientation and integration days as well as convocation ceremonies organized each year. An estimated 16,000 people visited Quebec on those occasions. These “business” tourists as well as “friends and family” are estimated to have spent over \$7.0M on accommodation, food or transportation during their stay in Montreal in 2008²³.

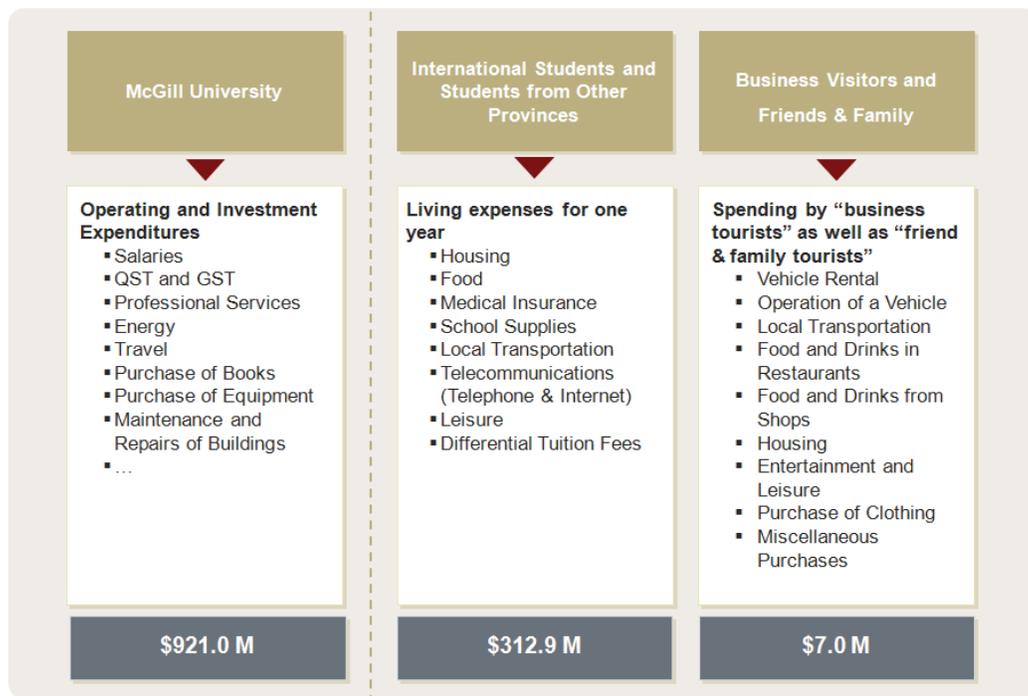
²⁰ Source: McGill University

²¹ Based on the typical annual budget of an international student established by HEC Montréal (regular expenses and certain academic and related costs) – See details in appendix 3, table 27.

²² Tuition fees are not factored into the calculation of the economic spin-offs generated by non-Quebec students at McGill as they are already implicitly included in the operating expenses – See details in appendix 3.

²³ Based on average expenditures per “business” or “friends and family” tourist as established by Tourisme Montréal – See detail in appendix 3, table 26.

FIGURE 14: THREE TYPES OF SPENDING GENERATED BY MCGILL IN QUEBEC
2008



4.2 ECONOMIC IMPACT OF SPENDING BY MCGILL AND THE STUDENTS AND VISITORS IT ATTRACTS TO QUEBEC

Expenditure generated by McGill’s activities were compiled in Quebec’s input-output model to measure the impact it has on the economy in terms of employment, the creation of added value and tax revenues for the provincial and federal governments. Combined, spending by McGill creates added value totalling \$1.0B and some 13,448 job-years for the Quebec economy²⁴. The table below details the breakdown of the added value and jobs in terms of the direct and indirect impact of all the spending by McGill.

²⁴ Total economic impact of each type of spending presented in appendix 3, tables 28 and 30

TABLE 12: IMPACT GENERATED BY MCGILL UNIVERSITY

For all of Quebec, in thousands of 2009 dollars

CATEGORIES	DIRECT EFFECT	INDIRECT EFFECTS	DIRECT AND INDIRECT EFFECTS
Added value	756,731	254,614	1,011,345
Salaries (excluding benefits)	559,357	137,145	696,503
Net income of unincorporated businesses	10,071	13,355	23,426
Other gross income before taxes	187,302	104,112	291,415
Workforce (person-years)	9,610	3,838	13,448
Salaried employees	9,493	3,358	12,850
Other workers	117	480	597

Sources: ISQ, SECOR analysis

The university's activities generate \$88.5M in revenues and \$92.7M in incidental taxation (QPP, CSST, FSS) for the Quebec government. The corresponding figures for the federal government are \$58.8M in revenues and \$16.5M in incidental taxation (employment insurance)²⁵.

