



THE ECONOMIC AND SOCIETAL CONTRIBUTION OF THE SCHOOL OF DENTISTRY



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UNIVERSITY OF ALBERTA
FACULTY OF MEDICINE & DENTISTRY



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THE ECONOMIC AND SOCIETAL CONTRIBUTION OF THE SCHOOL OF DENTISTRY



\$41.6 million

in total economic impact in Alberta



369 jobs

supported and sustained in Alberta



\$8.7 million

in government revenue impact (provincial and federal)



42.1% of alumni

Of the practicing dentists and dental hygienists in Alberta, 42.1% of practitioners are alumni of the School of Dentistry.



\$162,857

in free or reduced cost dental care provided to people who cannot afford dental care



EXECUTIVE REPORT

Introduction

For nearly 100 years the school has been providing Albertans with highly skilled dentists, dental hygienists, and other specialists in the healthcare field. The School of Dentistry has been at the University of Alberta since 1917 with the first full dental degree program offered in 1923. The School of Dentistry joined the Faculty of Medicine of Dentistry in 1996 and continues to grow and change the future of dentistry and dental hygiene in the Province of Alberta and throughout Canada. The School of Dentistry serves an integral role in educating a part of the healthcare workforce in Alberta. The School's education, clinical care, and research serve to improve the health of all Albertans, Canadians, and the world.

The School offers programs at the undergraduate, graduate, and postgraduate levels, and also ongoing professional development activities. The education of the current and future healthcare workforce is vital to the well-being of the province. The School of Dentistry graduates comprise 52 per cent of dentists working in Alberta, and 40 per cent of dental hygienists caring for Albertans.

High-quality teaching, clinical care, and research are core tenants of the School of Dentistry's approach.

Currently, the School of Dentistry is pursuing one of its biggest legacy projects in its history, a complete redesign of the DDS and DH curriculum. This decision to move forward with Curriculum Renewal was driven by a multitude of internal and external factors. The School of Dentistry will seek to identify current trends and best practices in education:

- To contribute to the research and scholarship mission of the University;
- To be responsive to evolving societal needs, practice patterns, scientific developments, economic conditions
- To create new approaches to curriculum to enhance research experience and applications of science to clinical problems;
- To close the gap for taking care of oral health needs of society;
- To increase the alignment between what is taught in dental school and the core values that define the profession;
- To create a better student experience, preparing students to enter practice as professionals, informed citizens, and enlightened leaders; and
- To increase the school's ability to impact the health outcomes of the general public.

The importance of high quality dental education and care can not be understated with respect to maintaining a healthy community. This report seeks to show the economic and community benefits that are achieved as a result of the University of Alberta's School of Dentistry.



The School of Dentistry

Vision

To become one of the top-tier schools within Canada and beyond.

Mission

Improving health of the people of Alberta and beyond through excellence and leadership in oral health care, education, research/scholarship and providing service that is responsive to social need

Project Overview

In January 2015, Tripp Umbach was retained by the School of Dentistry to measure the economic, employment, and government revenue impacts of the School of Dentistry's operations on the Province of Alberta and Canada. In addition, Tripp Umbach was asked to show the community benefits that the School, its faculty, staff, and students generate as a result of their activities in Alberta. The goals of the School of Dentistry economic impact study include the following:

- To quantify the economic and employment impacts of the School of Dentistry on Alberta.
- To quantify the economic and employment impacts of the School of Dentistry on Canada.
- To quantify the government revenue impacts of the School of Dentistry
- To demonstrate and quantify the benefits of a strong clinical, academic and teaching faculty and the School of Dentistry's partnership with the community, citizens, and the province.

Methodology

This economic impact analysis measures the effect of direct and indirect/induced business volume and government revenue impacts for all of the School of Dentistry's operations throughout Alberta. The methodology employed in the calculation of these impacts is linear cash flow modelling (see Appendix C) with data provided by Statistics Canada. Primary data utilized to conduct the analysis was collected from The School of Dentistry. Data included: capital expenditures, operational expenditures, jobs, payroll and benefits, and taxes all of which or which encompasses the Fiscal Year of 2014/2015 (FY 14/15). The approach taken in this study was decidedly conservative and adheres to industry standards for 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 and induced spending in the economy as a result of direct spending. Economic impact is not a measurement of revenue or dollars collected by institutions.

