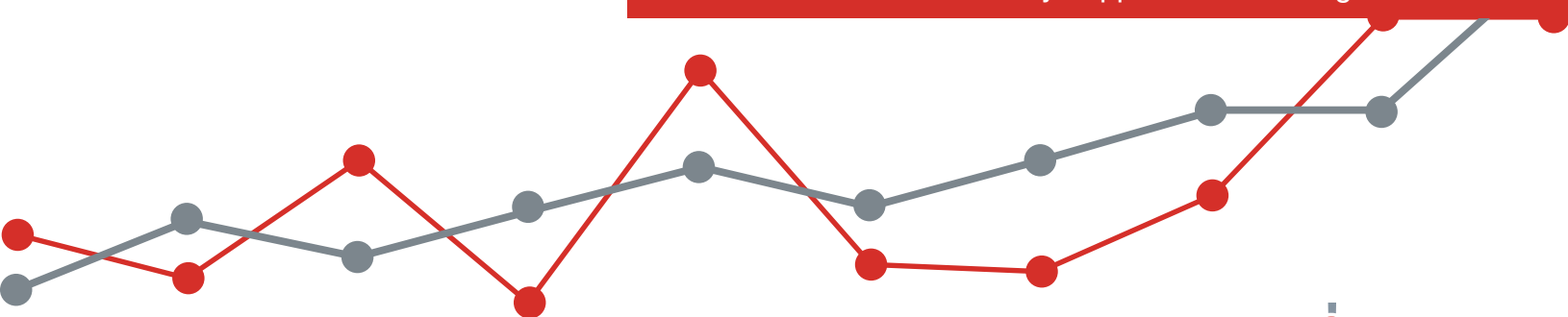




# THE ECONOMIC IMPACT OF CANADA'S FACULTIES OF MEDICINE AND HEALTH SCIENCE PARTNERS

Conducted for the AFMC by Tripp Umbach | August 2014





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## CANADA'S FACULTIES OF MEDICINE BY THE NUMBERS

- **\$66.1 billion** in total economic impact generated by Canada's Faculties of Medicine and their affiliated teaching hospitals. This represents **3.5% of GDP** in Canada.
- **More than 295,000 Faculty of Medicine and affiliated teaching hospital** supported jobs throughout Canada.
- **One in 60 jobs** in the country is attributable to academic medicine. This represents 1.7% of all employment in the country.
- **More than \$13.9 billion** in government revenue generated as a result of academic medicine.



## EXECUTIVE SUMMARY

In June 2013, the Association of Faculties of Medicine of Canada (AFMC) retained Tripp Umbach to measure the economic impact of the 17 Canadian faculties of medicine on the individual provinces in which they are located and operate, as well as the nation as a whole. This report presents results of the combined economic impact that Canada's faculties of medicine and their affiliated teaching hospitals have on the country.<sup>1</sup>

For the purposes of this report, "economic impact" includes both the direct and indirect business volume generated by an institution. Direct impact includes items such as institutional spending, employee spending, and spending by visitors. The indirect impact, also known as the multiplier effect, results from the re-spending of dollars generated directly by the institution.

During Fiscal Year 2012/2013 (FY 12/13), the combined economic impact of Canada's faculties of medicine and their affiliated teaching hospitals totaled **\$66.1 billion**.<sup>2</sup> Faculties of medicine and their affiliated teaching hospitals accounted for more than **295,000 full-time jobs**; this statement means that **one in every 60 wage earners** in the Canadian labour force works either directly or indirectly for a faculty of medicine or one of its affiliates.<sup>3</sup> In addition to improving the health status and quality of life of Canadians, Faculties of medicine and their affiliates make a tremendous contribution to Canada's national economy - generating significant tax revenues for all levels of government, supporting hundreds of thousands of jobs in a large number of industries, and providing more than three per cent of GDP.

In addition to the significant impact of academic medicine, Canada's faculties of medicine and their affiliated teaching hospitals generated more than **\$13.9 billion** in total tax revenue through taxes (personal income, corporate income, property, payroll, consumption [sales, excise], etc.) produced by the faculty and businesses that receive revenue from the faculties of medicine.

Canada's faculties of medicine have substantial economic and social impacts on their regions and within the cities where they operate. Communities in all regions of the country typically rely on these organizations for job creation, high-quality medical care, advanced research, new business development, and education of medical professionals.

<sup>1</sup> Each participating faculty was asked to identify their primary teaching hospital sites where their faculty teach, perform clinical work, and do research. A teaching hospital is a hospital that provides clinical education and training to future and current doctors, nurses, and other health professionals, in addition to delivering medical care to patients. They are generally affiliated with medical schools or universities (hence the alternative term university hospital), and may be owned by a university or may form part of a wider regional or national health system.

<sup>2</sup> This study measures the impact of all 17 Canadian Faculties of Medicine as well as their affiliated teaching hospitals. Two faculties indicated that they have operations in the Maritime provinces, specifically New Brunswick and Nova Scotia. These impacts have been allocated to the appropriate province and faculty within the models.

<sup>3</sup> Statistics Canada reports Canadian employment of 17,767,900 in December 2013. This is a point in time estimate of employment within Canada.

<sup>4</sup> Dalhousie University is located in Nova Scotia; however it has affiliates in Nova Scotia, Prince Edward Island, and New Brunswick.

<sup>5</sup> Université de Sherbrooke is located in Quebec; however it has primary hospital affiliates in Quebec and New Brunswick.

## CANADA'S FACULTIES OF MEDICINE

### ALBERTA

University of Alberta  
University of Calgary

### BRITISH COLUMBIA

University of British Columbia

### MANITOBA

University of Manitoba

### NEWFOUNDLAND AND LABRADOR

Memorial University  
of Newfoundland

### NOVA SCOTIA / NEW BRUNSWICK / PRINCE EDWARD ISLAND

Dalhousie University<sup>4</sup>

### ONTARIO

McMaster University  
Northern Ontario School of Medicine  
Queen's University  
University of Ottawa  
University of Toronto  
Western University

### QUEBEC

McGill University  
Université de Montréal  
Université de Sherbrooke<sup>5</sup>  
Université Laval

### SASKATCHEWAN

University of Saskatchewan

# BACKGROUND

The mission of academic medicine is to provide high quality medical education, state-of-the-art medical care, and innovative research to the communities they serve. An academic medical centre is more than a regular hospital. An academic medical centre:

- Teaches future generations of health care professionals while focusing on training the right mix of providers for tomorrow’s needs.
- Provides patients and the community with health care for everyday needs and the most specialized services for complex diseases, illnesses, and injuries.
- Conducts research and develops technology that improves lives.