TABLE 13: MCGILL UNIVERSITY'S IMPACT ON GOVERNMENT REVENUES

In thousands of 2009 dollars

CATEGORY	DIRECT EFFECTS	INDIRECT EFFECTS	DIRECT AND INDIRECT EFFECTS
Quebec government revenues	67,401	21,131	88,531
Taxes on salaries and wages paid by employees	57,877	10,544	68,420
Sales and specific tax	9,524	10,857	20,380
Incidental taxation (QPP, CSST, FSS)	71,680	21,012	92,692
Federal government revenues	45,925	12,849	58,774
Taxes on income and wage	41,023	6,341	47,364
Sales tax and excise tax	4,902	6,508	11,410
Incidental taxation (employment insurance)	12,492	3,960	16,452

Sources: ISQ, SECOR analysis

4.3 NET ECONOMIC IMPACT OF SPENDING BY MCGILL, ITS STUDENTS AND VISITORS ATTRACTED TO QUEBEC (NET IMPACT)

McGill University is characterized by its ability to generate revenues from outside Quebec, such as research funds from the federal government, companies based in other Canadian provinces or donations from individuals abroad. In 2008, 31%²⁶ of the university's revenues came from economic players in other Canadian provinces and abroad.

²⁵ Figure amounts of the impact on government revenues by each type of spending are presented in appendix 3, tables 29 and 31.

²⁶ Sources: CAUBO, McGill University, SECOR analysis

The economic impact generated solely through revenues the university attracted from outside Quebec is presented in the table below. The calculation of the net economic impact includes 31% of the university's operating and fixed capital expenditures in Quebec and 100% of spending by visitors and students attracted to Quebec.

TABLE 14: NET IMPACT GENERATED BY MCGILL UNIVERSITY

For all of Quebec, in thousands of 2009 dollars

CATEGORY	DIRECT EFFECTS	INDIRECT EFFECTS	DIRECT AND INDIRECT EFFECTS
Added value	353,634	141,463	495,096
Salaries (excluding benefits)	221,542	74,438	295,980
Net income of unincorporated businesses	7,720	7,992	15,711
Other gross income before taxes	124,372	59,033	183,406
Workforce (person-years)	4,379	2,135	6,514
Salaried employees	4,293	1,875	6,168
Other workers	86	259	345

Sources: ISQ, SECOR analysis

TABLE 15: NET IMPACT OF MCGILL UNIVERSITY ON GOVERNMENT REVENUES

In thousands of 2009 dollars

CATEGORY	DIRECT EFFECTS	INDIRECT EFFECTS	DIRECT AND INDIRECT EFFECTS
Quebec government revenues	30,439	11,308	41,746
Taxes on salaries and wages paid by employees	21,161	5,565	26,725
Sales and specific taxes	9,279	5,829	15,108
Incidental taxation (QPP, CSST, FSS)	29,083	11,490	40,573
Federal government revenues	19,470	6,740	26,210
Taxes on salaries and wages	14,703	3,320	18,022
Sales and excise taxes	4,767	3,421	8,188
Incidental taxation (employment insurance)	5,208	2,171	7,379

Sources: ISQ, SECOR analysis

5. ECONOMIC IMPACT LINKED TO THE CULTURE OF INTEGRATION AND SUPPORT IN THE COMMUNITY

Citizen engagement, social progress, environmental protection and the improvement of living standards are core concerns in our modern societies. Public institutions play a pivotal role in helping communities achieve these objectives.

Highlights

- *Through its work in the community, McGill University is actively involved in building a more open, more citizen-focused and fairer society in Quebec.*
- *McGill University awarded scholarships totalling \$5.4M in the 2008-2009 academic year (up 157% since 2003-2004).*
- *McGill's faculties awarded prizes for excellence totalling \$4M in the 2008-2009 academic year (up 111% since 2003-2004).*
- *In addition to the cultural and athletics facilities it makes available to the community, McGill's students, faculty members and staff are involved in many programs aimed at making concrete improvements to the lives of Montrealers and Quebecers through better education, health, social integration and sustainable development.*
- *As many of its community programs are international in scope, the university and its members are contributing towards raising the international profile of Quebec.*

In addition to its mission to teach and advance learning, for which it is internationally renowned, McGill University's activities extend to supporting the community. In a bid to help students fund their studies, the university awards scholarships totalling many millions of dollars each year. It also gives many Montreal organizations access to its cultural and athletics facilities.

McGill's staff, students and faculty members are involved in many programs and projects that make a concrete contribution towards enriching the community and improving living standards for Montrealers and Quebecers in many areas. Many of the projects also help communities elsewhere in Canada and in other countries, thereby reinforcing the image of Quebec as a province that is outward-looking and committed to the principles of democracy, social justice and sustainable development.

5.1 MCGILL'S INVOLVEMENT IN EDUCATION

As a university institution, McGill plays an obvious role in educating and training its student body; however, it is also involved in promoting and encouraging education within the entire Quebec population.

First of all, each year, the university awards many substantial scholarships to students who need financial support to enable them to continue their studies and to students who have excelled in their academic studies. Scholarships awarded during the 2008-2009 academic year totalled approximately \$5.4M (up 157% since the 2003-2004 year). In addition, the faculties also handed out \$4M in prizes for excellence (up 111% since the 2003-2004 year)²⁷.

²⁷ McGill University.

Many of the projects supported by McGill's students and faculty members also promote learning and encourage school children in Quebec to continue with university education. Other projects provide educational support to teachers by suggesting innovative activities and tools through which to share knowledge.

TABLE 16: A FEW EXAMPLES OF MCGILL'S INITIATIVES IN EDUCATION

Let's talk science: Graduate students participating in the Let's Talk Science partnership program enable children and teenagers of all ages, from kindergarten to Grade 12, to experience hands on science, engineering and technology. Approximately 200 volunteers are currently involved in the program at McGill.