Total economic impact measures the dollars that are generated within Alberta due to the presence of the School of Dentistry. This includes not only spending on goods and services with a variety of vendors within the province, and the spending of School of Dentistry staff and visitors, but also the volume generated by businesses within Alberta that benefit from the School of Dentistry's spending. It is important to remember that not all dollars spent by a university remain in its home province. Dollars that "leak" out of the province in the form of purchases from out-of-province vendors are not included in the School of Dentistry's economic impact. The multipliers utilized in this study are derived from the data provided by Statistics Canada.

Key economic impact findings presented within the summary include the total current (FY 14/15) economic, employment, provincial and federal government revenue impact of the School of Dentistry's operations.



University of Alberta School of Dentistry

Study Overview

Fiscal Year: 2014/2015

This study includes :
The School of Dentistry
Dental Clinics

Study Geography:
Province of Alberta, Canada

Methodology:
American Council on
Education (ACE) / Linear
Cash Flow Modelling

CONTRIBUTES TO THE PROVINCIAL ECONOMY

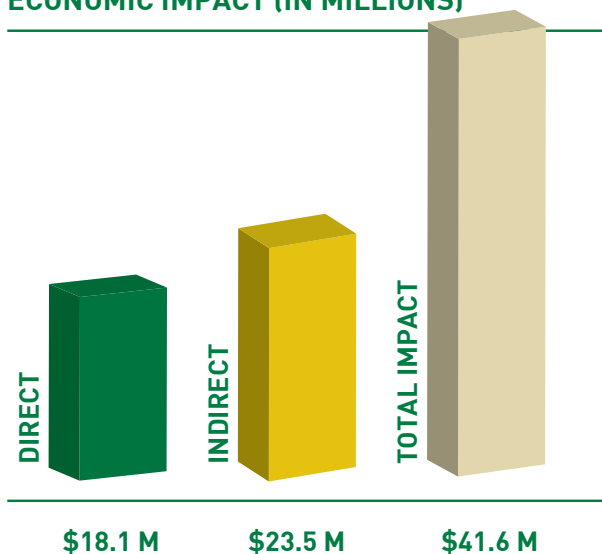
The School of Dentistry makes a significant contribution to the province’s economic success, and School of Dentistry operations directly or indirectly impact many Albertans every day – either through operational spending, research or provision of clinical care. The School of Dentistry affects business volume in Alberta in two ways:

1. Direct expenditures for goods and services by the School of Dentistry, employees, students, and visitors. This spending supports local businesses, which in turn employ local individuals to sell the goods and provide the services that School of Dentistry constituencies need.
1. Indirect and induced spending within Alberta. The businesses and individuals that receive direct payments re-spend this money within the province, thus creating the need for even more jobs.

The overall economic impact of all the School of Dentistry’s operations on Alberta in FY 14/15 was **\$41.6 million** (\$18.1 million direct impact and \$23.5 million indirect) (see Figure 1).

Figure 1

SCHOOL OF DENTISTRY ANNUAL ECONOMIC IMPACT (IN MILLIONS)



Source: Data supplied by the University of Alberta School of Dentistry for Analysis by Tripp Umbach.

SUSTAINS AND SUPPORTS JOBS

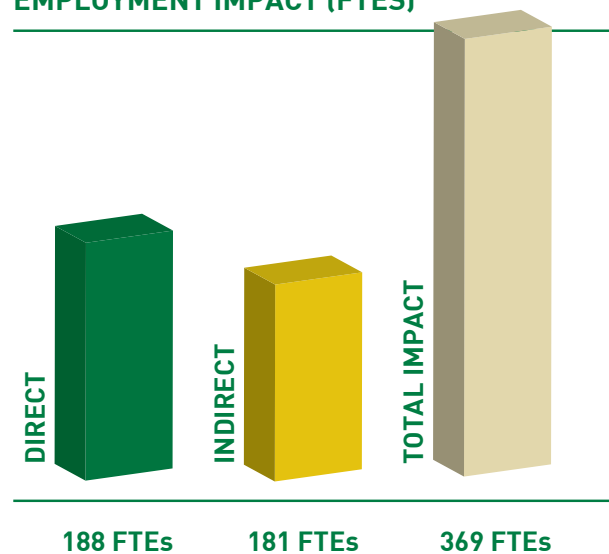
The School of Dentistry supported **369 jobs** in Alberta. These jobs include not only direct employment by the School of Dentistry, but also indirect and induced jobs created for supply and equipment vendors, contractors, and labourers for the construction and renovation of School of Dentistry facilities, and jobs created in the community at hotels, restaurants and retail stores in support of the School of Dentistry’s workforce and visitors (see Figure 2).