The economic impact of Canada’s Faculties of Medicine and health science partners presented within this document includes the quantifiable aspects of academic medicine (e.g., operational and capital expenditures, pay and benefits for faculty and staff, and visitor spending). Investment in academic medicine yields a strong return on investment for provincial governments throughout Canada. The partnerships between Canada’s Faculties of medicine and teaching hospitals generate a significant impact as a result of their collaborations. However, the study does not gauge broader economic impacts that stem from the presence of these facilities. For example, while research is a critical part of the mission of academic medicine, research commercialization (patents, licenses, business spin-offs, etc.) is not quantified within this study.



In addition, the cultural and community amenities that grow in a region as a result of the academic healthcare industry are not captured. The “attraction power” of an educated workforce and high-quality medical care is vital to businesses and workers making location decisions, but this number is also not quantified in the analysis. For many of these provinces, the health care industry segment is a major driver of provincial and national growth. Moreover, the types of faculty who are employed in an educational, clinical and/or research capacity within academic medicine have a knowledge base and expertise not found elsewhere in Canada. While not quantified in the economic impact numbers of this study, these other measures of economic impact are an integral part of what constitutes academic medicine.

## AF\$MC COMPONENTS OF ECONOMIC IMPACT

### WHAT IS INCLUDED IN THE ECONOMIC IMPACT?

Operational Spending  
Capital Spending  
Research Spending  
Number of Employees  
Salaries & Benefits  
Visitor Spending  
Student Spending

### WHAT IS NOT INCLUDED IN THE ECONOMIC IMPACT?

Research Commercialization  
Attraction Power  
Knowledge & Expertise  
Arts & Culture

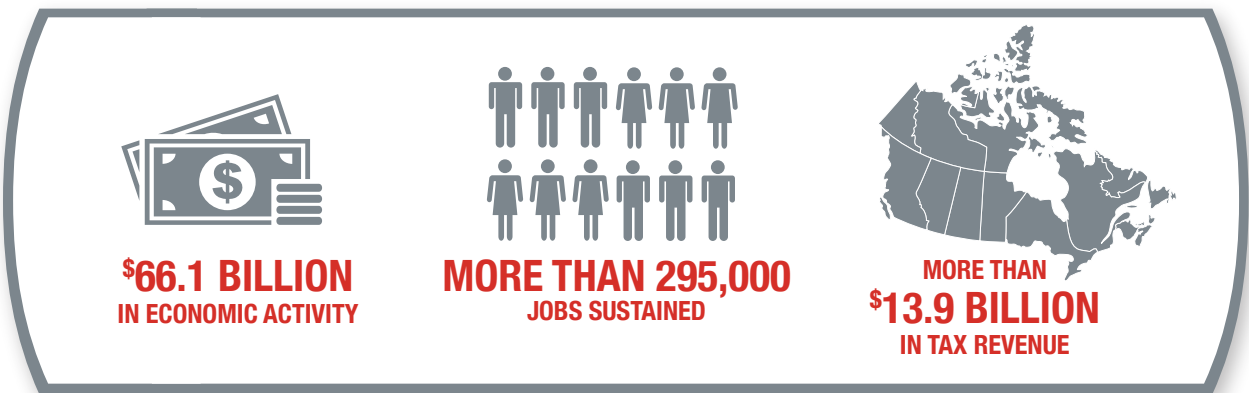
# INTRODUCTION

## GOALS OF THE ECONOMIC IMPACT STUDY

In 2013, the AFMC identified a need to measure the status of their member faculties' current economic impact on provinces' economies, employment, and government revenue. Specifically, Tripp Umbach was commissioned to perform research that:

- Measures the direct economic impact on individual provinces' and the nation's economy as a result of the education, research, and clinical services performed by Canada's faculties of medicine and their affiliated teaching hospitals.
- Measures the direct and indirect employment generated in Canada as a result of the faculties of medicine and their affiliated teaching hospitals.
- Measures government revenues that are generated by the presence and operations of Canadian faculties of medicine and affiliated teaching hospitals. Faculties of medicine and hospitals generate government revenue through income taxes paid by staff, employed physicians, and medical residents; sales tax revenues paid by businesses providing goods and services to medical schools and hospitals; corporate net income taxes paid by businesses providing goods and services to medical schools and hospitals; and other selective taxes.

## AFMC TOTAL IMPACT OF CANADA'S FACULTIES OF MEDICINE AND AFFILIATED TEACHING HOSPITALS, FY 12/13



## METHODOLOGY EMPLOYED IN THE ECONOMIC IMPACT STUDY

This report analyzes Canada's faculties of medicine and their primary affiliated teaching hospitals' impact on the national economy. There are a total of 17 faculties of medicine in Canada; all of the faculties are members of the AFMC. The analysis of the economic impact of the Canadian faculties of medicine along with their primary affiliated teaching hospitals can be defined as the economic impact of the academic medicine sector of the Canadian economy. Canada's faculties of medicine and their affiliates have operations in the following provinces or regions: Alberta, British Columbia, Manitoba, Newfoundland & Labrador, Ontario, Quebec, Saskatchewan, and The Maritimes.<sup>5,6</sup>

Based upon data provided by the faculties about their operations throughout the provinces and Canada, customized linear cash flow models were built to reflect not only operations of faculties in their home province, but their operations and primary clinical affiliations in other provinces. Tripp Umbach modified its models significantly to reflect the unique nature of Canadian academic medicine. The analysis presented within this document is based upon the fact that Canadian teaching hospitals are independently owned and operated, and that the relationships between partner hospitals and the faculties differ from those in the U.S.

Primary data utilized in this study was collected from the AFMC as well as individual faculties of medicine between October 2013 and March 2014. Tripp Umbach, in collaboration with AFMC staff, developed a customized data collection form to gather data beyond the regular level of data collection conducted by the AFMC (Annual AFMC Reports: Canadian Medical Education Statistics - CMES and Canadian Faculty of Medicine Financial Survey - CFMFS). Special attention was paid to

request data needed to fulfill the requirements of this study. Each faculty was also asked to provide supplementary data to Tripp Umbach. Specifically, Tripp Umbach requested data on: the number of faculty (physicians, dentists, clinical faculty), staff (administrative, clinical, research), and fellows active at the faculty of medicine or the affiliated teaching hospitals; pay and benefits for the aforementioned faculty, staff, and fellows; number of medical, dental, and professional degree students; rates of students living on- and off-campus; and primary hospital affiliates.

Tripp Umbach and the AFMC staff worked collaboratively and with the individual faculties to clarify data questions, understand the data provided, and ensure that all data was utilized appropriately in the models. In a study of this magnitude and complexity, this extra step of data verification and validation is critical to ensure accuracy and data veracity.