School-based outreach program: students in the Faculty of Law meet up with pupils from four Quebec high schools located in disadvantaged communities to prevent them from dropping out and to encourage them to continue post-secondary education, especially in the field of law.

Winners of Wonderment: a collaboration between the Faculties of Science and Education, McGill's Winners of Wonderment lab provides Canadian elementary and high-school teachers with ideas for dazzling demonstrations designed to captivate students and generate interest in math and science.

Source: McGill University

5.2 MCGILL'S INVOLVEMENT IN HEALTHCARE

McGill University is renowned worldwide for its Faculty of Medicine as well as its excellent affiliated centres and hospitals that care for thousands of Quebecers every year. The university's commitment does not end there though. Professionals and students from the Faculty of Medicine are also involved in many community projects aimed at providing healthcare services to the needy, to help people with psychological conditions or to educate certain segments of the population on healthcare issues.

TABLE 17: A FEW EXAMPLES OF MCGILL'S HEALTHCARE INITIATIVES

Free dental care for Montrealers: McGill's dentistry students offer pay-what-you-can dental care to needy Montrealers. Supervised by volunteer dentists, McGill students have provided check-ups, x-rays, cleanings and fillings to more than 800 people since 2002.

Eating Disorders Program (EDP): based at the Douglas Mental health University Institute, the EDP is Quebec's largest initiative specializing in the treatment of anorexia and bulimia.

CINE Project: CINE works with indigenous peoples to provide interdisciplinary education and research projects on safety, integrity and nutritional value of traditional foods in a changing world.

DOVE Project: the McGill-based DOVE project educates doctors and the general public about the symptoms of ovarian cancer. It has also established the world's first Rapid Access Diagnostic Centre for the early detection and treatment of ovarian cancer.

Source: McGill University

5.3 MCGILL'S SOCIAL INVOLVEMENT

The McGill community is deeply committed to social projects. Students, staff and faculty members volunteer their time and put their expertise to work on many projects aimed at fighting poverty, improving living conditions and life in the neighbourhoods or to help Montrealers and all Quebecers with legal issues.

TABLE 18: A FEW EXAMPLES OF MCGILL'S SOCIAL INITIATIVES

GO McGill: Santropol Roulant, an award-winning non-profit community group, uses food as a vehicle to break social and economic isolation between generations. Project GO McGill is the University's chapter of this youth-run, intergenerational Meals on Wheels program.

Affordable Homes program: members of the Affordable Homes program, a graduate studies program at the McGill School of Architecture, work to revitalize ailing communities by designing inexpensive, sustainable, aesthetically pleasing homes.

Free legal information: for 35 years, the McGill Legal Information Clinic has provided legal information and referrals to Montrealers who need help. The service is non-profit, student-run, bilingual and free.

Innocence McGill: was created by students at McGill's Faculty of Law and is dedicated to helping free Quebecers who have been wrongfully convicted. The project is supervised by faculty members and prominent criminal lawyers.

Centre for Research on Children and Families: conducts and disseminates research for effective programs and policies for vulnerable children and their families.

Source: McGill University

McGill also gives the community access to its cultural and athletics facilities. By virtue of an agreement with the City of Montreal, the university gives Montrealers access to its athletics facilities, in particular the Percival Molson Memorial Stadium, its adjacent grounds and the sports complex. During the summer, many daytime summer camps are also organized by students, faculty members, etc.

TABLE 19: A FEW EXAMPLES OF SUMMER CAMPS OFFERED BY MCGILL

The **McGill Conservatory Day Camp at the Schulich School of Music** initiates young Montrealers aged 4 to 18 to music.

The **Exploration Day Camp** introduces youth to activities, such as drama and painting, or draws the older ones into the world of science and research.

The **McGill Summer Sports Camp** offers 6- to 15-year-olds an opportunity to participate in a wide variety of sports and activities in the university's athletics facilities. The focus is on team sports, creativity and swimming.

The **Eagle Spirit High Performance Camp** was created to promote excellence in sports and education among young indigenous people aged between 13 and 17 as well as a strong balance between all components of life (education, family, personal relationships, health, culture, sports and self-esteem).

Source: McGill University

McGill University is a cultural arena that is committed to the city and society. It boosts the cultural vibrancy of Montreal and helps protect Quebec's cultural heritage through its five museums and affiliated museums, which attract hundreds of thousands of Montrealers and tourists every year. The Schulich School of Music

holds nearly 600 concerts and events each year. The university hosts many hundreds of open conferences and plays that are accessible to all Montrealers and visitors. For instance, the McGill Institute for the Study of Canada organizes a number of public events, including the Distinguished Lecture Series and the Lunch and Learn workshop series. In addition, on Freaky Fridays (one Friday a month), McGill scientists confront myths, debunk popular misconceptions and clarify science for the general public.

TABLE 20: MCGILL UNIVERSITY'S MUSEUMS AND AFFILIATED MUSEUMS

The **Redpath Museum**, which does not charge an entry fee, is housed in the oldest building in Canada to have been built specifically as a museum. It preserves and exhibits large collections of ancient and modern biodiversity, minerals and anthropology from around the world.

The **Ecomuseum** is an educational wildlife park spread over 11.3 hectares and houses more than 90 species of reptiles, amphibians, birds and mammals.