GENERATES TAX REVENUE

It is a common misperception that colleges and nonprofits do not generate tax revenue. Federal, provincial, and local government revenues attributable to the presence of the School of Dentistry totaled **\$8.7 million** in FY 14/15. Through its local spending, as well as direct and indirect support of jobs, the presence of the School stabilizes and strengthens the local and provincial tax base. The School is an integral part of the province’s economy – generating revenue, jobs, and spending.

Figure 2

SCHOOL OF DENTISTRY ANNUAL EMPLOYMENT IMPACT (FTEs)



Source: Data supplied by the University of Alberta School of Dentistry for Analysis by Tripp Umbach.

PROVIDES PATIENT CARE

The School of Dentistry provides patient care within the Kaye Edmonton Clinic to patients who are willing to participate in the educational experience of students at a reduced fee. At the School based-clinics, patients are charged a reduced fee structure for all services performed. As a teaching clinic, all patient care is delivered in an education setting. Treatment is provided in all areas of dental care. In 2014, 12,266 patients were seen by DDS students, and 3,847 patients were seen by dental hygiene students. There are additional patient visits for oral pathology, to the implant clinic, orthodontist clinic, oral surgery clinic, general practice clinic, and temporomandibular disorders treatment.

GENERATES RESEARCH IMPACT

Faculty at the School of Dentistry are engaged in many different types of research that attract research funding. Based upon research dollars received in 2014 that totaled nearly \$200,000 dollars, the impact of research was \$459.9 thousand (\$199.96 thousand direct). It is important to remember that research dollars are competitive and the strong faculty at the School of Dentistry obtains these dollars as a result of their efforts. The research is intended to improve the health and quality of life of individuals throughout Alberta, Canada, and the world.

Source: Data supplied by the University of Alberta School of Dentistry for Analysis by Tripp Umbach

The School of Dentistry conducts research that:

- Studies how oral and dental health play a major role in determining people's overall health and well-being, and on how to foster good oral health care in dental patients and in populations of Albertans at risk for oral diseases and disorders.
- Looks at the fundamental questions of craniofacial development and maturation, and the relationship of how developmental or chronic disorders in the mouth affect the normal development and activity of other tissues of the body.
- Investigates how chronic oral diseases and disorders are related to the progression of other chronic diseases such as cardiovascular disease, diabetes, inflammatory bowel disease, Parkinson's disease, and AIDS, and in trying to develop new therapies and approaches to the treatment of chronic inflammatory conditions such as that seen in Periodontal Disease.
- Examines the causes and the diagnosis of sleep disordered breathing (obstructive sleep apnea) in children and adolescents, and in designing new approaches to its treatment. The school's clinical research centers around understanding the relationship of tooth movement, tissue regeneration and tissue engineering using state-of-the-art, three-dimensional (3D) imaging and tissue engineering, as well as in the role of evidence based dentistry in determining changes to clinical practice.
- Investigates the psychosocial determinants of, and barriers to, an optimal oral health for children from high-risk populations, such as new immigrant families and First Nation populations.
- Conducts a wide variety of research on the delivery of health services to patients in Alberta, including research on the delivery of oral health services to older adults/seniors.
- Examines methods to enhance the effectiveness of tobacco cessation activities in dental hygiene practice.

BENEFITTING THE PROVINCE BEYOND OPERATIONS

The School of Dentistry's total impact on Alberta goes beyond the annual operational impacts detailed in this report. Economic impact studies often only capture what can be assigned an actual number, but the value of the School of Dentistry goes far beyond the annual **\$40.4 million** economic impact. The School of Dentistry provides access to expert faculty, expert-level dental care, and education of the future workforce. The alumni of the school who remain in the area after graduation contribute to the overall economy as well. It is challenging to assign a dollar amount to the outreach and community activities of the faculty, staff, and students, however the lives of Albertans are enhanced by the presence of the School of Dentistry.

Educating the Existing Workforce

The School of Dentistry offers courses and programs that cover a wide variety of relevant topics for dental-care providers. Programs are available for postgraduate dentists, dental hygienists, dental assistants and dental laboratory technicians, and are delivered in hands-on, lecture-based and self-study formats. A variety of outstanding continuing education programs are available for postgraduate dentists, dental hygienists, dental assistants, and dental laboratory technicians. The goal is to provide dental-care providers with opportunities to continue to grow in their clinical practice.