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## METHODOLOGY OVERVIEW

### STUDY YEAR:

FY 2012/2013 (FY 12/13)

### GEOGRAPHY:

Impacts included in this study represent the impact of all 17 Canadian faculties of medicine and their primary affiliated teaching hospitals on Canada. For those faculties indicating that they have primary affiliated teaching hospitals or faculties in other provinces, this report shows the combined impact of all operations, within all provinces, at the national level.

### KEY STUDY OUTPUT:

Included in the study are economic impact, employment and tax revenue (direct and indirect measures)

<sup>5</sup>The Maritimes are defined as the combined New Brunswick, Nova Scotia, and Prince Edward Island provinces.

<sup>6</sup>No data was collected from faculties detailing any economic activity in the Canadian Territories of Yukon, Northwest, and Nunavut



## DIRECT IMPACT

Canada's faculties of medicine and their affiliated teaching hospitals directly employ individuals in their home provinces or where they have operations; and therefore, generate personal income for residents. Businesses operating within each province in the wholesale, retail, service, and manufacturing sectors benefit from the expenditures of faculties of medicine and their affiliates on salaries, equipment, supplies, and professional services. In addition, businesses in each province are recipients of spending by hospital patients, patients' visitors, medical students, and their visitors. The aforementioned are the three main avenues of direct spending in the academic medical sector; pay and benefits to employees, spending on goods and services by the faculties of medicine and their affiliated teaching hospitals, and spending by visitors to students, faculty, staff, and patients of hospitals.

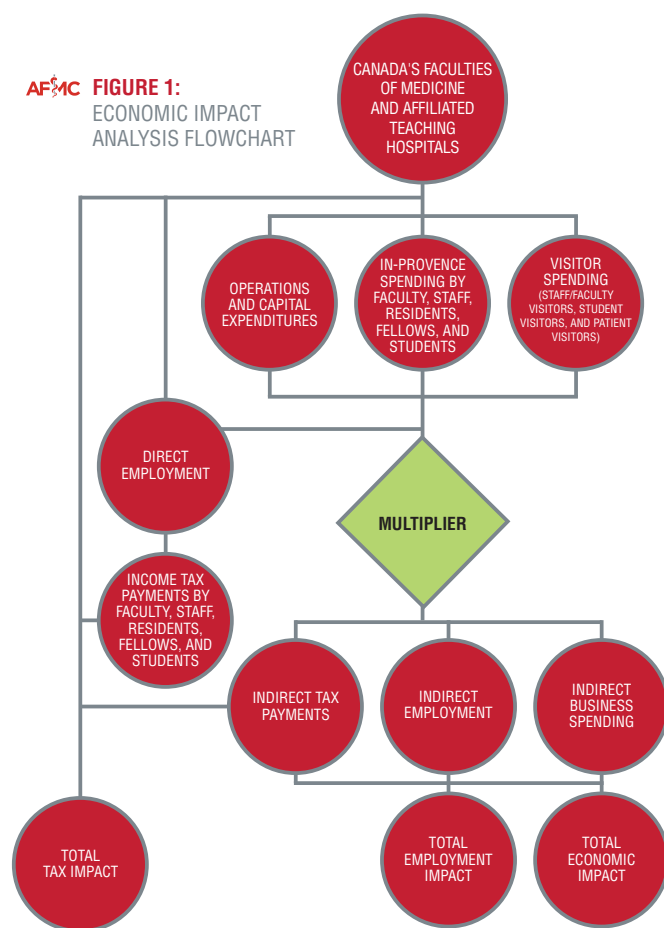
## INDIRECT IMPACT

All of these "direct" expenditures are re-circulated in the economy, as recipients of the first-round of income "re-spend" a portion of this income with other businesses and individuals within each province. This re-spending is often termed the "multiplier" or "indirect" effect. Indirect impacts can look like the employment of a delivery truck driver for a company that supplies the goods (i.e., medical supplies, paper, etc.) to the faculty of medicine and/or their affiliated teaching hospitals. Indirect impact can also come in the form of the dollars spent by the employees of Canada's faculties of medicine and/or their affiliated teaching hospitals at restaurants, places of entertainment, grocery stores, home improvement stores, etc.

Tripp Umbach's research has determined a faculty/affiliated teaching hospital business volume multiplier effect of 2.5 based on a review of the Canadian economy, specifically the higher education and healthcare sectors – two sectors that have outpaced the national economy over the past ten years. Therefore, for every \$1.00 directly spent by a faculty or affiliated teaching hospital, an additional \$1.50 is indirectly generated for a total impact of \$2.50. The methodology used for this study measures the effect of both direct and indirect business volume, employment, and government revenue impacts for provinces containing an faculty of medicine or an affiliated teaching hospital.

The Tripp Umbach methodology employed in this study was originally derived from a set of research tools and techniques developed for the American Council on Education (ACE).<sup>7,8</sup> The ACE-based methodology employs linear cash flow modeling to track the flow of faculty-originated funds through a delineated spatial area. Tripp Umbach modified the ACE model to accommodate the complexities of Canada's faculties of medicine and their affiliated teaching hospitals, and the Canadian economy (see Figure 1).

**AFMC FIGURE 1:**  
ECONOMIC IMPACT  
ANALYSIS FLOWCHART



<sup>7</sup>Caffrey, J. & Isaacs H. H. (1971). Estimating the Impact of a College or University on the Local Economy. American Council on Education. Washington, D.C.: ERIC ED 252100.

<sup>8</sup>Siegfried, J.J., Sanderson, A.R., & McHenry, P. (2007). The economic impact of colleges and universities. Economics of Education Review, 26(5), 546-558.



