AN UPDATE ON THE ECONOMIC IMPACT OF INTERNATIONAL EDUCATION IN BRITISH COLUMBIA

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An Update on the Economic Impact of International Education in British Columbia

Final Report

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Executive Summary

As BC becomes increasingly globalized, the importance of the international education sector to our economy and our province has gained recognition as a key platform in both economy and community. To remain competitive in the global economy, our province needs to continue to attract the best and brightest to develop new research opportunities, contribute to our talent pool and connect BC to countries around the world. These connections will provide a foundation for future economic development. International students studying in BC bring significant social and cultural benefits, as well as significant economic gains, to communities throughout the province.

This report serves as a reminder of the importance of international education as a venue of contribution to the province's economic development, job creation, and export. The values generated from this report only capture a conservative estimate of the contributions made by international students because we only quantify the impact from the students' out-of-pocket expenditure. Other economic impacts, such as international education's contribution to building a skilled labour force, increasing international collaboration and cooperation in academic research, and other social/cultural benefits, are beyond the scope of this current study.

The highlights of our current study of the impact of international education services include the following.

- In 2013/2014 academic year, BC's post-secondary institutions, language learning schools, and the K-12 schools were home to 114,600 international students. This represents a 22% increase of the number of international students in BC from four years ago in 2009/2010.
- The number of international students studying at the post-secondary level in BC grew significantly between 2009/2010 and 2013/2014. The post-secondary sector had the most significant four year growth rate compared to the K-12 and private language school sector. The share of this group of students increased from approximately 40% of the total number of international students in the province to almost 50% of the total student body.
- The number of international students in private language schools in BC increased steadily from 2009/2010 to 2012/2013, for a total gain of 14% by 2012/2013. This sub-sector did face some challenge in 2013/2014 for recruiting and retaining international students. However, preliminary 2014/15 data for Languages Canada private member schools indicates positive growth in the sector, which is consistent with the annual growth rate between 2009/10 and 2011/12.
- The number of international students in the province's K-12 system experienced strong enrollment growth between 2012/13 and 2013/14. This was a positive outcome following a lower growth rate between 2009/2010 and 2012/2013.

- In 2013/2014, the entire international student body spent over $2.6 billion in BC to pay for their tuition and fees and day-to-day living expenses. The expenditure in turn increased industrial output, generated jobs, and, for governments, tax revenue.
- The economic impacts of such an annual expenditure are equivalent to $1.86 billion contribution to the provincial GDP in 2014, and supporting 27,500 jobs. All levels of governments raised almost $100 million in their tax revenue.
- When the "supply chain" of the international education sector is included in the analysis, that is, the many sectors providing goods and services to international education services, the impacts are even greater.
- For every $1 million directly contributed into the provincial GDP, an additional $0.24 million in GDP goes to these supply-chain sectors.
- For every 10,000 jobs created directly as a result of international education, an additional 2,300 jobs are created in the supply-chain sectors.
- As the funds supporting these international students come from sources outside the country, international education is an export of services. When compared with BC's exports of goods, BC's international education service ranks in 5th place, behind our exports of commodities such as lumber, coal, copper and concentrates, and chemical wood pulp.
- BC's export in international education services is equivalent to 7% of its total value of exports of goods.

Summary tables of the economic impacts of international education in BC are shown as follows.

Summary Table I Number of International Students in BC, by Type of Institution

Institution Type	2009/10	2010/11	2011/12	2012/13	2013/14
Public post-secondary	28,000	32,000	33,500	35,600	39,600
Private post-secondary	11,000	11,400	12,800	15,000	17,400
Language schools	43,000	45,300	47,300	49,200	43,500
Elementary and secondary schools	12,000	12,000	13,000	13,000	14,100
Total	**94,000**	**100,700**	**106,600**	**112,800**	**114,600**

Summary Table II Estimated Total Expenditure in Educational Services and Cost of Living by International Students in BC, 2013/14

	Number of Students	Tuition Fees	Additional Fees	Books & Supplies	Accommodation and Meals	Transportation	Discretionary Spending	Total Spending
Public PSE								
Undergraduate	32,700	$ 584,185,500	$ 23,413,200	$ 39,240,000	$ 416,925,000	$ 11,772,000	$ 81,750,000	$ 1,157,285,700
Graduate	6,900	$ 85,442,700	$ 5,271,600	$ 8,280,000	$ 87,975,000	$ 2,484,000	$ 17,250,000	$ 206,703,300
Private PSE	17,400	$ 367,140,000	$ 4,350,000	$ 20,880,000	$ 156,600,000	$ 20,880,000	$ 43,500,000	$ 613,350,000
Languages Canada Students	43,500	$ 145,899,000	$ -	$ -	$ 102,129,300	$ 14,589,900	$ 58,359,600	$ 320,977,800
K-12								
Public	11,050	$ 155,854,816	$ -	$ -	$ 82,875,000	$ -	$ 5,525,000	$ 244,254,816
Independent	3,060	$ 47,685,510	$ -	$ -	$ 43,146,000	$ -	$ 1,530,000	$ 92,361,510
Sub-Total * PSE	57,000	$ 1,036,768,200	$ 33,034,800	$ 68,400,000	$ 661,500,000	$ 35,136,000	$ 142,500,000	$ 1,977,339,000
Languages Canada ^	43,500	$ 145,899,000	$ -	$ -	$ 102,129,300	$ 14,589,900	$ 58,359,600	$ 320,978,000
K-12	14,100	$ 203,540,000	$ -	$ -	$ 126,021,000	$ -	$ 7,055,000	$ 336,616,000
Grand Total *	114,600	$ 1,386,207,000	$ 33,035,000	$ 68,400,000	$ 889,650,000	$ 49,726,000	$ 207,915,000	$ 2,634,933,000

* Number of students sub-total and grand total rounded to the nearest 100. ^ Private Languages Canada member school students only.

Source: RKA

Summary Table III Estimated Economic Impact of International Education Services in BC, 2013/14

		Direct Economic Impact			Direct and Indirect Economic Impact		
		GDP	Employment	Government Revenue	GDP	Employment	Government Revenue
Sub-Total *	PSE	$ 1,375,881,000	17,800	$ 75,592,000	$ 1,700,290,000	22,600	$ 91,383,000
	Languages Canada ^	$ 210,964,000	5,600	$ 12,619,000	$ 279,768,000	6,600	$ 16,681,000
	K-12	$ 268,289,000	4,100	$ 11,645,000	$ 311,592,000	4,800	$ 13,844,000
Grand Total *		$ 1,855,134,000	27,500	$ 99,856,000	$ 2,291,650,000	34,000	$ 121,908,000

* Employment impact rounded to the nearest 100. Other impact rounded to nearest 1000. ^ Private Languages Canada member school students only.
Source: RKA

Summary Table IV Comparison of International Education Services with Total Exports in Goods from BC to the Top Ten International Student Source Countries and to All Countries, 2013/14

Country/Area	Export of Educational Services	All Goods Exports	Educational Services Compared with Total Goods Export
China	$ 884,877,000	$ 6,541,000,000	14%
South Korea	$ 236,355,000	$ 2,146,000,000	11%
Japan	$ 206,122,000	$ 3,687,000,000	6%
India	$ 177,277,000	$ 594,120,000	30%
Saudi Arabia	$ 130,779,000	$ 54,919,000	238%
United States	$ 98,097,000	$ 17,955,000,000	1%
Brazil	$ 97,846,000	$ 313,013,000	31%
Mexico	$ 69,267,000	$ 120,538,000	57%
Taiwan	$ 53,899,000	$ 550,739,000	10%
Germany	$ 39,245,000	$ 307,514,000	13%
Top Ten Countries	$ 1,993,764,000	$ 32,269,843,000	6%
Total (All Countries)	$ 2,634,929,000	$ 36,514,879,000	7%

Source: Statistics Canada & US Census Bureau; RKA

1. Introduction

As BC becomes increasingly globalized, the importance of the international education sector to our economy and our province has gained recognition as a key platform in both economy and community. To remain competitive in the global economy, our province needs to continue to attract the best and brightest to develop new research opportunities, contribute to our talent pool and connect BC to countries around the world. These connections will provide a foundation for future economic development. International students studying in BC bring significant social and cultural benefits, as well as significant economic gains, to communities throughout the province.