The **Lyman Entomological Museum** houses 2.8 million specimens of insects and other arthropods, making it the second largest insect collection in Canada.

The **Rutherford Museum** exhibits the actual apparatus used by Ernest Rutherford to work on the atom and develop theories of radioactivity, alpha rays and radioactive transformation for which he was awarded the Nobel Prize in Chemistry in 1908.

The **McCord Museum** brings to life the social and cultural history of Montreal, Quebec and Canada with over 1,375,000 objects, images and manuscripts.

Source: McGill University

5.4 MCGILL'S INVOLVEMENT IN SUSTAINABLE DEVELOPMENT

Through its Faculty of Agricultural and Environmental Sciences, which is located on the McDonald campus, and its Faculty of Engineering and Faculty of Science, McGill University is heavily involved in many scientific and community projects on sustainable development and the preservation of Quebec's "ecological treasures". Through this work, McGill is helping position Quebec as a world leader in environmental issues, one that is able to meet the challenges and develop solutions.

TABLE 21: A FEW EXAMPLES OF MCGILL'S SUSTAINABLE DEVELOPMENT INITIATIVES

Brace Centre for Water Resources Management: From water conservation and drought control to legal questions and public policy, the Brace Centre for Water Resources Management takes an interdisciplinary look at all aspects of water. Drawing on a critical mass of expertise in science, agriculture, environment, engineering, law and management, the Centre is involved in a wide range of worldwide sustainable development projects. These multiple streams of research flow well into the Centre's Lake Champlain project. For the past five years, the Brace Centre has deployed engineers and environmental scientists, health specialists and climate modellers to the Missisquoi Bay to tackle the problem of high levels of phosphorus in the lake which causes the excessive growth of aquatic plants, such as the toxin-producing blue-green algae which throw the entire ecosystem off balance.

Green Crop Network: McGill's Macdonald campus is home to the Green Crop Network, a virtual institute that unites the Canadian government, industry partners and plant researchers from 14 universities in a common goal: to find agriculture-based ways to cut greenhouse gases and find alternative energy sources.

Global Environmental and Climate Change Centre: aims to promote research programs at all levels (graduate students, postdoctoral fellows, faculty) focusing on the integration among physical, biological and chemical processes that regulate the climate system and their socio-economic impact. The centre also facilitates scientific cooperation among a cross-disciplinary group of Quebec researchers and promotes Quebec research at the national and international levels. The centre's ambition is to assume a lead role in global climate change issues and to provide input to the academic and public debate on the environment and climate change in Quebec, across Canada and internationally.

Gault Nature Reserve: Located at Mont Saint-Hilaire, McGill's Gault Nature Reserve is made up of 1,000 hectares of natural primeval forest. Its panoramic landscape is ideal for teaching, university research (coordinated by McGill's Faculty of Science) and strolling through nature. Its 25-km wooded trail is open to the public 365 days a year.

Morgan Arboretum: The 245-hectare Morgan Arboretum is home to examples of most of Quebec's native trees. The refuge also supports 18 collections of trees and shrubs from across the world, 30 species of mammals, 20 species of reptiles and amphibians, and more than 170 species of birds.

Source: McGill University

McGill University has also implemented voluntary policies aimed at achieving the highest standards in sustainable development on its campus; this includes its operations and daily management, its facilities and the manner in which they are run as well as its actions within the community. The university intends to comply with and even exceed the government norms on sustainable development within academic institutions as well as standards issued by comparable universities. McGill's target is to become a model for sustainable development by continuing its mission and by playing a positive and proactive role in communicating the need to develop and implement sustainable practices within the community.

McGill is actively involved in the implementation of the Quebec government's 2008-2013 Sustainable Development Strategy, in particular in terms of strategies and actions involving the social aspect of sustainable development, such as efforts to increase citizen involvement in democratic life, prevent and decrease economic disparities. The university contributes primarily towards promoting increased community involvement, encouraging citizens to play a larger role in decision making, preventing and combating poverty and exclusion as well as raising the level of education among the population and the number of graduates.

5.5 MCGILL'S INTERNATIONAL PROJECTS

Many humanitarian projects piloted by students, faculty members and staff at McGill are international and focus on defending human rights and peace, improving living conditions in developing nations by putting the expertise acquired at McGill to use in communities across the world. Members of the university community portray Quebec as an open, innovative society that is committed to democracy; they contribute to its international profile.

TABLE 22: A FEW EXAMPLES OF MCGILL'S INTERNATIONAL INITIATIVES

McGill Middle East Program in Civil Society and Peace Building: the program selects Israeli, Palestinian and Jordanian students to undertake community work together at the School of Social Work. Students take their learning back to the Middle East, where the Program runs six storefront practice centres serving over 100,000 low-income people a year.

Centre for Human Rights and Legal Pluralism: the Universal Declaration of Human Rights was drafted by a McGill professor in 1948. In keeping with that tradition of commitment to democracy and human rights, today the McGill Centre for Human Rights and Legal Pluralism supports the Special Court for Sierra Leone, holds public lectures and conferences, and works throughout the world to further the Declaration's aims.

Training nurses in rural Tanzania: volunteer McGill nurses are training a new generation of nurses and other health practitioners in rural Tanzania, one of Africa's most impoverished countries. Their work supports the Highlands Hope Consortium, which provides medical care in the Tanzanian highlands.

