

**An Assessment of the Economic Impact of  
International Education in British Columbia  
in 2010 and 2015**

**Final Report**

Presented to:

**British Columbia Council for International Education**

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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 updates the assessment of the economic impact of international students studying in BC during 2010 using counts of study-permit-holder data from Immigration, Refugees and Citizenship Canada. It also provides an assessment of the economic impacts of international students studying in the province during 2015. 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 highlights of our current study of the impact of international education services include the following:

- In the 2015 calendar year, BC's post-secondary institutions and K-12 schools were home to 130,053 international students. This represents a 44% increase of the number of international students in BC from five years ago in 2010.
- Within the body of international students studying at the post-secondary level in BC, those in public post-secondary institutions grew significantly faster (58%) than those in private post-secondary institutions (36%) between 2010 and 2015. The number of students in the K-12 sector grew 45%.
- During 2015, the entire international student body spent over \$3.5 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 a \$2 billion contribution to the provincial GDP in 2015, and supporting 29,300 jobs. Governments raised almost \$200 million in personal income tax revenue.
- By comparison, total spending by international students during 2010 amounted to \$2.1 billion. The economic contribution of such spending was \$1.2 billion in GDP growth, 17,900 jobs supported, and \$113 million of personal income tax revenue raised by governments.
- 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 export of goods in 2010, BC's export of international education service ranked in 4<sup>th</sup> place, behind our export of commodity groups such as mineral

fuels, mineral oils, bituminous substances and mineral waxes (all combined in one group); wood and articles of wood (incl. wood charcoal) (all in one group); and wood pulp as well as waste and scrap of paper or paperboard.

- BC's export in international education services during 2010 was equivalent to 7% of its total value of exports of goods.
- By comparison, BC's export in international education services during 2015 was equivalent to almost 10% of its total value of exports of goods. It ranked 3<sup>rd</sup> place after wood and articles of wood (incl. wood charcoal); and mineral fuels, mineral oils, bituminous substances and mineral waxes (combined in one group).
- The role of international education services is even more important when comparing the value of export of international education services with the value of export in goods to some of the top ten international student source countries. For example, the value of international education services was equivalent to 14.3% of the total value of export in goods from BC to China in 2010. By 2015, the value of international education services increased to 22.6% of the total value of export in goods to China.

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

**Summary Table I Total Number of International Students in BC during 2010 and 2015 Calendar Years and Percentage Increase**

	2010	2015	Percentage Change
<b>Public Post-Secondary</b>	28,490	45,130	58%
<b>Private Post-Secondary</b>	49,834	67,965	36%
<b>K-12</b>	11,713	16,958	45%
<b>Total</b>	90,037	130,053	44%

Source: Immigration, Refugees and Citizenship Canada (IRCC), Ministry of Advanced Education. See notes in the main part of the report.

**Summary Table II Total Annual Spending of International Students in BC during 2010 and 2015 Calendar Years and Percentage Increase**

	2010	2015	Percentage Change
<b>Public Post-Secondary</b>	\$712.9 million	\$1,355 million	90%
<b>Private Post-Secondary</b>	\$1,118 million	\$1,762 million	58%
<b>K-12</b>	\$277.7 million	\$387.8 million	40%
<b>Total</b>	\$2.1 billion	\$3.5 billion	66%

Source: RKA.

**Summary Table III Direct Economic Impacts of International Students in BC during 2010 and 2015 Calendar Years and Percentage Increase**

	2010	2015	Percentage Change
<b>GDP</b>	\$1.2 billion	\$2.0 billion	66%
<b>Jobs</b>	17,900	29,300	64%
<b>Government Revenue</b>	\$113.3 million	\$198.4 million	75%

Source: RKA, based on customized Statistics Canada Expenditure Model.

**Summary Table III Total Value of International Education Services in BC by Top Ten Source Countries, 2010 and 2015 Calendar Years and Percentage Increase**

	2010	2015	Percentage Change
<b>China</b>	\$554,110,000	\$1,377,980,000	149%
<b>South Korea</b>	\$472,150,000	\$342,140,000	-28%
<b>India</b>	\$75,180,000	\$326,240,000	334%
<b>Japan</b>	\$132,790,000	\$176,660,000	33%
<b>United States</b>	\$107,610,000	\$128,820,000	20%
<b>Brazil</b>	\$45,200,000	\$122,090,000	170%
<b>Saudi Arabia</b>	\$125,880,000	\$116,020,000	-8%
<b>Mexico</b>	\$59,140,000	\$90,010,000	52%
<b>Taiwan</b>	\$78,220,000	\$65,890,000	-16%
<b>Hong Kong</b>	\$37,000,000	\$52,820,000	43%
<b>Top Ten Source Countries</b>	\$1,687,280,000	\$2,798,670,000	66%
<b>All Countries</b>	\$2,108,660,000	\$3,504,990,000	66%

Source: RKA.