Roslyn Kunin and Associates, Inc. (RKA) has been commissioned by the British Columbia Council for International Education to undertake an in-depth and comprehensive study evaluating the economic impact of international education in the province for the 2013/14 academic year. The objective is to develop, implement, and analyse an economic model to determine the value international education and student mobility brings to the provincial economy. It provides an update to a similar economic impact study, which was prepared based on data from the 2010/2011 academic year.[1]

The layout of the report is as follows. In Section 2, we provide a description of our research methodology and approaches taken to gather data and provide estimates of economic impact. In Sections 3 to 4 we examine how we collected data on student enrolment as well as student expenditure. In Section 5 we combine our data and provide estimates of economic impact of international education services in the province on provincial GDP, employment, and government revenue. Finally in Section 6, we summarize our findings.

[1] Roslyn Kunin & Associates (2013). An Update on the Economic Impact of International Education in British Columbia. Report submitted to the BC Council for International Education.

2. Methodology

RKA's methodology for the study on the economic impact of international education in British Columbia includes extensive secondary research involving literature review, collecting existing statistical data and information, as well as consulting with provincial education sector representatives, and representatives from organizations promoting and researching trends in international education in the province.

The References section of this report provides a more detailed listing of the materials used in preparing this report.

The approach undertaken is as follows:

1. Collect as much data as possible on the following:
    - International student enrollment in various programs and institutions
    - Tuition data
    - Data on other additional fees pursuing the education/training programs
    - Living and entertainment expense data
2. Compile data and analyze data above.
3. Follow up with data gaps.
4. Calculate total expenditure by multiplying average expenditure in different categories by the number of student enrollment by level of study.
5. Allocate expenditure values as demand for goods and services in different industries in the province.
6. Feed values in demand for goods and services in each industry related in the provincial input-output tables published by Statistics Canada to estimate impact in terms of GDP, employment, and government revenue.
7. Sum up all impact values in all industries to arrive at total impact in GDP, employment, and government revenue.
8. Repeat procedures 4 to 7 for impact analysis in each region if regional analysis is involved.

Student expenditure valued have been collected and derived in seven categories.

- Tuition and fees for universities: expenditure in this category is the sum of average tuition and additional fees (such as Student Society fees, recreation fees), as well as average cost of books and supplies for students pursuing post-secondary education and training, both public and private.
- Tuition and fees in language training schools: expenditure in this category is the sum of average cost of tuition and additional fees incurred for students participating in private ESL programs in the province, as well as the average cost of books and supplies.

- Tuition and fees in K-12 schools: expenditure in this category is the sum of average tuition cost, plus additional student fees charged by schools, either public or private, as well as the cost of books and supplies incurred during the course of study.
- Food expenses: this expenditure category is generally the cost of food and meals incurred during either a home-stay, student residence, or living in a private accommodation.
- Residence expenses: this category of expenditure is the average cost of living accommodation incurred during a home-stay, student residence, or private apartment rental.
- Transportation expenses: this expenditure category refers to the average cost of getting a monthly bus pass (U-passes for public post-secondary students), or the average cost of getting ground transportation to and from school in a community.
- Discretionary expenses: this category of expenditure refers to an estimate of the average amount spent for entertainment (going to movies and dining out, for example), arts activities, or recreational activities (going to sports activities, ski trips, for example).

More detailed explanation of how we arrive at the expenditure values in each of the categories can be found in Section 4.

When comparing estimates of economic impact of international education services in BC in this updated study with values released in previous studies (published in 2011 and 2013), there are two methodological adjustments that we have made which affects the impact assessment value of international education. These are discussed in further detail below.

Before we discuss these two major changes, we provide a description of the input-output model of the BC economy, based upon which we construct our economic assessment model to evaluate the impact of international education services.

An Input-Output Structure of the Economy

When a person spends on a commodity (goods and/or services), that amount of expenditure creates a direct requirement for the production of that commodity or provision of that service. The economic impact, however, does not end there. The increased production of this commodity leads to increased production of all the intermediate goods that are used to make this commodity, and the increased production of intermediate goods will in turn generate more demand for other goods and services that are used to produce these intermediate goods. As demand rises, workers are able to earn a higher wage, and they sometimes decide to spend a portion of their extra earnings to purchase more goods and services.

As such, an initial demand for a commodity creates a chain effect down the production process.

An economic impact analysis is designed to study inter-linkage between industries in order to evaluate how a change in an initial demand for goods or services in an industry contributes to changes in other industries' levels of production. These changes may have implications to the overall economic activity level within a region.

Similarly, economic impact studies provide information on the amount and nature of spending generated by an agency/organization, facility, program, or event. They are completed for a variety of reasons. Most often the impact figures generated measure the results of a proposed development, existing program, or a new event. They can also help determine which specific actions or plans will provide the most benefits to a community or region.

The *input-output* model is built based on the input-output structure of the economy, which is essentially a set of tables describing the flows of goods and services amongst various sectors of the economy. Such a model is useful in determining how much additional production is generated by a change in the demand for one or more commodities or by a change in the output of an industry.

Beyond the direct expenditures, *input-output* models can be utilized to analyze additional benefits to the local economy such as businesses providing goods and services to entities where direct expenditures occur. In addition, as a result of increased local household income, there may be further increases in overall expenditure. The latter is considered as a spin-off (or induced) impact, which is sometimes captured in economic impact studies.

Statistics Canada has been providing input-output accounts for all provinces and territories of Canada on an annual basis starting 1997. Until 1997, annual publication of input-output accounts was limited to the national economy. These accounts are the most comprehensive and detailed statistics on transactions involving production activity and intermediate, as well as final consumption of goods and services in the economy. The accounts are prepared at the Worksheet level of detail, consisting of 303 industries, 727 groups of goods and services (commodities), and 172 categories of final users. There are three more compact versions of the tables that are usually available to the public: the Link, the Medium and the Small aggregation tables (Statistics Canada 2008).

Compared to the complexity of actual economic reality, the input-output model presents a simplified account of economic interdependency. This is not unique in input-output model as all economic models have to make certain simplified assumptions about the world they need to represent. That being said, it is useful to recognize the limitations of input-output models and the implication of these limitations. These limitations are described in Appendix 1.

Multiplier values in the input-output tables essentially represent the results of a production function associated with a set of inputs. The relationships amongst intermediate materials and a final product tend to remain relatively consistent unless the underlying technology changes drastically.

There are reasons why multiplier values change over time. Included below is an excerpt from a BC Stats research article that offers insight on this topic (Horne 2008).