Helping Foreign Trained Dentists

The School of Dentistry through its Advanced Placement (AP) Program offers training and education to people who are permanent Canadian residents but were educated in other countries so that they can continue working in their profession and care for their fellow Canadians. The AP Program offers internationally trained dentists from programs not recognized by the Commission of Dental Accreditation for Canada (CDAC) or the Commission of Dental Accreditation for the United States (CODA) an opportunity to join the undergraduate dentistry program in the third year. The School of Dentistry saw a need in the community for these dentists to have access to a program which afforded them the opportunity to acquire the necessary skills to practice in their new country.

The school offers a 6-week clinic refresher course that includes several hours in the simulation lab to allow students to practice their hand skills in operative and restorative dentistry, as well as didactic learning in areas like head and neck anatomy, and radiology. This course provides students the opportunity to enhance their skills for the purpose of increasing their abilities and confidence as they strive to achieve licensure in Canada. These students go on to be an essential part of the workforce providing dental care to Albertans.

Neuromodulators Continuing Dental Education

The School of Dentistry offers a multidisciplinary approach to Neuromodulators for all healthcare providers from Oral & Maxillofacial Surgery, Dermatology, Orthodontics, Family Medicine, Nursing, and Anatomy. The program offers exceptional clinical training in the University of Alberta's Edmonton Clinic and world-class anatomy lab. The Neuromodulators Continuing Education program is provided by renowned faculty from the fields of medicine and dentistry. The program provides professionals with a superior clinical experience, based on an unprecedented number of patient injections and assessments of three neuromodulators (Xeomin, Botox®, Dysport).

Educating the Future Workforce

The School of Dentistry educates the workforce that Alberta needs to succeed in the 21st century. The students who graduate every year from the School of Dentistry are essential to the province's human capital and workforce needs. About 52 per cent of dentists and 42 per cent of hygienists will stay in Alberta upon graduation and contribute to the provincial economy.

Alumni Play a Vital Role in the Alberta Economy

University of Alberta School of Dentistry graduates working throughout Alberta generate an economic impact of **\$1.2 billion annually**. These graduates are located in rural and urban areas to meet the health care needs of Albertans. Of the practicing dentists and dental hygienists in Alberta, 42.1% of practitioners are alumni of the School of Dentistry.

TOTAL ECONOMIC IMPACT

2,292 ALUMNI **\$1.2 B**

TOTAL IMPACT OF PRACTICING DENTISTS

1,179 ALUMNI **\$943.2 M**

TOTAL IMPACT OF PRACTICING DENTAL HYGIENISTS

1,114 ALUMNI **\$278.2 M**

Committed to the Community

Tripp Umbach estimates that the School of Dentistry staff, faculty, physicians, and students generate more than **\$777 million** annually in charitable donations, volunteer services and provision of free or reduced cost dental care to the community. The community clinics and programs operated by the School and staffed by students contribute greatly to improving the population health of Canadians.