To complete the economic impact model outlined in Figure 1, Tripp Umbach researchers worked closely with representatives from the AFMC as well as the individual faculties of medicine to collect the required data. The following data were used to perform this research:

### 1. AFMC-PROVIDED DATA

The AFMC maintains a number of databases of information necessary for the performance of the impact research. These databases were utilized to supply the following information:

- Revenues
- Operating Budget
- Operational Expenditures
- Research Funding from External Sources
- Number of Enrolled Students
- Number of Students Graduated
- Number of Students Doing Clerkships
- Pay and Benefits Residents
- Number of Residents

### 2. FACULTY-LEVEL DATA

Data not regularly collected via the AFMC for annual reporting purposes was requested directly from the individual faculties. This data included:

- Pay and Benefits: Physicians, Dentists, Faculty, Staff, Fellows
- FTE: Physicians, Dentists, Faculty, Staff, Fellows
- Number of Medical & Dental Students
- Number of Ph.D. and Other Professional Degree Students
- Primary Affiliated Teaching Hospitals
- Percentage of Faculty Practicing at Affiliated Teaching Hospitals

### 3. SECONDARY DATA

Study data necessary for the impact analysis that was not provided by either the AFMC or the individual faculties was gathered via secondary data research or was a component of Tripp Umbach's historical database of medical school

and teaching hospital information (constructed from medical schools and teaching hospitals that have completed individual economic impact studies with Tripp Umbach).<sup>9,10</sup>

Secondary data was gathered from sources such as: Statistics Canada, HealthCareCAN, Canadian Institute of Health Information, Hospital and Provincial Health Authorities' Audited Financial Statements, Canadian Post M.D. Education Registry (CAPER), and the Canadian Revenue Agency. Canadian-specific data elements used in the impact modeling that were gathered via secondary data research included the following:

- Population
- Gross Domestic Product (GDP) (country and province)
- Total Employment (country and province)
- Household Median Income
- Hospital Affiliates' Audited Financials
- Hospital Affiliates' Staff and Faculty Numbers
- Hospital Affiliates' Salary and Benefits
- Average Housing Prices
- Average Rental Prices

Examples of data provided by Tripp Umbach include the following:

- Average Expenditures on Goods and Services by Employees, Students, and Visitors
- Proportion of Employees and Students Renting vs. Purchasing Homes
- Average Number of Visitors to Faculty, Staff, Students, or Patients
- Average Number of Days a Visitor Stays with Faculty, Staff, Students, or Patients.

<sup>9</sup>Tripp Umbach has completed more than 150 economic impact studies for clients in North America and across the globe in the last 25 years.

<sup>10</sup>It is noteworthy that while U.S. and Canadian medical schools function similarly with respect to the delivery of education of students (e.g., operating costs, salaries, number of students, curriculum, and faculty/student ratios), many differences occur when factoring in the clinical activities of Canadian teaching hospitals. The inclusion of the Canadian clinical affiliates, as well as the presence of universal healthcare in Canada, necessitated that Tripp Umbach modify how patient spending was included within the linear cash flow models due to the fact that the Canadian government pays for a significantly higher percentage of care for its citizenry. In addition, the U.S. spends significantly more money on health care than Canada, on both a per-capita basis and as a percentage of GDP.

## ECONOMIC IMPACT FINDINGS

### TOTAL IMPACT OF CANADA'S FACULTIES OF MEDICINE AND AFFILIATED TEACHING HOSPITALS, FY 12/13

#### BUSINESS VOLUME IMPACT

*The direct and indirect expansion of the nation's economy attributable to Canada's Faculties of Medicine and their affiliated teaching hospitals*

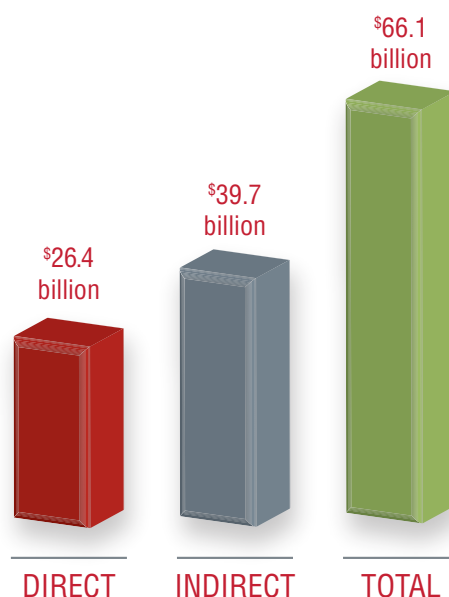
There is no doubt that healthcare is a major component of the Canadian economy. Spending for healthcare is expected to total more than \$211.2 billion nationwide in 2013, which represents 11.2 per cent of GDP.<sup>11</sup> Health care spending per person in Canada has increased by one-third since 2000, after adjusting for inflation. The nation has approximately 580,000 physicians, nurses, technicians, and other staff at more than 1,200 hospitals. These organizations include both general hospitals as well as specialty type hospitals and the majority are private, not-for-profit entities. Academic teaching hospitals provide more than clinical care. They seek to advance the practice of medicine through education, research and cutting-edge care.

Direct economic impact stems from the spending of Canada's faculties of medicine and their affiliated teaching hospitals. These impacts fall within six principal groups: institutional expenditures for capital improvements, goods, and services; spending of staff employees; spending of physicians and clinical faculty; spending of medical residents; spending of medical and other health sciences students; and spending of visitors.

In addition, these direct, first-round expenditures, received as income by businesses and individuals in the province, re-circulate through the economy in successive rounds of re-spending. The end result is a multiplied economic impact that is a linear result of Canada's faculties of medicine and their affiliated teaching hospitals' presence and spending patterns.

In FY 12/13, Canada's faculties of medicine and their affiliated teaching hospitals had a combined total economic impact on Canada of **\$66.1 billion**. This economic impact was comprised of \$26.4 billion in direct business volume impact as well as \$39.7 billion in indirect economic impacts accruing to the economy through the multiplier.

**AF\$MC** FIGURE 2: ECONOMIC IMPACT OF CANADA'S FACULTIES OF MEDICINE AND AFFILIATED TEACHING HOSPITALS, FY 12/13



<sup>11</sup> Canadian Institute for Health Information. National Health Expenditure Trends, 1975 to 2013. Ottawa, ON: CIHI; 2013.

# ECONOMIC IMPACT FINDINGS

## TOTAL IMPACT OF CANADA'S FACULTIES OF MEDICINE AND AFFILIATED TEACHING HOSPITALS, FY 12/13

### EMPLOYMENT IMPACT

#### *The direct and indirect expansion of employment attributable to Canada's Faculties of Medicine and their affiliated teaching hospitals*

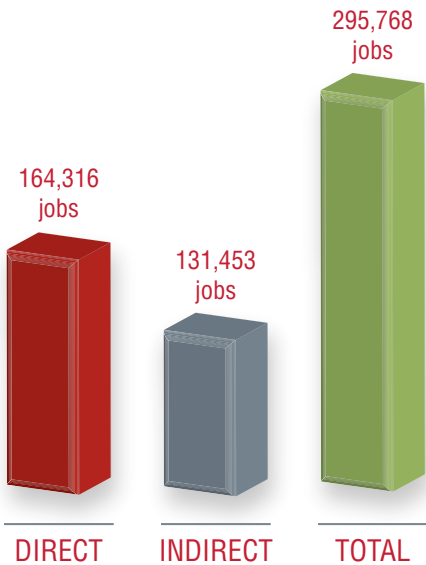
Perhaps the benefit that hits closest to home is the sheer number of Canadian citizens who depend on the faculties of medicine, either directly or indirectly, for their jobs and livelihoods. A total of **295,768 jobs** in Canada in FY 12/13 were directly or indirectly attributable to the faculties of medicine and their affiliated teaching hospitals.