Engineers Without Borders: McGill's student-led chapter of Engineers Without Borders works at home and abroad to drive global development, bringing badly needed tools and technologies to impoverished regions and helping to educate Quebecers about our role in the world.

Source: McGill University

6. CONCLUSION: SUMMARY OF ECONOMIC IMPACTS

McGill University makes a major contribution to Quebec's economy and society in more ways than one.

First of all, the university's **international reputation** stems from and drives its ability to attract people who are deemed to be the leading experts in their field. McGill is one of the top universities in the world and features in many prestigious rankings such as The Times Higher Education – QS World University Rankings and the Institute of Higher Education of Shanghai. *Maclean's* magazine has ranked it the best university in Quebec and in Canada for five consecutive years. It attracts the best professors (and researchers) thereby providing its students with training that is at the cutting edge of knowledge and top-quality research. As proof of the culture of excellence at McGill, its graduates are active at all levels of Quebec society and its network of international alumni is very prominent abroad. McGill University is therefore a flagship for Quebec and contributes towards **enhancing Quebec's knowledge-based economy**.

Second, in keeping with its mission to teach and provide excellent education, McGill University trains **the highly qualified workers that the Quebec economy needs to grow, innovate and perform**. Each year, McGill trains more than 35,000 students, almost a quarter of who are graduate students. The excellence of its teaching and the quality of its faculty members draw 15,000 students from outside Quebec; the differential tuition fees paid by these students are used, among others, to finance Quebec's university system. McGill is helping strengthen Quebec's healthcare system through its Faculty of Medicine. In the past 10 years, it has attracted almost 320 doctors and researchers from outside Quebec and trained new doctors from Quebec. Lastly, the university has generated an estimated **\$923.7M in economic impacts through its improvement of human capital**.

McGill University is also a leader in **research and learning**. The expertise created within the institution and subsequently disseminated in the economy also contributes towards **increasing the dynamism, productivity and innovativeness** of the Quebec economy. The quality of the research conducted by its researchers helped attract \$334M in funding to Quebec last year. On the international level, McGill is the only Canadian university to be ranked among the top 20 most innovative universities in biotechnology. In the past 10 years, the university has helped launch 50 new businesses, 38 of which are still operating, and issued 322 licences generating revenues of \$18.2M. **The economic impact that McGill has generated through the creation and dissemination of knowledge is estimated at \$3.2B.**

Spending by McGill, students from outside and who have opted to remain in Quebec as well as visitors that the university has attracted generate **\$1.0B worth of added value and 13,448 job-years for the Quebec economy**. The impact on the **revenues of the Quebec government and the federal government is \$88.5M and \$58.8M respectively**.

TABLE 23: SUMMARY OF THE IMPACT THAT MCGILL UNIVERSITY HAS HAD ON QUEBEC'S ECONOMY

IMPACTS	\$MILLION
<ul style="list-style-type: none"> McGill's contribution to increased productivity in Quebec through improved human capital. 	923.7
<ul style="list-style-type: none"> McGill's contribution to increased productivity in Quebec through the creation and dissemination of knowledge. 	3,221.9
<ul style="list-style-type: none"> Added value created by spending by McGill, students from outside Quebec and visitors attracted by the university. 	1,011.3
Total impact	5,156.9

Lastly, McGill University is deeply rooted in the society and the community. It awarded **scholarships totalling \$5.4M** during the 2008-2009 academic year and its faculties awarded **prizes for excellence totalling \$4M**. The university also makes its **cultural and athletics facilities** available to all Montrealers. Students, staff and faculty members are involved in many community programs aimed at making a concrete improvement in the lives of Montrealers and Quebeckers through better education, healthcare, social integration and sustainable development. Many of the university's projects and partnerships are also geared towards helping communities in other parts of Canada and in other countries and also to forge relationships with foreign universities. These projects and partnerships **reinforce the image of Quebec as a province that is outward-looking and committed to the principles of democracy, social justice and sustainable development.**

APPENDICES

APPENDIX 1 – CALCULATING THE ECONOMIC IMPACT GENERATED BY THE ENHANCEMENT OF HUMAN CAPITAL

To calculate the impact that McGill University's enhancement of human capital has had on increased productivity, SECOR focused on a study conducted by Fernand Martin on the economic impact of Canadian universities. The study has been adapted and cited by many researchers²⁸, including Walter Sudmant²⁹.

To determine McGill's contribution towards the improvement of human capital, SECOR calculated the salary differential between McGill students with a bachelor's degree and people who did not reach this level of education. The share of this salary differential directly attributable to McGill was estimated at 35.12%³⁰, which corresponds to the cost of the training provided by the university.

SECOR also factored in the salary differential between McGill students with graduate degrees to those who had not reached that academic level. As above, the share of the salary differential directly attributable to McGill was estimated at 35.12%, in other words, the cost of the training provided by the university. However, in this instance, an imported share was also subtracted in order to factor in graduates who obtained their undergraduate degrees outside Quebec.

In keeping with Fernand Martin's approach, the economic impacts associated with human capital (undergraduate and graduate) were also factored into the calculation; this was slightly different from the approach adopted by Walter Sudmant, who combined the impact of graduate training with that of the creation and dissemination of knowledge. Also different from the Sudmant's approach, SECOR did not multiply McGill's total contribution towards improving human capital by a regional multiplier, thereby adopting a more conservative approach.