## **1. Introduction**

Roslyn Kunin and Associates, Inc. (RKA) was commissioned by the British Columbia Council for International Education to estimate the impact of international students studying in BC during 2010 and 2015, based on student numbers reported by the Department of Immigration, Refugees and Citizenship Canada (IRCC).

The remainder of the report presents our assessment of the impact values. Notes on data sources and methodology have been described in Appendix 1.

## 2. Economic Impact of International Students in BC

In this Section, we report our assessment of the contribution to BC's economy attributed to international students studying in BC during 2010 and 2015.

### 2.1. Number of International Students

Table 1 shows the total number of international students in BC, with breakdown by sector: students in public post-secondary institutions, private post-secondary institutions, and the K-12 system, during 2010 and 2015.

**Table 1 Number of International Students in BC, by Sector, 2010 and 2015**

	2010	2015	Percentage Change
Public Post-Secondary *	28,490	45,130	58%
Private Post-Secondary *	49,834	67,965	36%
K-12 *	11,713	16,958	45%
<b>Total<sup>1</sup></b>	<b>90,037</b>	<b>130,053</b>	<b>44%</b>

Source: Immigration, Refugees and Citizenship Canada (IRCC), Ministry of Advanced Education.

\* Sector sub-totals subject to change.

### 2.2. Annual Spending by International Students

Table 2 shows the estimated sums of spending by international students in BC, with breakdown by sector during 2010 and 2015. The spending includes cost of education, as well as day-to-day living expenses.

**Table 2 Estimated Annual Spending of International Students in BC, by Sector, 2010 and 2015**

	2010	2015	Percentage Change
Public Post-Secondary	\$712.9 million	\$1,355 million	90%
Private Post-Secondary	\$1,118 million	\$1,762 million	58%
K-12	\$277.7 million	\$387.8 million	40%
<b>Total</b>	<b>\$2.1 billion</b>	<b>\$3.5 billion</b>	<b>66%</b>

Source: RKA.

<sup>1</sup> IRCC describes its data as follows: "The number of permit holders with valid permit(s) in the calendar year is a unique count of all persons who held one or more valid permits on one or more dates between January 1<sup>st</sup> and December 31<sup>st</sup>." Sector breakdowns have been provided by the Ministry of Advanced Education.

### 2.3. Direct Economic Impact

Tables 3 to 5 present the estimated economic impact of international students in BC in terms of direct contribution to provincial GDP and jobs supported, with breakdown by sector during 2010 and 2015. The impact also includes values of government revenue due to student spending. It should be noted that direct tax revenue being assessed refers to personal income tax only.

**Table 3 Direct GDP Impact of International Education Services, BC, 2010 and 2015**

	2010	2015	Percentage Change
<b>Public Post-Secondary</b>	\$404.2 million	\$768.7 million	90%
<b>Private Post-Secondary</b>	\$633.8 million	\$999.5 million	58%
<b>K-12</b>	\$157.4 million	\$219.9 million	40%
<b>Total</b>	\$1.2 billion	\$2.0 billion	66%

*Source: RKA, based on customized Statistics Canada Expenditure Model*

**Table 4 Direct Job Impact of International Education Services, BC, 2010 and 2015**

	2010	2015	Percentage Change
<b>Public Post-Secondary</b>	6,046	11,328	87%
<b>Private Post-Secondary</b>	9,482	14,731	55%
<b>K-12</b>	2,355	3,241	38%
<b>Total</b>	17,882	29,301	64%

*Source: RKA, based on customized Statistics Canada Expenditure Model*

**Table 5 Direct Tax Revenue Impact<sup>2</sup> of International Education Services, BC, 2010 and 2015**

	2010	2015	Percentage Change
<b>Public Post-Secondary</b>	\$38.3 million	\$76.7 million	100%
<b>Private Post-Secondary</b>	\$60.1 million	\$99.7 million	66%
<b>K-12</b>	\$14.9 million	\$21.9 million	47%
<b>Total</b>	\$113.3 million	\$198.4 million	75%

*Source: RKA, based on customized Statistics Canada Expenditure Model*

<sup>2</sup> Impact refers to the estimated tax revenue generated from personal income taxes associated with labour income only.