- Random noise in the data collection system. Statistics Canada collects all of the industry information and then manipulates, processes and ensures that it is consistent, by commodity and by industry and across the whole provincial economy. Given the many steps and the inherent complexity of these processes it would be very surprising if some anomalies did not appear in the same data from one year to another.
- Contracting out of Support Services. If services that are not part of the core business (e.g. administration or transportation) are conducted "in-house" as part of the business then employment in these services is part of the direct employment for that industry. On the other hand, if these services are contracted out to other firms then only the service is purchased and employment in these services would be considered indirect. Total employment may not have changed at all, but some of it would have moved from the direct column to the indirect column. The reverse transition is also possible. Structural changes of this sort will affect the multipliers.
- Real changes. Notwithstanding the above reasons why multipliers may have changed, it is possible that some of the differences actually reflect real changes.

RKA's first study in 2011 used 2007 provincial input-output multipliers published by Statistics Canada. The 2013 study used 2008 provincial input-output multipliers. In this update, we will use the 2008 provincial input-output multiplier values so that the assessment of economic impact is based on the same methodology. It is noted that Statistics Canada has released a new 2010 input-output multiplier tables. It is possible that future evaluations will use the new multiplier tables.

3. Number of International Students in BC

In this Section, we will describe data we have collected on the number of international students in British Columbia, as well as growth trends in recent years.

3.1. By Level of Education

3.1.1. Post-Secondary Education and Training

One of the main objectives of this study is to understand the number of international students in the province in different levels of study including the K-12 system, the post-secondary system, and private Languages Canada member schools.

Table 1 shows the total number of international students in BC in public post-secondary institutions from 2009/10 to 2013/14 academic year.

Table 1 Number of International and Canadian Students in BC Public Post-Secondary Institutions, 2009/10 to 2013/14, Unique Totals Only[2]

Academic year	International Students	Domestic Students
2009/10	28,000	411,800
2010/11	32,000	411,000
2011/12	33,500	411,400
2012/13	35,600	398,500
2013/14	39,600	394,400

Source: Student Transitions Project, Fall 2014 submission.

Over this period, the number of international students in BC post-secondary institutions has increased at an average growth rate of 9.1% per year. By comparison, enrollment of domestic students has decreased at an average rate of 1.1% per year during the same period.

We also received data on the number of international students in private post-secondary institutions (including degree-granting institutions and private career training providers) from 2009/2010 to 2013/14, as well as enrollment of students in Languages Canada (private) member schools during the same period.

2 Detailed notes on the Table.
1. At Colleges, Institutes and Teaching-intensive Universities, international students include students who have paid an international fee for at least one course in the period. At Research-intensive Universities, international students are defined as those who hold a visa (student visa, work permit, diplomatic visa, or minister's permit).
2. Data exclude offshore students.
3. In any given year, some students attend more than one institution. Since these students are included in the headcount of each institution they attend, the sum of all institutions' headcounts will include some students more than once, producing an overstated institution headcount total. In the unique headcount, students who are identified as attending more than one institution are only counted once. This number represents the number of students served by the participating institutions as a whole.

Over this period, the number of international students in private post-secondary institutions grew on average 12.1% per year, compared with 9.1% per year rate of increase in public post-secondary institutions. Over the same period, Languages Canada (private) member schools saw minimum growth in student enrollment, compared with previous years and other types of institutions. The average annual growth rate was 0.3% per year from 2009/2010 to 2013/14. Preliminary 2014/15 data for Languages Canada private member schools indicates positive growth in the sector, which is consistent with the annual growth rate between 2009/10 and 2011/12.

Table 2 Number of International Students in BC Public Post-Secondary Institutions, Private Post-Secondary Institutions, Private Languages Canada Member Schools, and K-12, 2009/10 to 2013/14, Unique Totals Only[3]

Institution Type	2009/10	2010/11	2011/12	2012/13	2013/14
Public post-secondary[2]	28,000	32,000	33,500	35,600	39,600
Graduate[3]	4,300	5,100	5,400	6,100	6,900
Undergraduate[4]	23,700	26,900	28,100	29,500	32,700
Private post-secondary[5]	11,000	11,400	12,800	15,000	17,400
Language schools[6]	43,000	45,300	47,300	49,200	43,500
Elementary and secondary schools[7]	12,000	12,000	13,000	13,000	14,100
Total	**94,000**	**100,700**	**106,600**	**112,800**	**114,600**

Source: see footnotes.

It is estimated that in 2013/14 academic year there are a total of 17,100 international students studying in private post-secondary institutes, and 43,500 Languages Canada students. According to Languages Canada representatives, on average students in BC studied for 11 weeks in the program in 2014.

3.1.2. K-12 Education

Table 3 shows the number of international students in both the public and independent K-12 school system in the province between 2009/10 and 2013/14 school year.

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3 Detailed notes on the Table.

2. Public post-secondary data source: Central Data Warehouse, October 2010 submission, BC HEADset, University of Northern British Columbia Institutional Research report (for 2009/10); Student Transitions Project (for 2010/11, 2011/12, 2012/13, 2013/14). Data reporting cycle is Academic Year ending August 31.

3. Graduate category includes the following credential types: doctorate, master's degree, graduate diploma, graduate certificate, graduate other, post-degree diploma and post-degree certificate.

4. Undergraduate category includes the following credential types: first professional degree, bachelor's degree, apprenticeship, advanced diploma, diploma, associate degree, advanced certificate, certificate, developmental, and programs that do not typically have a credential such as university transfer.

5. Private post-secondary data source: Citizenship and Immigration Canada international student visa data. Data include private degree-granting institutions and private career training providers. The headcount is estimated from Citizenship and Immigration Canada international student visa data. Data reflects students present on December 1st annually.

6. Language schools data source: Languages Canada report. Language schools include private language schools that are members of Languages Canada. Non-member language schools are not included. Public member schools are included in public post-secondary. Data reporting cycle is Calendar Year.

7. Elementary and secondary schools data source: Ministry of Education, Student Statistics: Province - Public and Independent Schools Combined headcount report. Elementary and secondary schools include all public and independent schools from Kindergarten to Grade 12. Data reporting cycle is Fiscal Year ending June 30.

International student enrollment grew at an average annual rate of 5% over four years, more modest in comparison with percentage increase of international students at the post-secondary level. However, 2014/15 Ministry of Education data for the K-12 sector indicates a substantial increase over 2013/14. This positive growth will result in an increased overall growth rate that is on par with growth in the post-secondary sector.

Table 3 Number of International Students in BC in K-12 Education System, 2009/10 to 2013/14

Academic year	Public Schools	Independent Schools	Total ^
2009/10	9,000	2,700	12,000
2010/11	9,300	2,600	12,000
2011/12	9,800	2,800	13,000
2012/13	10,300	2,800	13,000
2013/14	11,100	3,100	14,000

^ Totals have been rounded to the nearest 1000.
Source: Ministry of Education.

The overall total enrollments in the province`s K-12 system have shown steady growth over the years.

4. Student Expenditure

This section includes detailed sources of information, data we relied on and the techniques we applied to derive estimates of basic educational expenses and living costs while international students are in BC.

4.1. Tuition and Other Fees

4.1.1. K-12 School Students

We have relied upon a variety of data sources to arrive at average tuition and other fees for different levels of study.

For tuition and other fees at the K-12 level, we have collected information published by Ministry of Education reports on total revenue from international students in each of the school districts for international students in the public school system. We have relied upon information from the report *International Education Survey of Member Schools within FISABC* and a selected number of independent school websites to arrive at an average for tuition and fees paid by international students in independent schools.