Even on a direct employment basis (i.e., only counting those directly paid by Canada's faculties of medicine and their affiliated teaching hospitals such as regular staff, clinical faculty, or residents receiving training), Faculties of medicine and their affiliates are responsible for a substantial component of national employment. During FY 12/13, Canada's faculties of medicine and their affiliated teaching hospitals employed a total of 164,316 full-time equivalent persons; this includes employed faculty, staff, and students at the faculty of medicine as well as clinical faculty and residents at the affiliated teaching hospitals.

While direct employment is significant, the actual extent of employment impact on the province stemming from faculties of medicine and affiliated teaching hospitals is considerably larger. The business volume generated by Canada's faculties of medicine and their affiliated teaching hospitals creates jobs in a broad range of sectors throughout the nation's economy – retail sector jobs, teachers, public safety, accounting, financial and other professional service workers (e.g., healthcare executives, bankers, and lawyers).

These jobs are proportionate to the need to service the faculties of medicine and affiliated teaching hospitals themselves and their related populations (staff, physicians, students, etc.). In addition, the tax revenues generated at the provincial and local levels by Canada's faculties of medicine and the affiliated teaching hospitals and their business volume also create government employment opportunities.

**AF&MC** **FIGURE 3:** EMPLOYMENT IMPACT OF CANADA'S FACULTIES OF MEDICINE AND AFFILIATED TEACHING HOSPITALS, FY 12/13



## ECONOMIC IMPACT FINDINGS

TOTAL IMPACT OF CANADA'S FACULTIES OF MEDICINE AND AFFILIATED TEACHING HOSPITALS, FY 12/13

### GOVERNMENT REVENUE IMPACT

#### *Government Revenues attributable to Canada's Faculties of Medicine and their affiliated teaching hospitals*

Canada's faculties of medicine generate substantial revenues as a result of both the direct and indirect influence of their teaching activities, research, and clinical activities. The faculties of medicine and their affiliated teaching hospitals provide significant revenue in income taxes. In addition to income taxes generated as a result of the faculties of medicine and their affiliated teaching hospitals, there is substantial spending within each province that generates large-scale revenues in the form of consumption taxes (sales and excise), corporate income taxes, payroll taxes, and property taxes.

The Tripp Umbach model calculated the revenue benefits accruing to the country of Canada at the federal and provincial level based upon the direct and indirect expenditures of the faculties of medicine and their affiliates – the taxes represent the direct and indirect taxes paid and collected. Taxes included at the Federal level are: income tax, corporate income tax, GST, and other taxes such as gas, excise, etc.

Provincial taxes included: income tax, corporate tax, property tax, PST/HST, and other miscellaneous taxes.

Canada's faculties of medicine and their affiliated teaching hospitals generated a total of **\$13,889,705,984** in government revenue in FY 12/13.

**AF\$MC** FIGURE 4: GOVERNMENT REVENUE IMPACT OF CANADA'S FACULTIES OF MEDICINE AND AFFILIATED TEACHING HOSPITALS, FY 12/13



## ECONOMIC IMPACT FINDINGS

TOTAL IMPACT OF CANADA'S FACULTIES OF MEDICINE AND AFFILIATED TEACHING HOSPITALS, FY 12/13

### RESEARCH AND MEDICAL EDUCATION

#### *Research Revenues attributable to Canada's Faculties of Medicine*

##### RESEARCH AND MEDICAL EDUCATION BENEFITS ATTRIBUTABLE TO CANADA'S FACULTIES OF MEDICINE

Research undertaken at academic medical centers throughout Canada is widely considered to be responsible for the preponderance of major advances in medical technology. This research is fundamental to the future health status of Canadian citizens. Research dollars spent by Canada's faculties of medicine grow the economy and seek to improve health care outcomes for their citizens and the world. Research funding from organizations such as: the Canadian Institute of Health Research (CIHR), the Natural Sciences and Engineering Research Council of Canada (NSERC), the Canada Foundation for Innovation, private corporations/businesses and other municipal, provincial and foreign government sources all contribute to the ability of the faculties to fulfill and grow their research mission. In FY 10/11, the 17 Faculties of Medicine received a total of \$2.76 billion in research revenues.<sup>12</sup>

The 17 Canadian Faculties of Medicine work independently on their research efforts as well as collaboratively with other entities to maximize their research capabilities. This is accomplished through the shared use of lab space and specialized equipment and through combining the human capital to generate superior research outcomes. These collaborations fuel Canada's biotechnology, medical technology, and biomedical companies creating benefits for the national economy, the job market, and the healthcare industry segment.

##### BENEFITS ASSOCIATED WITH MEDICAL EDUCATION

The Canadian model of medical education, which combines didactic education with research and clinical practice, has created a national resource of health care practitioners with skills and training. Students have the opportunity to learn from some of the nation's most renowned surgeons and medical researchers. In FY 12/13, Canada's faculties of medicine and their affiliated teaching hospitals were training 12,973 residents throughout Canada. Educating the future health care workforce to ensure the health and well-being of Canadians is critical as the population ages and has increased health demands.