**2.3.1. 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. It is noted that allocation of international students by Development Region is based on an international student headcount file produced by the Ministry of Advanced Education, and not based on student permit data produced by IRCC<sup>3</sup>. 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.

In the tables below, we have shown the regional share of student population, the estimated number of international students in each region, and their aggregate expenditure.

**Table 6 Estimated Number of International Students in BC and Annual Spending, by Region, 2010**

	<b>Regional Share</b>	<b>Number of Students</b>	<b>Annual Spending</b>
<b>Mainland/Southwest</b>	81.6%	73,466	\$1,721 million
<b>Vancouver Island/Coast</b>	9.5%	8,525	\$199.6 million
<b>Southern Interior</b>	6.0%	5,364	\$125.6 million
<b>Northern BC</b>	1.1%	958	\$22.4 million
<b>Total *</b>	100%	90,037	\$2.1 billion

Source: RKA.

\* Regions' subtotal does not add up to Total as Total includes "regions not stated"

<sup>3</sup> IRCC data includes a large amount of duplication across regional categories and a large proportion in the "British Columbia (not elsewhere specified)" category which will require further investigation to determine how it should be allocated regionally.

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**Table 7 Direct Economic Impact of International Education Services in BC,  
by Region, 2010**

	GDP	Jobs	Tax Revenue
Mainland/Southwest	\$975.4 million	14,591	\$92.5 million
Vancouver Island/Coast	\$113.2 million	1,693	\$10.7 million
Southern Interior	\$71.2 million	1,065	\$6.8 million
Northern BC	\$12.7 million	190	\$1.2 million
<b>Total *</b>	<b>\$1,195 million</b>	<b>17,882</b>	<b>\$113.3 million</b>

*Source: RKA, based on customized Statistics Canada Expenditure Model*

*\* Regions' subtotal does not add up to Total as Total includes "regions not stated"*

**Table 8 Estimated Number of International Students in BC and Annual Spending,  
by Region, 2015**

	Regional Share	Number of Students	Annual Spending
Mainland/Southwest	77.0%	100,093	\$2,698 million
Vancouver Island/Coast	12.5%	16,228	\$437.4 million
Southern Interior	6.5%	8,398	\$226.3 million
Northern BC	1.2%	1,589	\$42.8 million
<b>Total *</b>	<b>100%</b>	<b>130,053</b>	<b>\$3.5 billion</b>

*Source: RKA.*

*\* Regions' subtotal does not add up to Total as Total includes "regions not stated"*

**Table 9 Direct Economic Impact of International Education Services in BC,  
by Region, 2015**

	GDP	Jobs	Tax Revenue
Mainland/Southwest	\$1,530 million	22,551	\$152.7 million
Vancouver Island/Coast	\$248.1 million	3,656	\$24.8 million
Southern Interior	\$128.4 million	1,892	\$12.8 million
Northern BC	\$24.3 million	358	\$2.4 million
<b>Total *</b>	<b>\$1,988 million</b>	<b>29,301</b>	<b>\$198.4 million</b>

*Source: RKA, based on customized Statistics Canada Expenditure Model*

*\* Regions' subtotal does not add up to Total as Total includes "regions not stated"*

## **2.4. Comparison of International Education Services in BC with Other Export Trade**

We start this sub-section by presenting the number of international students in BC by top source countries, followed by the estimated values of their annual spending. We will compare the value of annual spending by international students 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.

**Table 10 Number of International Students in BC by Top Source Countries, 2010 and 2015**

	<b>2010</b>	<b>2015</b>	<b>Percentage Change</b>
<b>China</b>	23,660	51,130	116%
<b>South Korea</b>	20,160	12,695	-37%
<b>India</b>	3,210	12,105	277%
<b>Japan</b>	5,670	6,555	16%
<b>United States</b>	4,595	4,780	4%
<b>Brazil</b>	1,930	4,530	135%
<b>Saudi Arabia</b>	5,375	4,305	-20%
<b>Mexico</b>	2,525	3,340	32%
<b>Taiwan</b>	3,340	2,445	-27%
<b>Hong Kong</b>	1,580	1,960	24%
<b>Top Ten Source Countries</b>	72,045	103,845	44%
<b>All Countries</b>	90,037	130,053	44%

*Source: IRCC*

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 2010 and 2015 respectively (see Appendix) 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 11.