4.1.2. Post-Secondary Education Students

Detailed tuition fees for full-time university level international students for each of the provinces are available from Statistics Canada's annual Tuition and Living Accommodation Costs (TLAC) survey. The information we have used is the final estimates for 2014/2015 academic year.

We note that we have applied the average for full time undergraduate tuition fees for those in the "undergraduate" level and average for full-time graduate tuition fees for those in the "graduate" level for the number of international students in the "undergraduate" and "graduate" category in the public post-secondary institutions.[4]

In addition, we have included "Additional Fees" which represent compulsory fees universities impose on both domestic and international students, such as general fees (admission, registration, examination, internship, et cetera), technology fees, student services fees, student association fees, contributions to student activities, copyright fees, premiums for compulsory insurance plans, fees for athletics and recreational activities, and various other fees such as transcript, degree, laboratory, uniform, et cetera. The data we use applies to fees reported for Canadian full-time students in undergraduate

4 We note that the weighted average tuition fees for undergraduate students in BC in 2013/14 were about $17,900, while the weighted average tuition fees for graduate students were about $12,400. However, it is noted that at graduate level study, the weighted average tuition fees did not take into account the fees charged in the Master of Business Administration (MBA) program as these are substantially higher than other graduate level programs. Dental, medical and veterinary residency programs offered in teaching hospitals and similar locations that may lead to advanced professional certification have also been excluded. On the other hand, financial assistance or tax rebates have not been accounted for in the calculation of these averages either.

and graduate programs. International students may pay supplemental fees (for example, they may have to add to health insurance if they are not covered by the provincial insurance).

We have also made an allowance of $1,200 per academic year for books.

On the other hand, even though private post-secondary institutions have been included in Statistics Canada's data sample, no institutions in this category reported tuition and fees information in the current survey. Further, we do not have a breakdown of the number of international students studying at undergraduate and graduate levels, or a breakdown between the number of students in degree-granting institutions and career development colleges in the province. As such, the data we have used is a simple average of tuition and fees information reported (from websites) in a sample of private post-secondary institutes in the province for different levels of study.

We note that tuition fees data from the Statistics Canada TLAC survey for undergraduate students ranges from a minimum of eight months to a maximum of 10 to 12 months. We have assumed that all undergraduate international students are studying for at least 10 months in a given year.

4.1.3. Languages Canada Students

Information from Languages Canada indicates that short term language students pay an average $300 per study week for tuition fees (including books and other study related expenses).

4.2. Living Expenses

In this sub-section, we develop a model of estimating cost of living for international students while they study in BC.

We have also relied upon a variety of data sources to arrive at average living expenses for different levels of study. Information related to home-stay, average room and meals and other basic living expenses for international students in different levels of study, along with tuition and fees as discussed in the previous sub-section, is shown in Table 4.

4.2.1. K-12 School Students

For calculating living expenses at the K-12 level in the public domain, we have relied upon information published by school websites on average home-stay costs for a 10-month period. For independent K-12 schools, we have relied upon information from school websites on cost of residence on campus.

4.2.2. Post-Secondary Institution Students

At post-secondary level, we have relied upon Statistics Canada's annual Tuition and Living Accommodation Costs (TLAC) survey data to calculate the average costs of on-campus room and meal expenses for an eight months period. Average of high and low values in a range has been applied and scaled up to full year (12 months) values.

We note that these are fairly conservative estimates as they apply to single students living on campus. Students with a family generally pay more than the amount shown here in Table 4.

We have also made allowances for transportation costs for students staying in the province. For those studying in public post-secondary institutions, we have applied a value of $420 per year as all these students are eligible to purchase a bus pass at a cost of $35 per month, across the province. For those studying in private post-secondary institutions, we have applied a value of $100 per month for local transit purposes.

In addition to basic living costs as presented above, we have made an allowance of $2,500 per student per year for discretionary expenses (such as eating out, recreational activities, and entertaining).

For each level of study, the formula to calculate total expenditure is as follows:

Estimated number of students in that level of study x sum of (average tuition and additional fees, books, average room and meals, average transportation cost, average discretionary spending) per year = Total International Student Expenditure in one year in the level of study

4.2.3. Languages Canada Students

Information from Languages Canada representatives indicates that an average student spends $210 per study week for living expenses (full board). It is noted that not all Languages Canada member programs charge fees from students, and not all students choose to stay with accommodation offered by member programs. This amount ($210 per week) is likely the least expensive accommodation option for students, so accommodation and meal costs may be higher for students in non-reporting member institutes.

Information from Languages Canada representatives also indicates that most students are based in the larger cities where average public transportation passes range around $120-$130 per month. We have applied the weekly estimate of $32.50 to account for expense for local transportation.

Table 4 Estimated Total Expenditure on Tuition and Fees and Living Expenses for International Student in BC by Level of Study, 2013/14 Academic Year

	Number of Students	Tuition Fees	Additional Fees	Books & Supplies	Accommodation and Meals	Transportation	Discretionary Spending	Total Spending
Public PSE								
Undergraduate	32,700	$ 584,185,500	$ 23,413,200	$ 39,240,000	$ 416,925,000	$ 11,772,000	$ 81,750,000	$ 1,157,285,700
Graduate	6,900	$ 85,442,700	$ 5,271,600	$ 8,280,000	$ 87,975,000	$ 2,484,000	$ 17,250,000	$ 206,703,300
Private PSE	17,400	$ 367,140,000	$ 4,350,000	$ 20,880,000	$ 156,600,000	$ 20,880,000	$ 43,500,000	$ 613,350,000
Languages Canada Students	43,500	$ 145,899,000	$ -	$ -	$ 102,129,300	$ 14,589,900	$ 58,359,600	$ 320,977,800
K-12								
Public	11,050	$ 155,854,816	$ -	$ -	$ 82,875,000	$ -	$ 5,525,000	$ 244,254,816
Independent	3,060	$ 47,685,510	$ -	$ -	$ 43,146,000	$ -	$ 1,530,000	$ 92,361,510
Sub-Total * PSE	57,000	$ 1,036,768,200	$ 33,034,800	$ 68,400,000	$ 661,500,000	$ 35,136,000	$ 142,500,000	$ 1,977,339,000
Languages Canada ^	43,500	$ 145,899,000	$ -	$ -	$ 102,129,300	$ 14,589,900	$ 58,359,600	$ 320,978,000
K-12	14,100	$ 203,540,000	$ -	$ -	$ 126,021,000	$ -	$ 7,055,000	$ 336,616,000
Grand Total *	114,600	$ 1,386,207,000	$ 33,035,000	$ 68,400,000	$ 889,650,000	$ 49,726,000	$ 207,915,000	$ 2,634,933,000

* Number of students sub-total and grand total rounded to the nearest 100. ^ Private Languages Canada member school students only.

Source: RKA

Languages Canada representatives also provided information on a series of discretionary expenses for our reference, expenses ranging from phone/internet data plans, electricity, health insurance, to tourism related activities such as sight-seeing trips, dining-out, and arts and sports performances. We have made a modest allowance of $120 per week for such discretionary spending.

Summary of educational expenses and living expenses incurred by international students in different types of institutions is presented in Table 4.

5. Assessing the Economic Impact of International Education in British Columbia

In this section, we will combine an estimated number of international students in the province by level of study and estimates on educational and living costs to arrive at an estimation of total expenditure by international students while they study in the province.