²⁸ Our Future Prosperity Hinges on our Universities, Desjardins – Economic Studies, François Dupuis, Yves St-Maurice and Fernand Martin, November 19, 2008.

²⁹ The Economic Impact of the University of British Columbia, Walter Sudmant, Planning and Institutional Research, UBC, September 2009.

³⁰ Source: Our Future Prosperity Hinges on our Universities, Desjardins – Economic Studies, François Dupuis, Yves St-Maurice and Fernand Martin, November 19, 2008.

TABLE 24: CALCULATING MCGILL'S CONTRIBUTION TO INCREASED PRODUCTIVITY THROUGH IMPROVED HUMAN CAPITAL

In dollars 2008

IMPACT OF UNDERGRADUATE TRAINING ON PRODUCTIVITY	
Salary differential between undergraduates and workers who have no university training (source: Dupuis, St-Maurice, Martin)	\$21,991
Number of McGill undergraduates living in Quebec (estimated at 36% of the total number of graduates, based on 2008 academic year) (source: McGill University)	76,755
Total differential for McGill undergraduates	\$1,687,919,205
McGill's contribution to the improvement of human capital (undergraduate) – 35.12% of the differential considering the costs to the university (source: Dupuis, St-Maurice, Martin)	\$592,797,225
IMPACT OF POSTGRADUATE TRAINING ON PRODUCTIVITY	
Salary differential between Master's and Ph.D. graduates and workers who have no university training (source: Dupuis, St-Maurice, Martin)	\$38,187
Number of McGill Master's and Ph.D. graduates living in Quebec (estimated at 15% of total number of graduates, based on 2008 academic year) (source: McGill University)	32,895
Differential for McGill Master's and Ph.D. graduates	\$1,256,161,365
Imported share (25%) (source: Dupuis, St-Maurice, Martin)	\$314,040,341
McGill's contribution to the improvement of human capital (graduate level) – 35.12% of the differential taking into account the costs to the university (source: Dupuis, St-Maurice, Martin)	\$330,872,904
Total contribution from McGill to the improvement of human capital (undergraduate and postgraduate)	\$923,670,128

Sources: Dupuis, St-Maurice, Martin; McGill University, SECOR analysis

APPENDIX 2 – CALCULATING THE ECONOMIC IMPACT GENERATED BY THE CREATION AND DISSEMINATION OF KNOWLEDGE

SECOR also used Fernand Martin's study on the economic impact of Canadian universities, which has been adapted and cited by many researchers³¹, including Walter Sudmant³², to determine the economic impact that McGill has made through the creation and dissemination of knowledge.

SECOR subtracted the share of imported knowledge from the increase in total factor productivity, determined the share attributable to the universities and then to McGill. However, the methodology used includes the creation and dissemination of knowledge generated by Master's and Ph.D. graduates. McGill's contribution through the training provided to these Master's and Ph.D. graduates, which had already been factored into our calculation of the improvement in human capital, was therefore subtracted in order to determine the final contribution.

TABLE 25: CALCULATING MCGILL'S CONTRIBUTION TO INCREASED PRODUCTIVITY THROUGH THE CREATION AND DISSEMINATION OF KNOWLEDGE
2008 dollars

IMPACT OF THE CREATION OF KNOWLEDGE ON PRODUCTIVITY	
Total factor productivity's contribution to increase in GDP in 2008 (source: Dupuis, St-Maurice, Martin; SECOR discounting)	\$40,233,848,587
R&D imports (source: Dupuis, St-Maurice, Martin)	\$6,116,114,021
Value of Quebec knowledge	\$34,117,734,566
Share of Quebec universities in R&D (35.5%) (source: Dupuis, St-Maurice, Martin)	\$12,125,442,865
McGill's share in R&D conducted by Quebec universities (29.3% of R&D spending in 2008) (source: CAUBO)	\$3,552,754,759
Minus contribution of McGill's Master's and Ph.D. graduates (already factored into the contribution to improved human capital)	\$330,872,904
Total contribution of McGill to increased productivity through creation of knowledge	\$3,221,881,856

Sources: Dupuis, St-Maurice, Martin; W, Sudmant; McGill University; SECOR analysis

³¹ See also Our Future Prosperity Hinges on our Universities, Desjardins – Economic Studies, François Dupuis, Yves St-Maurice and Fernand Martin, November 19, 2008.