**Table 11 Total Value of International Education Services by Top Source Countries, 2010 and 2015**

	2010	2015	Percentage Change
China	\$554,110,000	\$1,377,980,000	149%
South Korea	\$472,150,000	\$342,140,000	-28%
India	\$75,180,000	\$326,240,000	334%
Japan	\$132,790,000	\$176,660,000	33%
United States	\$107,610,000	\$128,820,000	20%
Brazil	\$45,200,000	\$122,090,000	170%
Saudi Arabia	\$125,880,000	\$116,020,000	-8%
Mexico	\$59,140,000	\$90,010,000	52%
Taiwan	\$78,220,000	\$65,890,000	-16%
Hong Kong	\$37,000,000	\$52,820,000	43%
<b>Top Ten Source Countries</b>	<b>\$1,687,280,000</b>	<b>\$2,798,670,000</b>	<b>66%</b>
<b>All Countries</b>	<b>\$2,108,660,000</b>	<b>\$3,504,990,000</b>	<b>66%</b>

Source: RKA

It should be noted that we do not have detailed information regarding the distribution of students by source country in different levels of study. As such we have calculated the value of international student spending for students in each country by applying an average total spending value for all students.

Note that the amounts generated as shown here in Table 11 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. In addition, because we use data from IRCC to represent the number of international students in the province during the year, we may not have captured the impact of short-term students who study for fewer than six months.

We have further compared BC’s export in international education services with other export in goods from BC.<sup>4</sup> They are shown in Tables 12 and 13.

<sup>4</sup> The data on export of goods is available at: <http://www.ic.gc.ca/tdo>. The time period is 2010 and 2015 respectively. Product Search is “Top 25 Product Groups – HS2”.

**Table 12 Comparison of International Education Services with Other Top Exports in Goods from BC, 2010**

Value in Thousands of Canadian Dollars	2010
27 - Mineral Fuels, Mineral Oils, Bituminous Substances and Mineral Waxes	8,017,370
44 - Wood and Articles of Wood (Incl. Wood Charcoal)	4,995,244
47 - Pulp of Wood and The Like; Waste and Scrap of Paper or Paperboard	2,999,999
<b>International Education Services</b>	<b>2,108,660</b>
26 - Ores, Slag and Ash	1,834,333
84 - Nuclear Reactors, Boilers, Machinery and Mechanical Appliances	1,335,726
48 - Paper, Paperboard and Articles Made From These Materials	1,037,689
03 - Fish, Crustaceans, Molluscs and Other Aquatic Invertebrates	932,935
85 - Electrical or Electronic Machinery and Equipment	713,561
79 - Zinc and Articles Thereof	626,997
<b>Total (All Products) - not including international education services</b>	<b>29,009,606</b>

Data Source: *Statistics Canada & US Census Bureau*  
 Source: Trade Data Online in Industry Canada's website

**Table 13 Comparison of International Education Services with Other Top Exports in Goods from BC, 2015**

Value in Thousands of Canadian Dollars	2015
44 - Wood and Articles of Wood (Incl. Wood Charcoal)	8,360,808
27 - Mineral Fuels, Mineral Oils, Bituminous Substances and Mineral Waxes	5,853,502
<b>International Education Services</b>	<b>3,504,990</b>
47 - Pulp of Wood and The Like; Waste and Scrap of Paper or Paperboard	3,382,874
26 - Ores, Slag and Ash	3,167,636
84 - Nuclear Reactors, Boilers, Machinery and Mechanical Appliances	2,170,847
03 - Fish, Crustaceans, Molluscs and Other Aquatic Invertebrates	1,087,254
85 - Electrical or Electronic Machinery and Equipment	1,048,361
48 - Paper, Paperboard and Articles Made From These Materials	985,093
79 - Zinc and Articles Thereof	826,452
<b>Total (All Products) - not including international education services</b>	<b>36,727,010</b>

Data Source: *Statistics Canada & US Census Bureau*  
 Source: Trade Data Online in Industry Canada's website

In 2010, the value of international education services in BC amounted to 7% of the total value of BC's export in goods. By 2015, the value of international education services in BC had increased to 9.5% of the province's total value of export in goods.