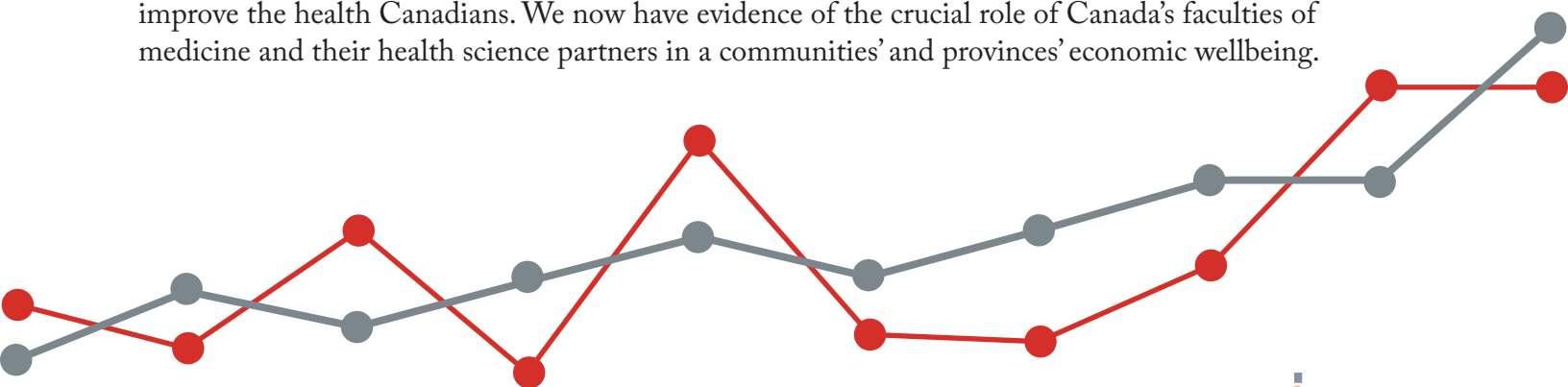
Canada's medical education resources have a multitude of other impacts throughout the country. The quality of medical education resources available enhances workforce productivity and quality-of-life for all Canadian citizens. In an area with an extremely diverse or rural population, the diversity in the students as well as the curriculum to which the students are exposed is a benefit to the local communities in which these students learn and eventually practice. It is well documented that education provides a present value of future earnings impact for education recipients. Although not quantified in this report, the increased earning power of trained healthcare professionals provides a return in terms of increased tax revenues to the provincial and federal governments. It also translates into increased income for those whose livelihood depends all or in part on the disposable income spending of healthcare professionals.

<sup>12</sup> Canadian Medical Education Statistics (CMES) 2012. The Association of Faculties of Medicine of Canada (AFMC). Vol. 34.



## CONCLUSION

This is the first-ever study of the combined economic and employment impact of Canada's faculties of medicine and their health science partners. As part of their tripartite mission, medical schools provide health care to patients every day; they educate and train the physicians who will serve tomorrow's population; finally, they drive health research and innovation to improve the health Canadians. We now have evidence of the crucial role of Canada's faculties of medicine and their health science partners in a communities' and provinces' economic wellbeing.





## APPENDIX A: DEFINITION OF TERMS

Study Year	Fiscal Year 2013-2013 (12/13)
Study Area	Canada's faculties of medicine and their affiliated teaching hospitals have operations in the following provinces or regions: Alberta, British Columbia, Manitoba, Newfoundland & Labrador, Ontario, Quebec, Saskatchewan, and The Maritimes (defined as the combined: New Brunswick, Nova Scotia and Prince Edward Island). No data was collected from the faculties detailing any economic activity in the Canadian Territories of Yukon, Northwest, and Nunavut. Faculties that noted in their data having operations or affiliates in multiple provinces included Université de Sherbrooke and Dalhousie University.
Direct Employment	Total employees based on full-time equivalents (FTEs).
Indirect Employment	The additional jobs created as a result of the institution's economic impact. Local companies that provide goods and services to an institution increase their number of employees as purchasing increases, creating an employment multiplier.
Government Revenue	The revenue benefits accruing to the country of Canada at the federal and provincial level based upon the direct and indirect expenditures of the 17 faculties of medicine and their affiliates. The taxes represent the direct and indirect taxes paid and collected. Taxes included at the Federal level are: income tax, corporate income tax, GST, and other taxes such as gas, excise, etc. Provincial taxes included: income tax, corporate tax, property tax, PST/HST, and other miscellaneous taxes.
Multiplier Effect	The additional economic impact created as a result of the institution's direct economic impact. Local companies that provide goods and services to an institution increase their purchasing, creating a multiplier.
Total Economic Impact	The total economic impact of an institution includes both the direct economic impact and the indirect economic impact, generated in the economy as a result of the direct impact. Direct impact includes items such as institutional spending, employee spending, and spending by visitors to the institution. Indirect economic impact, also known as the multiplier effect, includes the re-spending of dollars within the local economy.

## APPENDIX A: DEFINITION OF TERMS (CONT.)

Pay and Benefits Staff/Fellows	The faculties of medicine were asked to provide their organization's expenditures for pay and benefits to Staff and fellows; both clinical and administrative.
Pay and Benefits Physicians/Faculty	The faculties of medicine were asked to provide their organization's expenditures for pay and benefits to Physicians and Clinical Faculty. The faculties were asked to clarify if data reported was: academic/teaching only, clinical only, or academic/teaching and clinical combined.
Staff FTEs	The faculties of medicine were asked to provide information on the full-time equivalents (FTEs) of Staff that work at their organization. The faculties were asked to include only those who receive a cheque from their organization.
Physicians/Faculty FTEs	The faculties of medicine were asked to provide information on the full-time equivalents (FTEs) of Physicians/Faculty that work at their organization. The faculties were asked to include only those who receive a cheque from their organization.
Research Staff/Fellows FTEs	The faculties of medicine were asked to provide information on the full-time equivalents (FTEs) of Research Staff and Fellows that work at their organization. The faculties were asked to include only those who receive a cheque from their organization.

## APPENDIX B: HEALTH SCIENCE PARTNERS

<b>ALBERTA</b>	Alberta Health Services - Calgary Zone Alberta Health Services - Edmonton Zone
<b>BRITISH COLUMBIA</b>	Fraser Health Interior Health Island Health Northern Health Provincial Health Services Authority Vancouver Coastal Health
<b>MANITOBA</b>	Concordia Hospital Deer Lodge Centre Health Sciences Centre Pan Am Clinic Seven Oaks General Hospital St. Boniface General Hospital The Salvation Army Grace General Hospital - Winnipeg Victoria General Hospital
<b>MARITIME PROVINCES</b>	Annapolis Valley Health (Nova Scotia) Cape Breton Health Authority (Nova Scotia) Capital Health (Nova Scotia) Colchester East Hants Health Authority (Nova Scotia) Cumberland Health Authority (Nova Scotia) Guysborough Antigonish Strait Health Authority (Nova Scotia) Health PEI (Prince Edward Island) Horizon Health (New Brunswick) IWK (Nova Scotia) Pictou County Health Authority (Nova Scotia) South Shore Health (Nova Scotia) South West Health (Nova Scotia)
<b>NEWFOUNDLAND AND LABRADOR</b>	Central Health Newfoundland Eastern Health Labrador-Grenfell Regional Health Authority Western Health
<b>ONTARIO</b>	Bruyère Continuing Care Children's Hospital of Eastern Ontario Credit Valley Hospital Hamilton Health Sciences Health Sciences North - Ramsey Lake Health Centre Health Sciences North - Sudbury Mental Health and Addictions Centre Monfort Hospital Hospital for Sick Children Hôtel Dieu Hospital Kingston General Hospital London Health Sciences Centre - University Hospital London Health Sciences Centre - Victoria Hospital Mount Sinai Hospital North York General Hospital Providence Care - Corp. Office - St. Mary's of the Lake Hospital Providence Care - Mental Health Services Providence Care - Providence Manor Royal Ottawa Health Care Group Royal Ottawa Health Care Group - Royal Ottawa Mental Health Centre Royal Ottawa Health Care Group - Royal Ottawa Place St. Joseph's Healthcare St. Joseph's Health Centre St. Joseph's Hospital, London Ontario St. Michael's Hospital Sunnybrook Health Sciences Centre The Ottawa Hospital Thunder Bay Regional Health Sciences Centre Toronto East General Hospital Trillium Health Centre - Mississauga Site UHN - Princess Margaret Cancer Center UHN - Toronto General Hospital UHN - Toronto Western Hospital Windsor Regional Hospital - Metropolitan Campus Windsor Regional Hospital - Western Campus Women's College Hospital