³² The Economic Impact of the University of British Columbia, Walter Sudmant, Planning and Institutional Research, UBC, September 2009

APPENDIX 3 – GROSS ECONOMIC IMPACT OF SPENDING BY MCGILL UNIVERSITY AND ITS STUDENTS AND VISITORS ATTRACTED

TABLE 26: TOURIST SPENDING BY MCGILL VISITORS IN 2008

	SPENDING / PERS.	REST OF CANADA	U.S.	OTHERS	TOTAL
NUM. “BUSINESS” VISITORS					
Homecoming 2008		1,290	516	301	2,107
Academic visitors		1,666	1,667	1,667	5,000
IAMAS – IAPSO – IACS (scientific associations)		42	119	150	311
Intercontinental Conference on Anti-Aging Medicine		10	22	30	62
International Society for the History of Rhetoric		19	128	115	262
Food Security		70	6	29	105
Total		3,097	2,458	2,292	7,847
TOURIST SPENDING BY “BUSINESS” VISITORS (source: Tourisme Montréal)					
Car rental	\$22	\$69,547	\$55,207	\$51,478	\$176,232
Operating a vehicle (fuel, repairs, etc.)	\$19	\$59,267	\$47,046	\$43,869	\$150,182
Local transportation	\$24	\$73,387	\$58,255	\$54,320	\$185,962
Food and drinks in restaurants and bars	\$119	\$367,369	\$291,617	\$271,923	\$930,909
Food and drinks in shops	\$15	\$46,478	\$36,895	\$34,403	\$117,776
Accommodation	\$298	\$922,664	\$732,410	\$682,947	\$2,338,022
Entertainment and leisure	\$20	\$61,558	\$48,865	\$45,565	\$155,988
Purchase of clothing	\$68	\$210,934	\$167,439	\$156,131	\$534,504
Miscellaneous purchases	\$31	\$97,044	\$77,034	\$71,831	\$245,909
TOTAL	\$616	\$1,908,249	\$1,514,767	\$1,412,468	\$4,835,484
NO. “FRIENDS AND FAMILY” VISITORS					
Open house 2009		710	322	79	1,111
Parents tent 2008		328	143	42	513
Parents WE 2008		146	133	23	302
Graduations		7,823	2,099	3,880	13,801
Total		9,007	2,697	4,024	15,727
TOURIST SPENDING BY “FRIENDS AND FAMILY” VISITORS (source: Tourisme Montréal)					
Car rental	3	\$24,048	\$7,200	\$10,743	\$41,992
Operating a vehicle (fuel, repairs, etc.)	22	\$198,870	\$59,545	\$88,841	\$347,257
Local transportation	3	\$26,750	\$8,009	\$11,950	\$46,710
Food and drinks in restaurants and bars	39	\$346,852	\$103,854	\$154,949	\$605,654
Food and drinks in shops	11	\$97,544	\$29,206	\$43,576	\$170,326
Accommodation	14	\$126,365	\$37,836	\$56,451	\$220,653
Entertainment and leisure	12	\$105,650	\$31,633	\$47,197	\$184,480
Purchase of clothing	32	\$286,236	\$85,704	\$127,870	\$499,810
Miscellaneous purchases	5	\$40,891	\$12,243	\$18,267	\$71,401
TOTAL	139	\$1,253,206	\$375,233	\$559,844	\$2,188,283

	REST OF CANADA	U.S.	OTHERS	TOTAL
TOTAL VISITOR SPENDING				
Car rental	\$93,596	\$62,407	\$62,221	\$218,224
Operating a vehicle (fuel, repairs, etc.)	\$258,137	\$106,591	\$132,710	\$497,439
Local transportation	\$100,137	\$66,264	\$66,270	\$232,672
Food and drinks in restaurants and bars	\$714,221	\$395,471	\$426,872	\$1,536,563
Food and drinks in shops	\$144,022	\$66,101	\$77,979	\$288,102
Accommodation	\$1,049,030	\$770,246	\$739,398	\$2,558,674
Entertainment and leisure	\$167,208	\$80,499	\$92,762	\$340,468
Purchase of clothing	\$497,170	\$253,143	\$284,001	\$1,034,314
Miscellaneous purchases	\$137,935	\$89,277	\$90,098	\$317,311
TOTAL	\$3,161,455	\$1,890,000	\$1,972,312	\$7,023,767

Sources: McGill University, SECOR analysis

TABLE 27: LIVING EXPENSES PAID BY NON-QUEBEC STUDENTS AT MCGILL IN 2008

	SPENDING/ PERS.	REST OF CANADA	U.S.	OTHERS	TOTAL
NO. NON-QUEBEC STUDENTS (Fall 2008)		8431	2248	4144	14 823
LIVING EXPENSES FOR NON-QUEBEC STUDENTS (source: HEC Montréal)					
Accommodation	\$7,200	\$60,703,200	\$16,185,600	\$29,836,800	\$106,725,600
Food	\$4,800	\$40,468,800	\$10,790,400	\$19,891,200	\$71,150,400
Medical coverage	\$578	\$4,873,118	\$1,299,344	\$2,395,232	\$8,567,694
School supplies	\$1,000	\$8,431,000	\$2,248,000	\$4,144,000	\$14,823,000
Local transportation (student fares)	\$444	\$3,743,364	\$998,112	\$1,839,936	\$6,581,412
Telecommunications (telephone; Internet)	\$1,200	\$10,117,200	\$2,697,600	\$4,972,800	\$17,787,600
Leisure	\$2,000	\$16,862,000	\$4,496,000	\$8,288,000	\$29,646,000
TOTAL	\$17,222	\$145,198,682	\$38,715,056	\$71,367,968	\$255,281,706

Sources: McGill University, SECOR analysis

TABLE 28: IMPACT OF MCGILL'S OPERATING AND INVESTMENT SPENDING

For all of Quebec, in thousands of 2009 dollars

CATEGORY	DIRECT EFFECTS	INDIRECT EFFECTS	DIRECT AND INDIRECT EFFECTS
Added value	593,376	166,563	759,939
Salaries (excluding benefits)	497,278	92,308	589,588
Net income of unincorporated businesses	3,462	7,895	11,358
Other gross income before taxes	92,636	66,358	158,995
Workforce (person-years)	7,700	2,507	10,207
Salaried employees	7,654	2,182	9,836
Other workers	46	325	371