In total, there were 114,600 international students in the province in 2013/14 academic year studying in various types of education institutions including: elementary and secondary schools, post-secondary institutions, and private language schools. Their spending contributed $2.6 billion to the provincial economy.

Of this total, students in the K-12 system contributed $336.6 million and those in the post-secondary system (public and private) contributed almost $1.98 billion to the provincial economy. Students in private language training schools contributed another $321 million.

Our calculations have incorporated various survey results and average expenditure values have been applied in most cases. We believe that our estimates are fairly conservative as we have included only the most common type of expenses, for a single student with no dependants. We realize that in certain cases the expenditure can be substantially above average. However, without consistent data set that shows the distribution of international students in different level of spending bracket, we have not included such data in our estimates.[5]

5.1. Direct and Indirect Economic Impact

5.1.1. Provincial Aggregate

When we compare international education services in the province with other sectors, we need to translate those total expenditure values into Gross Domestic Products (GDP), employment, and government revenue contribution.[6]

5 One instance is the number of Saudi Arabian students studying in Canada has increased substantially from approximately 1,000 students in 2005 to 16,000 in 2014. According to information from the Saudi Arabian Cultural Bureau in Canada, most students are sponsored by scholarships under the Saudi Postgraduate Medical Program and the King Abdullah Scholarship Program. These scholarships pay to the doctors and scholarship students (and their dependents) in Canada tuition and fees, a monthly stipend for living expense, family travel, child benefits, health insurance, dental costs and other expenses.

6 Total expenditure (or industrial output) refers to the value of outputs produced, whether the products are used as an intermediate product (think of a log cut down from a tree for the purposes of building houses, for example) or used as a final product (think of a beam in a completed house). If we calculate gross domestic product at the provincial level, or GDP at the provincial level, this way, the cost of the log will be counted many times, as it moves from a raw product to its eventual use as a beam, and it is wrong. The value of total industrial output thus includes both the value of intermediate inputs and primary inputs - the latter being the labour and the capital in production. It is the sum of the latter, which is also referred to as the value added, that is equal to gross domestic product at the provincial level.

In this subsection, we utilize Statistics Canada's economic multipliers, as derived from its provincial Input-Output Tables, to estimate international education services' contribution to the province's GDP, employment, and government revenue.[7]

In Table 5, we provide our estimates of the total expenditure by international students in all levels of study, and the corresponding contribution to the province's GDP, employment, and government revenue in 2013/14.[8]

Table 5 Direct and Indirect Economic Impact of International Education Services, BC, 2013/14

	Direct Economic Impact			Direct and Indirect Economic Impact		
	GDP	Employment	Government Revenue	GDP	Employment	Government Revenue
Sub-Total * PSE	$ 1,375,881,000	17,800	$ 75,592,000	$ 1,700,290,000	22,600	$ 91,383,000
Languages Canada ^	$ 210,964,000	5,600	$ 12,619,000	$ 279,768,000	6,600	$ 16,681,000
K-12	$ 268,289,000	4,100	$ 11,645,000	$ 311,592,000	4,800	$ 13,844,000
Grand Total *	$ 1,855,134,000	27,500	$ 99,856,000	$ 2,291,650,000	34,000	$ 121,908,000

* Employment impact rounded to the nearest 100. Other impact rounded to nearest 1000. ^ Private Languages Canada member school students only.
Source: RKA

Total GDP contribution of international education services amounted to almost $1.86 billion in the 2013/14 academic year in British Columbia. By comparison, the GDP contribution of the whole Educational Services sector in BC was approximately $11.5 billion. Therefore, international education services accounted for about 16% of the province's overall educational services.[9]

In employment, international education services provided 27,500 jobs in BC. The overall educational services sector in BC employed about 166,300 persons in 2014. Therefore, international educational services also provided equivalent to about 16% of all the jobs in the educational services sector.

In economic impact analysis, a whole impact approach can be taken in which case indirect impact, measuring additional benefits brought on to industries providing goods and services to the industries directly impacted, is also measured in addition to direct impact.

Also in Table 5, we have shown values of combined direct and indirect impact international students bring to the provincial economy.

7 Statistics Canada, *Provincial Input-Output Multipliers, 2008*.

8 The types of taxes included in the Input-Output Tables include indirect taxes on products as well as indirect taxes on production, at the federal, provincial, and municipal levels, where applicable, net of subsidies on products and/or production.

9 Note that direct economic impact in terms of GDP, employment, and government revenue is not attributed to the educational services industry only. In fact, total expenditure in the province has been allocated to these following industries in the provincial input-output model: universities; government education services; educational services (except universities); retail trade; transit and ground passenger transportation; lessors of real estate; and arts, entertainment and recreation.

5.1.2. Regional Impact Analysis

In this sub-section, we provide estimates of economic impact by international students studying in different regions of the province in terms of their contribution to the provincial GDP, employment, and government revenue.

For the purposes of this analysis, we have used the boundaries of eight Development Regions in the province, and collected data of international students in each of the region, and data on their spending patterns. After arriving at the total expenditure for students in the various types of institutions, we have replicated the procedures in applying the demand for goods and services by industry by multiplier values in the provincial input-output tables to arrive at our estimates of direct and indirect impact in GDP, employment, and government revenue contribution.

In the table below, we have shown total number of international students in each region by level of study, and their aggregate expenditure by category. For the purposes of the report, we have one region for Southern Interior which combines Thompson/Okanagan and Kootenay Development Regions, and another region for Northern BC which combines Cariboo, Nechako, Northcoast and Northeast Development Regions.

Table 6 Estimated Total Expenditure on Tuition and Fees and Living for International Student in BC by Level of Study, by Region, 2013/14

Mainland/Southwest

	Number of Students	Tuition Fees	Additional Fees	Books & Supplies	Accommodation and Meals	Transportation	Discretionary Spending	Total Spending
Public PSE	27,000	$ 456,564,682	$ 19,557,818	$ 32,400,000	$ 344,250,000	$ 9,720,000	$ 67,500,000	$ 929,992,500
Private PSE	11,000	$ 232,100,000	$ 2,750,000	$ 13,200,000	$ 99,000,000	$ 13,200,000	$ 27,500,000	$ 387,750,000
Languages Canada Students K-12	40,200	$ 134,830,800	$ -	$ -	$ 94,381,560	$ 13,483,080	$ 53,932,320	$ 296,627,760
Public	7,830	$ 110,438,299	$ -	$ -	$ 58,725,000	$ -	$ 3,915,000	$ 173,078,299
Independent	2,170	$ 33,816,195	$ -	$ -	$ 30,597,000	$ -	$ 1,085,000	$ 65,498,195
Total PSE	38,000	$ 688,664,682	$ 22,307,818	$ 45,600,000	$ 443,250,000	$ 22,920,000	$ 95,000,000	$ 1,317,743,000
Languages Canada ^	40,200	$ 134,830,800	$ -	$ -	$ 94,381,560	$ 13,483,080	$ 53,932,320	$ 296,628,000
K-12	10,000	$ 144,254,494	$ -	$ -	$ 89,322,000	$ -	$ 5,000,000	$ 238,576,000