- **SHINE (Student Health Initiative for the Needs of Edmonton)** is a student-led clinic that provides much-needed dental care to the inner-city population, as well as to recent immigrants to the area. Many of the SHINE Clinic patients are referred from the Boyle McCauley Health Centre, as well as through word-of-mouth and community resources or networks. Every Saturday morning, students from first, second and third year of dentistry spend their free time in the clinic helping others. In 2014, students saw 301 patients — adults and children — for routine exams, radiographs, and fillings and/or extractions totaling to approximately \$39,700 in care provided.
- **School Visit Program:** Every year, the School of Dentistry provides dental health care to approximately 150 children in lower socio-economic areas of Edmonton. Each year, six schools across the capital region are selected to be a part of the School Visit Program. The program enables children in kindergarten through Grade 6 to be bused to the School of Dentistry dental clinics to receive a check up, cleaning and basic dental treatment. The School Visit Program also serves as a bridge program between the School of Dentistry and Alberta Health Services' dental public-health program, which identifies high-needs schools across Edmonton for participation in the program. In addition to promoting good oral health in children, the goal of the School Visit Program is to provide low-income parents an opportunity for their children to have access to dental care.
- **Elders Smile Practicum:** Senior dental hygiene students participate in this program as a part of a course offered in the School. The course is focused on comprehensive dental hygiene care and education for clients with chronic and acute oral health. Since the start of the program in 2011, an average of 42 students each academic year participate in the practicum. Each student visits either St. Michaels or St. Joe's long-term care facilities twice during the practicum. In 2014, Elder Smiles saw a total of 203 residents. In addition to their clinical work, the students also deliver oral health presentations to the staff.
- **Rural Dental Outreach:** Doctor of Dental Surgery (DDS) students have trained at satellite clinics in High Level, La Crete, and McLennan. These sites were specifically selected by Alberta Health through demographic assessment and consultation with community leaders. These satellite clinics are a part of the schools dental outreach program. The services provided at these sites include general dentistry services such as extractions, restorative, periodontal, and endodontic treatment. These services are very valuable because private practice dental care is very limited in rural areas.
- **Glenrose Dental Clinic:** The dental clinic specializes in providing dental care for physically or mentally challenged people. Four dental hygiene students spend two consecutive days, and four DDS students spend three consecutive days in a one-week period working in the clinic. The services provided at the Glenrose Dental Clinic are not provided by any other local facility or private practice. It has the facilities, equipment, and atmosphere to care for patients who have medical issues and impaired mobility. In academic year 2013-2014, DDS students provided supervised care in 484 visits and DH students provided supervised care in 268 visits. From September 2014 to May 2015, dental and dental hygiene students at Glenrose Dental Clinic provided \$123,157 (1,418 procedures) in care to patients. This reflects an increase in services provided because of an expansion project from 4 to 8 chairs in November 2012. From September 2012 to May 2013, students provided \$94,359 (1,173 procedures) in care, and from September 2012 to May 2013, \$97,639 (1,251 procedures) in care was provided.
- **Dental Missions:** In 2014, nineteen third- and fourth-year dentistry students participated in dental missions through Dentistry For All (DFA) and Kindness in Action (KIA)—both are non-profit volunteer organizations that provide free dental care in areas around the world for those who have limited, to no access, to dental care. These organizations were both formed by School of Dentistry alumni—Dr. Amil Shapka (KIA) and Dr. Denis Bedard (DFA). The School of Dentistry allows eligible students to participate in international programs as a way of developing social and community awareness.
- **\$162,857** in free or reduced cost dental care provided to residents by the faculty and students.
- **More than \$145,000 donated** to local charitable organizations by School of Dentistry faculty, staff, and students.
- **More than \$469,000 in value of volunteer time** provided to area communities by School of Dentistry faculty, staff, and students.

APPENDIX A: DEFINITION OF TERMS

| | |
|------------------------------|--|
| STUDY YEAR | Fiscal Year 2014-2015 (14/15) |
| STUDY AREA | Alberta Province and Canada |
| 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 B: ECONOMIC CONTRIBUTION IN CANADA

Tripp Umbach also completed analysis on the School of Dentistry’s economic contribution in Canada. Analysis shows the following:

- The School of Dentistry has an overall economic impact on Canada of **\$45.2 million** (\$18.1 million direct) annually.
- The School of Dentistry has an overall employment impact on Canada of **369 FTEs** (188 direct FTEs).
- Total federal, provincial, and government revenue impact of **\$8.7 million** annually.



SCHOOL OF DENTISTRY IMPACT ON CANADA

| | DIRECT | INDIRECT | TOTAL |
|---|----------------|----------------|----------------|
| Annual Economic Impact | \$18.1 Million | \$27.1 Million | \$45.2 Million |
| Employment Impact (FTEs) | 188 | 181 | 369 |
| Annual Government Revenue Impact (Federal, Provincial, and Local) | | | \$8.7 Million |

Source: Data supplied by the University of Alberta School of Dentistry for Analysis by Tripp Umbach.