Sources: ISQ, SECOR analysis

TABLE 29: IMPACT OF MCGILL'S OPERATING AND INVESTMENT SPENDING ON GOVERNMENT REVENUES

In thousands of 2009 dollars

CATEGORY	DIRECT EFFECTS	INDIRECT EFFECTS	DIRECT AND INDIRECT EFFECTS
Quebec government revenues	54,409	14,460	68,869
Taxes on salaries and wages paid by employees	54,048	7,328	61,376
Sales and specific taxes	361	7,401	7,762
Incidental taxes (QPP, CSST, FSS)	62,704	14,017	76,721
Federal government revenues	38,943	8,992	47,935
Taxes on salaries and wages	38,745	4,447	43,192
Sales and excise taxes	198	4,545	4,743
Incidental taxation (employment insurance)	10,723	2,633	13,356

Sources: ISQ, SECOR analysis

TABLE 30: IMPACT OF SPENDING BY VISITORS AND STUDENTS ATTRACTED TO MCGILL UNIVERSITY
For all of Quebec, in thousands of 2009 dollars

CATEGORY	DIRECT EFFECTS	INDIRECT EFFECTS	DIRECT AND INDIRECT EFFECTS
Added value	163,355	88,051	251,406
Salaries (excluding benefits)	62,079	44,837	106,917
Net income of unincorporated businesses	6,609	5,460	12,069
Other gross income before taxes	94,666	37,754	132,421
Workforce (person-years)	1,910	1,331	3,240
Salaried employees	1,839	1,176	3,014
Other workers	71	155	226

Sources: ISQ, SECOR analysis

**TABLE 31: IMPACT OF SPENDING BY VISITORS AND STUDENTS ATTRACTED TO MCGILL ON
GOVERNMENT REVENUES**
In thousands of 2009 dollars

CATEGORY	DIRECT EFFECTS	INDIRECT EFFECTS	DIRECT AND INDIRECT EFFECTS
Quebec government revenues	12,992	6,671	19,662
Taxes on salaries and wages paid by employees	3,829	3,216	7,044
Sales and specific taxes	9,163	3,456	12,618
Incidental taxes (QPP, CSST, FSS)	8,976	6,995	15,971
Federal government revenues	6,982	3,857	10,839
Taxes on salaries and wages	2,278	1,894	4,172
Sales and excise taxes	4,704	1,963	6,667
Incidental taxation (employment insurance)	1,769	1,327	3,096

Sources: ISQ, SECOR analysis

APPENDIX 4 – NET IMPACT OF THE DIFFERENTIAL TUITION FEES PAID BY NON-QUEBEC STUDENTS

According to the 2008-2009 budget rules and the number of FTE students for 2006-2007, non-Quebec students paid a total of \$63.5M in differential tuition fees to the Quebec government. The government of Quebec allocated \$100.2M to McGill University for the education of these students. The net impact of the differential tuition fees paid by non-Quebec students at McGill is therefore -\$36.7M for the government of Quebec. This represents \$3,445.3 per student per year³³.

Through their living expenses, non-Quebec students attracted to McGill generate economic benefits estimated at \$12,887 in added value and \$1,008 in annual revenues for the Quebec government per student. In addition, approximately 20%³⁴ of non-Quebec students drawn to McGill will stay in Quebec after completing their studies. They will hold top-quality, well-paid jobs (average salary estimated at \$75,000) and will pay income tax to the government of Quebec.

TABLE 32: DIFFERENTIAL PAID BY NON-QUEBEC STUDENTS AND GOVERNMENT SUBSIDIES RECEIVED BY MCGILL UNIVERSITY IN RESPECT OF THESE STUDENTS

CYCLE	CITIZENSHIP OF STUDENTS	NUMBER OF STUDENTS (FTE)	DIFFERENTIAL	GOVERNMENT SUBSIDIES	NET IMPACT OF DIFFERENTIAL
Bachelor's	International	2,834.1	\$29,472,211	\$21,031,622	\$8,440,589
	Other Canadian provinces	6,033.4	\$21,178,967	\$46,108,987	-\$24,930,021
	Sub-total	8,867.5	\$50,651,177	\$67,140,609	-\$16,489,432
Master's	International	843.40	\$8,223,136	\$12,510,959	-\$4,287,822
	Other Canadian provinces	648.8	\$2,277,601	\$11,718,182	-\$9,440,581
	Sub-total	1,492.2	\$10,500,737	\$24,229,140	-\$13,728,403
Ph.D.	International	277.4	\$2,380,210	\$8,809,972	-\$6,429,761
	Sub-total	277.4	\$2,380,210	\$8,809,972	-\$6,429,761
Total		10 637,1	\$63,532,125	\$100,179,721	-\$36,647,596

Source: McGill University, based on 2008-2009 budget rules and number of FTE students for 2006-2007

³³ The figures listed here differ from those indicated on page 21. A different set of budget rules and number of students was used for this calculation.

³⁴ Source: CRÉ Montréal, 2006