Vancouver Island/Coast

	Number of Students	Tuition Fees	Additional Fees	Books & Supplies	Accommodation and Meals	Transportation	Discretionary Spending	Total Spending
Public PSE	6,500	$ 109,913,720	$ 4,708,364	$ 7,800,000	$ 82,875,000	$ 2,340,000	$ 16,250,000	$ 223,887,083
Private PSE	1,600	$ 33,760,000	$ 400,000	$ 1,920,000	$ 14,400,000	$ 1,920,000	$ 4,000,000	$ 56,400,000
Languages Canada Students K-12	3,100	$ 10,397,400	$ -	$ -	$ 7,278,180	$ 1,039,740	$ 4,158,960	$ 22,874,280
Public	2,430	$ 34,273,955	$ -	$ -	$ 18,225,000	$ -	$ 1,215,000	$ 53,713,955
Independent	670	$ 10,440,945	$ -	$ -	$ 9,447,000	$ -	$ 335,000	$ 20,222,945
Total PSE	8,100	$ 143,673,720	$ 5,108,364	$ 9,720,000	$ 97,275,000	$ 4,260,000	$ 20,250,000	$ 280,287,000
Languages Canada ^	3,100	$ 10,397,400	$ -	$ -	$ 7,278,180	$ 1,039,740	$ 4,158,960	$ 22,874,000
K-12	3,100	$ 44,714,900	$ -	$ -	$ 27,672,000	$ -	$ 1,550,000	$ 73,937,000

Southern Interior

	Number of Students	Tuition Fees	Additional Fees	Books & Supplies	Accommodation and Meals	Transportation	Discretionary Spending	Total Spending
Public PSE	5,100	$ 86,239,995	$ 3,694,255	$ 6,120,000	$ 65,025,000	$ 1,836,000	$ 12,750,000	$ 175,665,250
Private PSE	1,200	$ 25,320,000	$ 300,000	$ 1,440,000	$ 10,800,000	$ 1,440,000	$ 3,000,000	$ 42,300,000
Languages Canada Students K-12	200	$ 670,800	$ -	$ -	$ 469,560	$ 67,080	$ 268,320	$ 1,475,760
Public	710	$ 10,014,201	$ -	$ -	$ 5,325,000	$ -	$ 355,000	$ 15,694,201
Independent	190	$ 2,960,865	$ -	$ -	$ 2,679,000	$ -	$ 95,000	$ 5,734,865
Total PSE	6,300	$ 111,559,995	$ 3,994,255	$ 7,560,000	$ 75,825,000	$ 3,276,000	$ 15,750,000	$ 217,965,000
Languages Canada ^	200	$ 670,800	$ -	$ -	$ 469,560	$ 67,080	$ 268,320	$ 1,476,000
K-12	900	$ 12,975,066	$ -	$ -	$ 8,004,000	$ -	$ 450,000	$ 21,429,000

Northern BC

	Number of Students	Tuition Fees	Additional Fees	Books & Supplies	Accommodation and Meals	Transportation	Discretionary Spending	Total Spending
Public PSE	1,000	$ 16,909,803	$ 724,364	$ 1,200,000	$ 12,750,000	$ 360,000	$ 2,500,000	$ 34,444,167
Private PSE	300	$ 6,330,000	$ 75,000	$ 360,000	$ 2,700,000	$ 360,000	$ 750,000	$ 10,575,000
Languages Canada Students K-12	0	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Public	80	$ 1,128,361	$ -	$ -	$ 600,000	$ -	$ 40,000	$ 1,768,361
Independent	20	$ 311,670	$ -	$ -	$ 282,000	$ -	$ 10,000	$ 603,670
Total PSE	1,300	$ 23,239,803	$ 799,364	$ 1,560,000	$ 15,450,000	$ 720,000	$ 3,250,000	$ 45,019,000
Languages Canada ^	0	$ -	$ -	$ -	$ -	$ -	$ -	$ -
K-12	100	$ 1,440,031	$ -	$ -	$ 882,000	$ -	$ 50,000	$ 2,372,000

^ Private Languages Canada member school students only.

Source: RKA

Note that all headcounts by region in above do not add up to province total due to exclusion of students in "Region not stated"

In Table 7, we further show values of direct and combined direct and indirect economic impact from students in these regions to the provincial economy.

Table 7 Direct and Indirect Economic Impact of International Students in BC, by Region, 2013/14

		Direct Economic Impact			Direct and Indirect Economic Impact		
Mainland/Southwest		GDP	Employment	Government Revenue	GDP	Employment	Government Revenue
Total	PSE	$ 916,818,000	11,840	$ 50,560,000	$ 1,133,225,000	15,040	$ 61,105,000
	Languages Canada ^	$ 194,960,000	5,190	$ 11,661,000	$ 258,544,000	6,070	$ 15,416,000
	K-12	$ 190,148,000	2,920	$ 8,254,000	$ 220,841,000	3,380	$ 9,813,000
Vancouver Island/Coast							
Total	PSE	$ 194,885,000	2,510	$ 10,983,000	$ 241,181,000	3,190	$ 13,253,000
	Languages Canada ^	$ 15,034,000	400	$ 899,000	$ 19,937,000	470	$ 1,189,000
	K-12	$ 58,931,000	900	$ 2,557,000	$ 68,441,000	1,050	$ 3,040,000
Southern Interior							
Total	PSE	$ 151,545,000	1,950	$ 8,554,000	$ 187,563,000	2,480	$ 10,321,000
	Languages Canada ^	$ 970,000	30	$ 58,000	$ 1,286,000	30	$ 77,000
	K-12	$ 17,084,000	260	$ 740,000	$ 19,837,000	300	$ 880,000
Northern BC							
Total	PSE	$ 31,309,000	400	$ 1,751,000	$ 38,730,000	510	$ 2,114,000
	Languages Canada ^						
	K-12	$ 1,892,000	30	$ 82,000	$ 2,196,000	30	$ 97,000

^ Private Languages Canada member school students only.

Source: RKA

Note that all headcounts by region in above do not add up to province total due to exclusion of students in "Region not stated"

5.2. Comparison of International Education Services in BC with Other Export Trade

In this sub-section, we will provide a comparison of the total value of international education services by top source country, with the values of BC's exports of goods to these countries. We will also compare the value of total expenditure in international education services in the province with the total export of goods from BC.

The Table that follows details the number of international students by top ten source countries. (See Appendix 2 for data table showing the number of international students in BC by source countries.)

Table 8 Number of International Students in BC by Top Source Countries, 2013/14, Unique Totals Only[10]

Source Country	Public Post-Secondary[2]	Private Post-Secondary[3]	Language Schools[4]	Elementary and Secondary Schools[3]	Total
China	15,400	6,000	1,900	5,400	**28,700**
South Korea	1,900	1,200	7,400	3,100	**13,600**
Japan	1,800	1,600	9,300	800	**13,500**
Brazil	800	200	7,600	300	**8,900**
Saudi Arabia	1,700	1,400	3,100		**6,200**
India	3,100	2,000			**5,100**
Mexico	500	500	2,400	700	**4,100**
Taiwan	600	300	2,100	300	**3,300**
United States	2,300	400		200	**2,900**
Switzerland	100		2,000		**2,100**
Top 10 Countries	28,200	13,600	35,800	10,800	88,400
All Countries	**39,600**	**17,400**	**43,500**	**14,100**	**114,600**

Source: see footnotes

In general, international students from the top 10 source countries account for more than three-quarters of all international students coming to study in BC.

By multiplying an average total expenditure per student in 2013/14 (see Section 4.0) by the total number of international students in each of the top ten source countries, we have calculated the total amount of export in international education services from BC to each of these countries. This is summarized in Table 9.