APPENDIX C: METHODOLOGY

IMPACT ON PROVINCIAL BUSINESS VOLUME

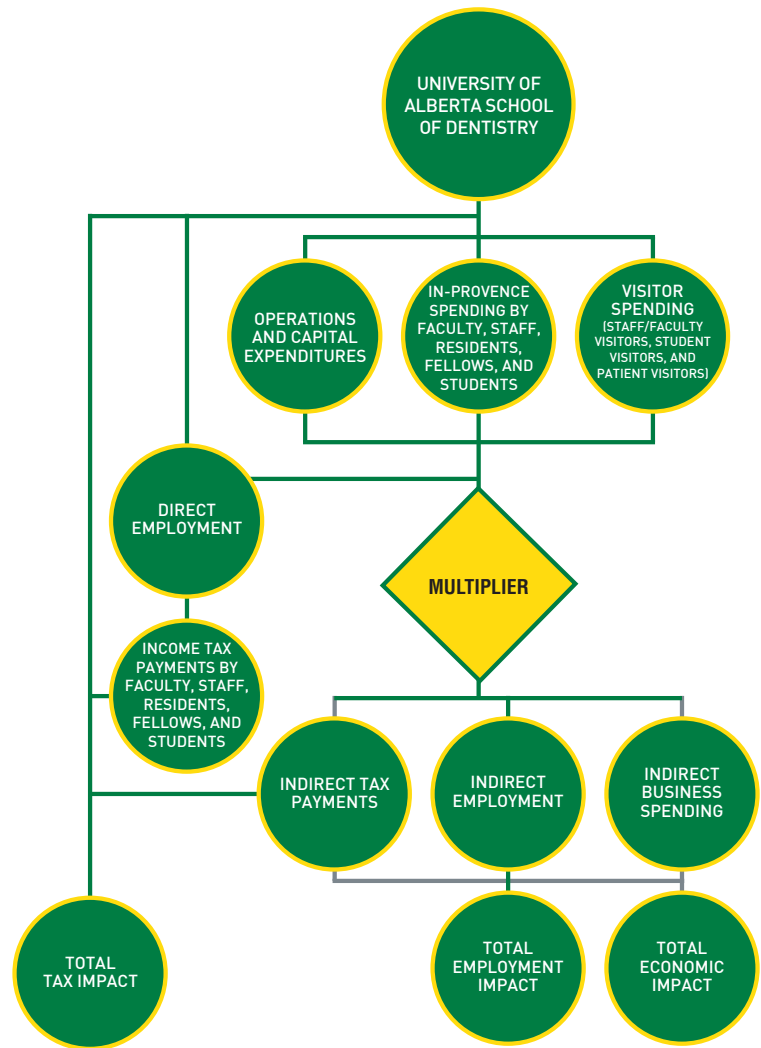
The School of Dentistry is an important employer in the province and, as such, a significant generator of personal income for residents of the province. Businesses operating within Alberta in the wholesale, retail, service, and manufacturing sectors benefit from the direct expenditures of the institutions 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 province.

METHODOLOGY AND DATA UTILIZED FOR THE ESTIMATION OF THE ECONOMIC IMPACT OF THE SCHOOL OF DENTISTRY

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. 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 modelling to track the flow of institution-originated funds through a delineated spatial area. For the School of Dentistry impact analysis, models were developed to measure the impact on the provincial and national economies.

MODEL INPUTS AND DATA SOURCES

Model inputs included actual FY 14/15 expenditures provided by the School of Dentistry, and research throughout Alberta and Canada. Statistics Canada provided data to populate the models.



APPENDIX D: FAQs REGARDING ECONOMIC CONTRIBUTION 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 Alberta and western Canada due to the presence of the School of Dentistry. 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 Alberta that benefit from the School of Dentistry's spending. It is important to remember that not all dollars spent by the School remain in its home province. Dollars that "leak" out of the province in the form of purchases from out-of-province vendors are not included in the School's economic impact on the province.

The total economic impact includes the "multiplier" of spending from companies that do business with School of Dentistry. 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 School of Dentistry 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. 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.

What methodology was used in this study?

The methodology employed in the calculation of the impact of the School of Dentistry was 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. The ACE-based methodology is well-established, having been used in hundreds of impact studies. The ACE methodology employs linear cash-flow modelling to track the flow of institution-originated funds through a delineated spatial area.

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 School of Dentistry.

Indirect and induced employment impact refers to other employees throughout the province that exist because of the School of Dentistry's 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 School of Dentistry.

Is this a one-time impact or does the economic contribution repeat each year?

The results presented in the School of Dentistry economic impact study are generated for FY 14/15. The economic impact in future years may either increase or decrease based on number of students, 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 School of Dentistry?

Tripp Umbach is the leader in providing economic impact analysis to leading health-care organizations, universities and academic health centres. Tripp Umbach has completed more than 150 economic impact studies over the past 20 years for clients such as The Association of Faculties of Medicine of Canada, The Association for American Medical Colleges, The University of Minnesota, Indiana University and IU Health, The Ohio State University, the University of Washington, The University of Iowa, UAB, Cleveland Clinic, University of Florida Shands HealthCare, the University of North Carolina Hospitals, the University of Pennsylvania Medical Center, the University of Pittsburgh Medical Center, and the Ohio State University Medical Center. Tripp Umbach has completed economic impact studies for all members of the AFMC and the University of Alberta Faculty of Medicine & Dentistry.