Finally, in Tables 14 and 15, we present the comparison of the value of annual spending of international students in BC in a year by top source countries with the value of export of goods from BC to these countries.

**Table 14 Comparison of International Education Services in Top Source Countries with Exports in Goods to these Countries from BC, 2010**

	Export of International Education Services	Export of Goods	International Education Services as % of Export in Goods
China	\$554,110,000	\$3,877,253,000	14.3%
South Korea	\$472,150,000	\$1,903,455,000	24.8%
India	\$75,180,000	\$143,041,000	52.6%
Japan	\$132,790,000	\$4,221,563,000	3.1%
United States	\$107,610,000	\$13,252,904,000	0.8%
Brazil	\$45,200,000	\$448,344,000	10.1%
Saudi Arabia	\$125,880,000	\$43,694,000	288.1%
Mexico	\$59,140,000	\$196,751,000	30.1%
Taiwan	\$78,220,000	\$498,566,000	15.7%
Hong Kong	\$37,000,000	\$268,784,000	13.8%
Top Ten Source Countries	\$1,687,280,000	\$24,854,355,000	6.8%
All Countries	\$2,108,660,000	\$29,009,605,741	7.3%

Source: RKA; Statistics Canada.

**Table 15 Comparison of International Education Services in Top Source Countries with Exports in Goods to these Countries from BC, 2015**

	Export of International Education Services	Export in Goods	International Education Services as % of Export in Goods
China	\$1,377,980,000	\$6,087,460,000	22.6%
South Korea	\$342,140,000	\$1,870,258,000	18.3%
India	\$326,240,000	\$626,587,000	52.1%
Japan	\$176,660,000	\$3,662,799,000	4.8%
United States	\$128,820,000	\$18,740,413,000	0.7%
Brazil	\$122,090,000	\$193,162,000	63.2%
Saudi Arabia	\$116,020,000	\$49,142,000	236.1%
Mexico	\$90,010,000	\$194,116,000	46.4%
Taiwan	\$65,890,000	\$570,913,000	11.5%
Hong Kong	\$52,820,000	\$276,935,000	19.1%
Top Ten Source Countries	\$2,798,670,000	\$32,271,785,000	8.7%
All Countries	\$3,504,990,000	\$36,727,010,030	9.5%

Source: RKA; Statistics Canada.

### **3. Conclusions**

During the 2015 calendar year, BC was home to approximately 130,053 international students. This represents a 44% increase in the number of international students studying in the province over 2010. Almost 35% of these students were studying in public post-secondary institutions, while just over half of these students were studying in private post-secondary sector. The province's K-12 system hosted about 13% 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 \$3.5 billion in 2015, an increase of 66% over international students' total spending during 2010. This directly contributed \$2.0 billion to the provincial GDP, and supported 29,300 jobs. Government benefited as well in raising almost \$200 million personal income tax revenue from this source.

Most people think of traditional sectors like logging and forestry, or oil and gas, or mining, when asked what supports the BC economy. It is important to point out that the contributions of international students are at least as great and in some cases, greater. For example, in 2015 logging and forestry contributed \$1.6 billion in provincial GDP, oil and gas extraction contributed \$3.6 billion in provincial GDP, and mining and quarrying contributed \$3.5 to provincial GDP, while the international education sector contributed \$2.0 billion.<sup>5</sup>

Furthermore, international education is not as cyclical as the resource sectors and continues on an upward trend. The number of jobs created in a year directly due to international education services was 29,300, a 64% increase over 17,900 jobs supported by the sector during the 2010 calendar year. By comparison, employment in many resource industries in the province saw modest growth between 2010 and 2015. In logging and forestry employment grew 19%, and 21% in mining and quarrying.

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 almost 10% of the total values of goods export from the province during 2015, quite an increase from when international education services accounted for 7% of the total value of export in goods from the province during 2010. The impact for some countries is even more striking. The Saudi Arabians, for example, spend the equivalent of 236% of the value of the goods they import from BC on educational services. Similarly, we see that Brazil (63%), India

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<sup>5</sup> GDP at basic price, in current dollars, for logging and forestry, oil and gas extraction, as well as mining and quarrying in BC, were valued in 2013 (from Statistics Canada CANSIM table 379-0030). At the time this report is prepared, values in 2015 were not available. The values shown here have been estimated by applying the real (net of inflation) percentage increase of GDP in these industries between 2013 and 2015 to their values in 2013 (in current dollars).