10 Detailed notes on the Table.
2. Public post-secondary data source: Student Transitions Project, Fall 2014 submission. Data reporting cycle is Academic Year.
3. Private post-secondary and elementary and secondary schools data source: Estimated from Citizenship and Immigration Canada international student visa data (Table 9a: Top 10 Source Countries of International Students Present Dec. 1st in BC by Level of Study).
4. Language schools data source: Languages Canada report. Language schools include private language schools that are members of Languages Canada. Non-member language schools are not included. Public member schools are included in public post-secondary. Data reporting cycle is Calendar Year.
5. 'Unknown' category includes students whose source country was not identified.

Table 9 Total Value of International Education Services by Top Ten Source Countries (by Number of Students), 2013/14

Source Country	Public Post-Secondary	Private Post-Secondary	Languages Schools	Elementary and Secondary Schools	Total: All Types
China	$ 530,440,000	$ 211,500,000	$ 14,020,000	$ 128,917,000	$ 884,877,000
South Korea	$ 65,444,000	$ 42,300,000	$ 54,603,000	$ 74,008,000	$ 236,355,000
Japan	$ 62,000,000	$ 56,400,000	$ 68,623,000	$ 19,099,000	$ 206,122,000
Brazil	$ 27,555,000	$ 7,050,000	$ 56,079,000	$ 7,162,000	$ 97,846,000
Saudi Arabia	$ 58,555,000	$ 49,350,000	$ 22,874,000	$ -	$ 130,779,000
India	$ 106,777,000	$ 70,500,000	$ -	$ -	$ 177,277,000
Mexico	$ 17,222,000	$ 17,625,000	$ 17,709,000	$ 16,711,000	$ 69,267,000
Taiwan	$ 20,667,000	$ 10,575,000	$ 15,495,000	$ 7,162,000	$ 53,899,000
United States	$ 79,222,000	$ 14,100,000	$ -	$ 4,775,000	$ 98,097,000
Switzerland	$ 3,444,000	$ -	$ 14,758,000	$ -	$ 18,202,000
Top Ten Countries	$ 971,326,000	$ 479,400,000	$ 264,161,000	$ 257,834,000	$ 1,972,721,000
Total (All Countries)	$ 1,363,982,000	$ 613,350,000	$ 320,980,000	$ 336,617,000	$ 2,634,929,000

Source: RKA

As can be seen from the column "Total: All Types", the ranking of these top ten source countries changes when total expenditure is being compared. This is due to the differences in the distribution of international students from these countries studying in the type of institutions in the province. Saudi Arabia, for example, ranks below Brazil in terms of the number of students studying in BC, but because the majority are in post-secondary institutions, their total expenditure is larger than students from Brazil.

For this reason, we have constructed another table showing the top ten countries with international students in BC using values of student expenditure in BC. See Table 10.

Table 10 Total Value of International Education Services by Top Ten Source Countries (by Value of Student Expenditure), 2013/14

Source Country	Public Post-Secondary	Private Post-Secondary	Languages Schools	Elementary and Secondary Schools	Total: All Types
China	$ 530,440,000	$ 211,500,000	$ 14,020,000	$ 128,917,000	$ 884,877,000
South Korea	$ 65,444,000	$ 42,300,000	$ 54,603,000	$ 74,008,000	$ 236,355,000
Japan	$ 62,000,000	$ 56,400,000	$ 68,623,000	$ 19,099,000	$ 206,122,000
India	$ 106,777,000	$ 70,500,000	$ -	$ -	$ 177,277,000
Saudi Arabia	$ 58,555,000	$ 49,350,000	$ 22,874,000	$ -	$ 130,779,000
United States	$ 79,222,000	$ 14,100,000	$ -	$ 4,775,000	$ 98,097,000
Brazil	$ 27,555,000	$ 7,050,000	$ 56,079,000	$ 7,162,000	$ 97,846,000
Mexico	$ 17,222,000	$ 17,625,000	$ 17,709,000	$ 16,711,000	$ 69,267,000
Taiwan	$ 20,667,000	$ 10,575,000	$ 15,495,000	$ 7,162,000	$ 53,899,000
Germany	$ 20,667,000	$ -	$ 6,641,000	$ 11,937,000	$ 39,245,000
Top Ten Countries	$ 988,549,000	$ 479,400,000	$ 256,044,000	$ 269,771,000	$ 1,993,764,000
Total (All Countries)	$ 1,363,982,000	$ 613,350,000	$ 320,980,000	$ 336,617,000	$ 2,634,929,000

Source: RKA

Note that the amounts generated as shown here in Table 10 are underestimates of the "true" amount of BC's exports of educational services as we are only accounting for the number of students who stay in the province to study. We have not accounted for the province's export of educational services in the form of setting up programs on campuses outside of Canada.

We have further compared BC's export in international education services with other export in goods from BC.[11] This is shown in Table 11.

[11] The data on export of goods is available at: http://www.ic.gc.ca/tdo. The time period is 2014. Product Search is "Top 25 Product Groups – HS4", and each country was chosen individually.

Table 11 Comparison of International Education Services with Other Top Exports in Goods from BC, 2014

Value in Thousands of Canadian Dollars	2014
Lumber (Thickness >6Mm)	$5,767,018
Coal and Solid Fuels Manufactured from Coal	$3,659,799
Copper ores and Concentrates	$2,920,501
Chemical Woodpulp - Soda or Sulphate	$2,692,384
International Education Services	**$2,634,929**
Liquefied Petroleum or Hydrocarbon Gases	$2,591,144
Wood in the Rough	$848,271
Preparations of/Non-Crude Petroleum oils and oils Obtained from Bituminous Minerals	$773,956
Zinc and Zinc alloys	$683,446
Uncoated Paper and Paperboard for Writing, Printing or Graphic uses	$390,569
Fresh or Chilled Fish (excl. fish Fillets)	$389,646
Total (All Products)	$36,514,879

Source: Statistics Canada & US Census Bureau; RKA

For comparison, we have also shown the value of international education services in each of the top 10 source countries as a percentage of total value of goods export to these countries. The final row in Table 12 shows the value of international education services in BC from all international students and the value of province's total export in goods.

Table 12 Comparison of International Education Services with Total Exports in Goods from BC to the Top Ten International Student Source Countries and to All Countries, 2014

Country/Area	Export of Educational Services	All Goods Exports	Educational Services Compared with Total Goods Export
China	$ 884,877,000	$ 6,541,000,000	14%
South Korea	$ 236,355,000	$ 2,146,000,000	11%
Japan	$ 206,122,000	$ 3,687,000,000	6%
India	$ 177,277,000	$ 594,120,000	30%
Saudi Arabia	$ 130,779,000	$ 54,919,000	238%
United States	$ 98,097,000	$ 17,955,000,000	1%
Brazil	$ 97,846,000	$ 313,013,000	31%
Mexico	$ 69,267,000	$ 120,538,000	57%
Taiwan	$ 53,899,000	$ 550,739,000	10%
Germany	$ 39,245,000	$ 307,514,000	13%
Top Ten Countries	$ 1,993,764,000	$ 32,269,843,000	6%
Total (All Countries)	$ 2,634,929,000	$ 36,514,879,000	7%

Source: Statistics Canada & US Census Bureau; RKA

While the size of international education services is small in comparison with the value of total export in goods to countries such as Japan and the United States, such services contribute substantially to BC's total export to countries such as Saudi Arabia, Mexico, India, and Brazil. They are also significant when compared to export in goods to China (especially when combined with Taiwan and Hong Kong), and South Korea.

6. Conclusions

In 2013/2014 academic year, BC was home to approximately 114,600 international students. Almost 50% of these students were studying in post-secondary institutions, while another 38% of these students were studying in language schools. The province's K-12 system hosted about 12% of all international students.