## APPENDIX B: HEALTH SCIENCE PARTNERS (CONT.)

<b>SASKATCHEWAN</b>	Pasqua Hospital Regina General Hospital Royal University Hospital Saskatoon City Hospital St. Paul's Hospital
<b>QUEBEC</b>	Centre hospitalier de l'Université de Montréal (CHUM) Centre hospitalier universitaire Sainte-Justine (CHUSJ) Centre Hospitalier Universitaire de Sherbrooke CSSS Champlain - Charles-LeMoine CSSS de Chicoutimi CSSS de Trois-Rivières Douglas Mental Health University Institute Hôpital Charles LeMoine Hôpital de Chicoutimi Hôpital Maisonneuve-Rosemont Hôpital du Sacré-Cœur de Montréal Institut Universitaire de gériatrie de Sherbrooke Jewish General Hospital McGill University Health Centre, comprised of: Montreal Children's Montreal General Montreal Neurological Hospitals Centre de santé et de services sociaux de la Vieille-Capitale Centre de santé et de services sociaux de Québec-Nord Centre hospitalier universitaire de Québec (CHU de Québec) Institut de cardiologie de Montréal Institut universitaire de cardiologie et de pneumologie de Québec Région Institut universitaire de gériatrie de Montréal Institut de réadaptation en déficience physique de Québec Institut universitaire en santé mentale de Montréal Institut universitaire en santé mentale de Québec

*Note: This study includes only primary clinical affiliates and teaching hospitals, as identified by each faculty of medicine.*

## APPENDIX C: METHODOLOGY

### IMPACT ON BUSINESS VOLUME

Canada's faculties of medicine and their affiliated teaching hospitals are important employers in the country and within each of the provinces that they operate, and, as such, a significant generator of personal income for residents of the province. Businesses operating within Canada in the wholesale, retail, service, and manufacturing sectors benefit from the direct expenditures of the institutions and their faculty, staff, students, and visitors on goods and services. In addition, many of these "direct" expenditures are re-circulated in the economy as recipients of the first-round of income re-spend a portion of this income with other businesses and individuals within the country.

### METHODOLOGY AND DATA UTILIZED FOR THE ESTIMATION OF THE ECONOMIC IMPACT OF CANADA'S FACULTIES OF MEDICINE AND AFFILIATED TEACHING HOSPITALS

This economic impact analysis measures the effect of both direct and indirect business volume and government revenue impacts. The methodology employed in the calculation of these impacts is derived from the standard set of impact research tools developed by the American Council on Education (ACE) for the measurement of college and university economic impact.<sup>13</sup> The ACE-based methodology is well established, having been used in hundreds of impact studies including for the American Association of Medical Colleges. The ACE methodology employs linear cash flow modeling to track the flow of institution-originated funds through a delineated spatial area. For this impact analysis, models were developed for the entire Faculty, with the models measuring impact on the national economy.

### MODEL INPUTS AND DATA SOURCES

Model inputs included actual FY 12/13 revenues and expenditures provided by the faculties of medicine. Hospital data was obtained through audited financial statements, annual reports, and significant secondary data research, including the Guide to Canadian Healthcare Facilities from the HealthCareCAN. Statistics Canada was utilized to populate the rest of the models with regard to GDP, national taxation, population, and employment values.

Figure 5 demonstrates how the linear cash flow model calculates the economic impact of Canada's faculties of medicine and their affiliated teaching hospitals.