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(52%), Mexico (46%), China (23%), and South Korea (18%) all spend significantly for educational services when compared to the value of goods they import from BC.

## **Appendix 1 Notes on Data Sources and Methodology**

### **International Student Number**

In this report, we use the number of “*foreign students*” as a proxy to represent international students in BC.

The Department of Immigration, Refugees and Citizenship Canada (IRCC) defines foreign students as “Temporary residents who entered Canada mainly to study and have been issued a study permit (with or without other types of permits). A study permit is an official document issued by an officer that allows someone who is not a Canadian citizen or a permanent resident to study in Canada. In general, a study permit is not needed for any program of study that is six months or less. For statistical purposes, a temporary resident is designated as a foreign student on the basis of IRCC’s determination of his or her “yearly status” – the main reason for which the person has been authorized to enter and stay temporarily in Canada during the year of observation. Foreign students exclude temporary residents who have been issued a study permit but who entered Canada mainly for reasons other than study.”

The IRCC data therefore allows us to use the number of study permit holders as a proxy for the number of international students during a year.

For the purposes of this study, the IRCC data “reports the number of permit holders with valid study permit(s) in the calendar year. This is a unique count of all persons who held one or more valid permits on one or more dates between January 1st and December 31st.”

One limitation of using the IRCC data set to represent the number of international students is that the actual number of permit holders registering in a Canadian institution may be smaller than the number of permits issued, due to the fact that some permit holders may not be able to, or have chosen not to, enroll in an education program.

Another limitation of the current IRCC data is the inability to breakdown the study permits holders by level of study in an accurate and reliable manner. In the absence of this data, BC’s Ministry of Advanced Education has provided an estimate of the breakdown of study permits in three categories: public post-secondary, private post-secondary, and K-12, using available data sources.

One of the adjustments we have for the students in the K-12 category was to further allocate them in the public or independent K-12 system based on shares derived from Ministry of Education data.

The allocation of student permit holders in the post-secondary system into finer categories of trade, college, undergraduate, master’s, Ph.D., and other types of programs is based on IRCC information.

Further allocation of registration status by full-time and part-time study for each type of student has been based on Statistics Canada’s CANSIM data series (Table 477-0019).

## **Student Expenditure**

### **Tuition and Fees**

For tuition and other fees at the K-12 level, we will rely upon information published in the CAPS-I report.<sup>6</sup> Note these are based on tuition and fees in a school year (10 months). Tuition and fees in private schools can be substantially higher. In this regard we have also used information available from the CAPS-I report to calculate average annual tuition and fees for private school international students.

Tuition and fees data used to calculate spending in 2010 were from the previous report evaluating economic impact of international students in BC, produced by RKA.

Detailed tuition and fees for full-time university level international students for each province are available from Statistics Canada's annual Tuition and Living Accommodation Costs (TLAC) survey.

In deriving student tuition and fees in the four levels of study other than "secondary or less" (i.e., post-secondary, which is further divided into trade/college, university, other post-secondary), we make the following assumptions:

- **University:** We have applied separate undergraduate and graduate tuition values from the TLAC to full-time undergraduate students and students in master's/Ph.D. programs.

Part-time students are assumed to take a 50% course load for the purposes of calculation.

In addition to tuition, we have included "additional fees" which represent compulsory fees universities imposed on both domestic and international students, such as facility fees, society fees, health and dental (for international students only) fees, student pass fees in some cases, and others. We also make an allowance of \$1,200 per academic year for books/tools/materials.

Tuition and fees are for an academic year (i.e., eight months).

- **Trade/College:** For full-time tuition, we apply a factor of 75% to the average university undergraduate tuition in each province. The factor of 75% is an approximation, and based on Web research conducted for selected college programs in each province to see how they compare to full-time tuition of an undergraduate program.

For part-time students, we have assumed a 50% course load.

We also assume that international students in "Trade" and "College" levels of study pay on average the same percentage (75%) of "Additional Fees" as university level international students. We also make the same allowance for books/equipment requirement (\$1,200) in a year.

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<sup>6</sup> Canadian Association of Public Schools – International (CAPSI) (2015). "A Comparative Market Assessment of International K-12 Students in Canada".

- Other Post-Secondary: we have assumed that students in this category are students in language training programs. We have used estimates of tuition and fees on a weekly basis derived from information provided by Languages Canada. We have also assumed that students in this category study for six months in the year in language training programs.