International students studying in BC play an important and growing role in contributing to the province's economic benefit. Student expenditure, comprising tuition and fees to pay for education services and expenses for day-to-day living, was estimated to be $2.6 billion in 2013/2014. This is equivalent to directly contributing $1.86 billion in the provincial GDP, and supporting 27,500 jobs. All levels of government benefited as well in raising almost $100 million tax revenue from this source.

If we also include the many industries providing goods and services to support those directly impacted by international students, the economic impacts are even greater. The combined direct and indirect GDP contribution by internationals students is estimated to be $2.29 billion, and the combined direct and indirect jobs supported by international students are even higher, about 34,000 in total.

Most people think of traditional sectors like logging and forestry when asked what supports the BC economy. Few realize that the contributions of international students are almost as great: $1.7 billion in GDP for logging and forestry (in chained 2007 dollars, i.e., in constant dollars) versus $1.86 billion for international education (in current dollars). Furthermore, international education is not as cyclical as the resource sectors and continues on as upward trend. The number of jobs created in a year directly due to international education services was 27,500, which is greater than all employed in the agriculture sector (24,300), is about the same as employment total in accounting and tax preparation services (25,200), and greater than employment in many other industries in the province.

International education is a form of export in service. When we compare the value of international educational services with the value of the more traditional goods that BC exports, we note that international education services accounts for 7% of the total values of goods export from the province. The impact for some countries is even more striking. The Saudi Arabians, for example, spend the equivalent of 238% of the value of the goods they import from BC on educational services. Similarly, we see that Mexico (57%), Brazil (31%), India (30%), China (14%), and South Korea (12%) all spend significantly for educational services when compared to the value of goods they import from BC.

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Art Institute of Vancouver: https://content.edmc.edu/assets/pdf/AI/International/price-sheets/Ai-Educational-Costs-and-Art-Grant_location_17.pdf.

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Cost of K-12 Education for International Students

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Bodwell High School: http://www.bodwell.edu/highschool/admissions/fee-schedule/

Mulgrave School: http://www.mulgrave.com/admissions/financial-information/index.aspx

Meadowridge School (in Fraser/Abbotsford):
http://www.meadowridge.bc.ca/page.cfm?p=399.

Pattison School: http://www.pattisonhighschool.ca/admissions/fee-schedule/

Appendix 1 Notes on Methodology

In the Methodology section, we have described the input-output model that is used to estimate the potential direct and indirect economic impacts of international students via their expenditure incurred during their stay in BC. The input-output model is a useful model to capture the relationship amongst industries in the economy. However, we also should be mindful of the model's limitations when interpreting results derived from the model.

Included here is an excerpt from a BC Stats research article that offers some of the more major limitations of the model (Horne 2008).

- The relationships of input-output models are simple proportionalities which imply that marginal changes are equal to average changes. This feature makes input-output models convenient to use; however, under many circumstances, proportional relationships may not be appropriate. For example, economies or diseconomies of scale cannot be represented.
- Increases and decreases show the same proportional impact whereas, in reality, the disappearance of a particular expenditure does not generate a slowdown in the economy equal to its total economic impact, unless all funds originate from abroad. This is because at least some of the amount saved will be re-injected into the domestic economy.
- Input-output models are static models - time is not explicitly represented. Input-output methodology measures the total economic impacts on major economic variables after an exogenous event has taken place. The model does not calculate the amount of time required for the propagation of all effects.
- Input-output models are exclusively flow models and stocks are not represented. Indeed, the introduction of the concept of stocks would require explicit representation of time. As a result, it is necessary to assume that all intermediate goods can be produced without additions to capital stock.
- Supply and demand factors cannot be handled simultaneously. Implicit in input-output models is the assumption that supply is perfectly elastic. Thus, any increase in demand for goods and services would lead the producing industries to increase their output by an equal amount to satisfy that demand. It is also assumed that these producing industries have no difficulty in obtaining the necessary inputs for their new level of output. These inputs include not only the intermediate inputs of domestic goods and services but also labour and imports. If a shortage or bottleneck of economic resources develops in one or more sectors, this may precipitate inflationary activity (i.e. relative price changes), substitution effects or changes in import proportions. Any one of these results could subsequently change the overall economic impact. Another basic assumption is that all industries are operating at full capacity with regard to employment. Hence, any increase in output would require a further proportional demand for labour services. This assumption implies that no

industry will meet a new demand for its goods and services with its existing labour force. Therefore, the employment level in the economy is assumed to change in proportion to the increased output in each industry.

- Although input-output analysis incorporates the provincial economic structure and linkages, it often ignores any economic displacement that may occur in existing industries as new projects are completed. Economic gains in these new projects should be tempered by an estimation of subsequent contractions or losses in existing plants or industries. Further contraction effects on economic activity may result from the recovery of funds used to finance a particular project, either through increased taxation or repayment of borrowed capital. Any displacement effects arising from financing a project should be taken into account in an overall project cost-benefit analysis.

Appendix 2 Number of International Students in BC by Source Countries, 2013/14[12]

[12] Note: footnotes in the table same as those in Table 8 in the main part of the report.

Source Country	Public Post-Secondary[2]	Private Post-Secondary[3]	Language Schools[4]	Elementary and Secondary Schools[3]	Total
China	15,400	6,000	1,900	5,400	**28,700**
South Korea	1,900	1,200	7,400	3,100	**13,600**
Japan	1,800	1,600	9,300	800	**13,500**
Brazil	800	200	7,600	300	**8,900**
All Other Countries	1,400	3,000	800	2,300	**7,500**
Saudi Arabia	1,700	1,400	3,100		**6,200**
India	3,100	2,000			**5,100**
Mexico	500	500	2,400	700	**4,100**
Taiwan	600	300	2,100	300	**3,300**
United States	2,300	400		200	**2,900**
Switzerland	100		2,000		**2,100**
Germany	600		900	500	**2,000**
Unknown[5]	1,300				**1,300**
Russia	500	100	700		**1,300**
Viet Nam	400	300	200	200	**1,100**
Thailand	200		900		**1,100**
France	400		600		**1,000**
Iran	800				**800**
Spain	100		700		**800**
Nigeria	600				**600**
Turkey	200	100	300		**600**
Colombia	100		500		**600**
Hong Kong		300		300	**600**
United Kingdom	500				**500**
Italy	100		400		**500**
Venezuela	100		400		**500**
Indonesia	400				**400**
Pakistan	400				**400**
Ukraine	200		200		**400**
Chile	100		300		**400**
Malaysia	300				**300**
Australia	300				**300**
Singapore	200				**200**
Bangladesh	200				**200**
Philippines	200				**200**
Austria	100		100		**200**
Libya	100		100		**200**
Peru	100		100		**200**
Ecuador	100		100		**200**
Kazakhstan	100				**100**
Kenya	100				**100**
Norway	100				**100**
Netherlands	100				**100**
Ghana	100				**100**
Sweden	100				**100**
Egypt	100				**100**
Jamaica	100				**100**
Denmark	100				**100**
South Africa	100				**100**
Zimbabwe	100				**100**
New Zealand	100				**100**
Tanzania	100				**100**
Israel	100				**100**
Czech Republic			100		**100**
Argentina			100		**100**
United Arab Emirates			100		**100**
Poland			100		**100**
Total	**39,600**	**17,400**	**43,500**	**14,100**	**114,600**

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