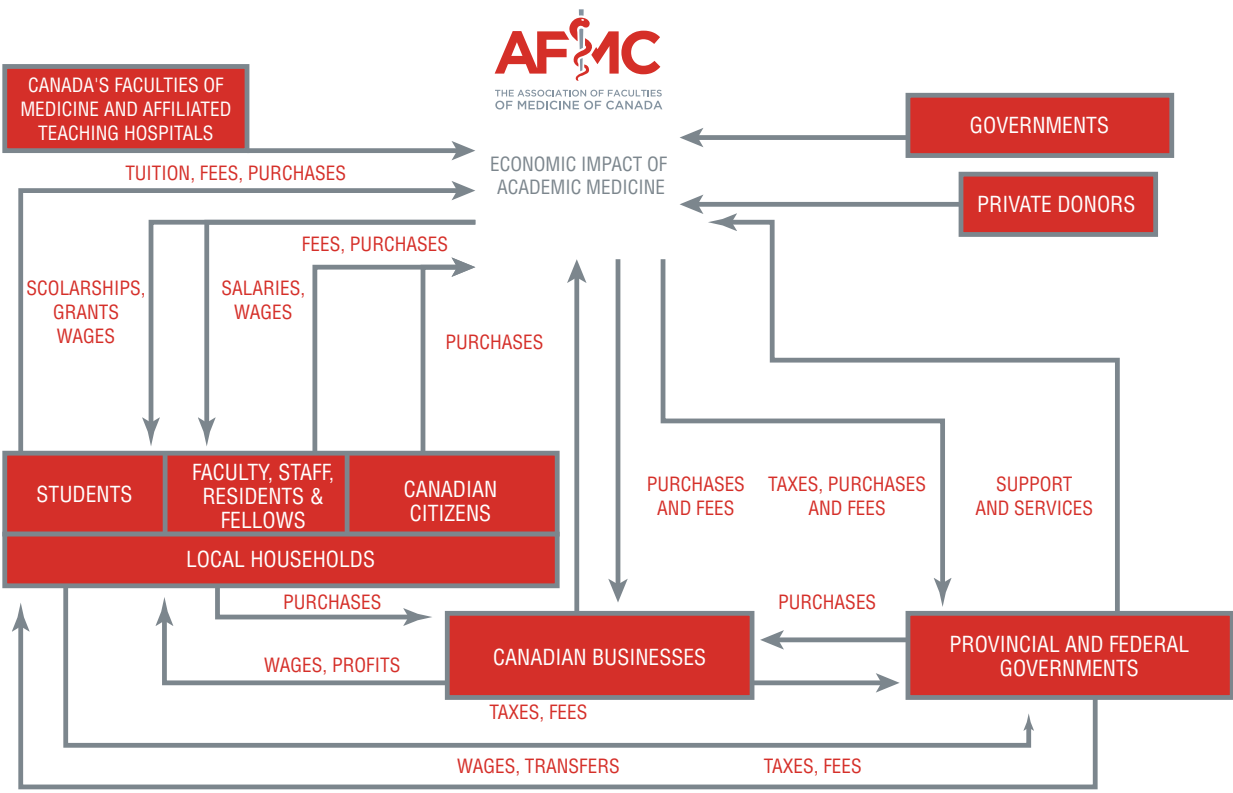
### THE LINEAR CASH FLOW MODEL FOR AN ECONOMIC IMPACT STUDY

The linear cash flow model measures the impact of money brought into the economy from outside sources. This "fresh dollar" approach represents a true expansion of the economy, and does not track dollars that already exist within the region. The linear cash flow model also takes into account the re-spending of money within the economy as a result of what professional economists term "the multiplier effect". The multiplier effect measures the circulation of dollars originally attributable to businesses or institutions, and tracks their spending by successive recipients until the funds eventually leak out of the economy. The analyses are built as a unique spreadsheet set, reflecting national economic characteristics and tax rates. The models calculate both direct and indirect (multiplier effect) economic impacts.

<sup>13</sup>Caffrey, J. & Isaacs H. H. (1971). Estimating the Impact of a College or University on the Local Economy. American Council on Education. Washington, D.C.: ERIC ED 252100.

APPENDIX C: METHODOLOGY (CONT.)

**AFMC** **FIGURE 1:** ECONOMIC IMPACT OF CANADA'S FACULTIES OF MEDICINE AND AFFILIATED TEACHING HOSPITALS ON THE CANADIAN ECONOMY  
LINEAR CASH FLOW MODEL





## APPENDIX D: FAQs REGARDING ECONOMIC IMPACT ANALYSIS

### WHAT IS ECONOMIC IMPACT?

Economic impact begins when an organization spends money. Economic impact studies measure the direct economic impact of an organization's spending, plus additional indirect spending in the economy as a result of direct spending. Economic impact has nothing to do with dollars collected by institutions, their profitability or even their sustainability, since all operating organizations have a positive economic impact when they spend money and attract spending from outside sources.

Direct economic impact measures the dollars that are generated within Canada due to the presence of the faculties of medicine and their affiliated teaching hospitals. This includes not only spending on goods and services with a variety of vendors within the province, and the spending of its staff and visitors, but also the business volume generated by businesses within Canada that benefit from the faculties' spending.

The total economic impact includes the "multiplier" of spending from companies that do business with the faculties of medicine and their affiliated teaching hospitals. Support businesses may include lodging establishments, restaurants, construction firms, vendors, temporary agencies, etc. Spending multipliers attempt to estimate the ripple effect in the provincial economy where the spending occurs. For example, spending by the faculties of medicine and their affiliated teaching hospitals with local vendors provides these vendors with additional dollars that they re-spend in the local economy, causing a "multiplier effect."

### WHAT IS THE MULTIPLIER EFFECT?

Multipliers are a numeric way of describing the secondary impacts stemming from the operations of an organization. A multiplier is the ratio of Total Economic Spending to Direct Economic Spending ( $\text{Multiplier} = \text{Total Economic Spending} / \text{Direct Economic Spending}$ ). An institution's total economic impact is derived from some multiple of its direct expenditures. For example to determine all 17 faculties of medicine's total economic impact on Canada, a multiplier of 2.5 was used. This multiplier was calculated specifically for the academic healthcare industry in Canada through an analysis of economic impact multipliers gathered from Statistics Canada and historical database of economic impact studies completed by Tripp Umbach in Canada. An economic impact multiplier of 2.5 means that for every \$1.00 of direct spending, an additional \$1.50 is generated in secondary spending.

For example, an employment multiplier of 1.8 would suggest that for every 10 employees hired in the given industry, eight additional jobs would be created in other industries, such that 18 total jobs would be added to the given economic region.

## APPENDIX D (CONT.):

### WHAT IS EMPLOYMENT IMPACT?

Employment impact measures the direct employment (staff, faculty, administration) plus additional employment created in the economy as a result of the operations of the faculties of medicine and affiliated teaching hospitals.

Indirect and induced employment impact refers to other employees throughout the province that exist because of Canada's faculties of medicine and affiliated teaching hospitals' economic impact. In other words, jobs related to the population – city services (police, fire), employees at local hotels and restaurants, clerks at local retail establishments, residents employed by vendors used by the faculties of medicine.

### IS THIS A ONE-TIME IMPACT OR DOES THE ECONOMIC CONTRIBUTION REPEAT EACH YEAR?

The results presented in this economic impact study are generated for FY 12/13. The economic impact in future years may either increase or decrease based on number of students, spending, capital expansion, increases in external research and research grants, and provincial appropriations.

### WHAT ARE TRIPP UMBACH'S QUALIFICATIONS TO PERFORM AN ECONOMIC CONTRIBUTION ANALYSIS FOR THE AFMC?

Founded in 1990, Tripp Umbach is a nationally recognized consulting firm that provides comprehensive services ranging from research and strategic planning to economic impact analyses for medical schools, hospitals, non-profit organizations, communities, and corporations throughout the world. Tripp Umbach has completed more than 150 economic impact studies over the past 25 years for clients in North America such as The Association for American Medical Colleges (Washington, D.C., U.S.), Capital Health (Halifax, NS, Canada), Cleveland Clinic (Cleveland, OH, U.S.), GE Healthcare (Waukesha, WI, U.S.), Southlake Regional Hospital (Newmarket, ON, Canada), University of Alberta Faculty of Medicine & Dentistry (Edmonton, AB, Canada), University of Pittsburgh Medical Center (Pittsburgh, PA, U.S.), and University of Washington (Seattle, WA, U.S.). Outside of North America, Tripp Umbach has completed studies recently for Edith Cowan University (Perth, WA, Australia), GE Healthcare Saudi Arabia (Riyadh, Saudi Arabia), Ministry of Health Trinidad and Tobago (Port of Spain, Trinidad), and University of Adelaide (Adelaide, SA, Australia).

Tripp Umbach has completed thousands of assignments worldwide and provided the blueprint for its clients to leverage their assets and seize new opportunities.



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