### **Living Expenses**

Living expenses for students in 2010 have been extracted from the previous report on economic impact of international students in BC, produced by RKA.

For students in 2015, we have made the following assumptions:

- K-12: we have assumed that a student in the public school system pays an average homestay cost of \$750 per month for a 10-month period. Essentially we are assuming that students return to their home countries for summer vacation. For those in the private independent school system, we have assumed that three-quarters of these students pay an average homestay cost of \$750 per month, and one-quarter of these students are on full board with the school they attend.
- University: for full-time students, we use 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-month period for students in the undergraduate, master's and Ph.D. programs). Then, values have been scaled up to full year (12 months) values. That is, we assume that international students in the university category stay in the country for 12 months, even though they may only take two semesters of courses.

For part-time students, we have assumed a monthly home-stay cost of \$750, for 12 months in a year.

We also make allowances for transportation costs for students staying in the province. We have applied data from Statistics Canada's Survey of Household Spending (SHS), detailing household spending on public transportation, by province and territory, in 2010 and 2014. The values we use refer to the average expenditure per household using public transportation (households with or without using public transit).

- For students in other levels of study (trade/college), we have assumed that they spend the equivalent of what university students have to pay in an academic year (average room and meal and transportation costs).
- Other Post-Secondary: we have used information provided by Languages Canada pertaining to language training school students to estimate cost of room, food, and transportation.

In addition to basic living costs as presented above, we make an allowance of \$2,500 per student per year (\$1,500 for K-12 students) for discretionary expenses (such as eating out, recreational activities, and entertaining).

For students in each level of study, the formula to calculate gross 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 = Gross Expenditure in one year for International Students in the level of study*

### **Analytical Framework**

To capture the overall impact of international educational services on the provincial economy, expenditures of international students are applied to the Statistics Canada interprovincial impact simulation model.<sup>7</sup> The model provides estimates of the overall impact on output, gross domestic products (GDP), and employment in each provincial/territorial economy.

A short description of the input-output model is provided below.

#### ***An Input-Output Structure of the Economy***

When a person spends on a product (goods and/or services), that amount of expense creates a direct requirement for the production of that product. The economic impact, however, does not end there. The increased production of this product leads to increased production of all the intermediate goods and services that are used to make this product, and the increased production of intermediate goods and services will in turn generate more demand for other goods and services that are used to produce these intermediate products. 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 product creates a chain effect down the production process.

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

The input-output model is based on the input-output structure of the Canadian economy,<sup>8</sup> which is essentially a set of tables describing the flows of goods and services among the 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 products 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 economy. This includes businesses providing goods and services to entities where direct expenditures occur. In addition, as a result of increased

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<sup>7</sup> Statistics Canada catalogue product 15F0009X – Input-Output Model Simulations (Interprovincial Model).

<sup>8</sup> Statistics Canada catalogue product 15F0042X – Provincial Input-Output Tables.

local household income, there may be further increases in overall expenditure. The latter is considered as a spun-off (or induced) impact, which is sometimes shown in economic impact studies.

Currently, Statistics Canada uses the 2010 interprovincial input-output model to estimate the economic impact, and the results are used for comparative analysis purposes. It should be noted that employment impact estimates from this model are based on the 2010 total compensation per job.<sup>9</sup> As such, it was necessary to deflate the net student expenditures incurred in 2015 to 2010 dollars to get a more accurate estimate of the employment impact.

It should be noted that even though we describe the impact assessment as that related to international students studying in BC, direct economic impact is not attributed exclusively to educational services. In fact, in the expenditure model, total expenditures have been allocated to most industries, with the majority in universities and government education services; retail trade; transit and ground passenger transportation; finance, insurance, real estate and rental and leasing; food and beverage services; and arts, entertainment and recreation.

It should be noted that in previous studies on valuation of the economic impact of international student spending in BC, Statistics Canada's output multipliers were used.<sup>10</sup> In this study, we used exogenous shock values on final consumption expenditures from Statistics Canada's Input-Out economic impact simulation model. This is in recognition of the fact that expenditures are measured at purchaser's prices (meaning they include margins such as transportation, wholesale, retail and taxes), whereas output is measured at basic prices. Also, expenditures may be supplied through imports. As such, all expenditures for goods and services must remove all taxes on products before an output multiplier can be applied.

Statistics Canada's current input-output economic impact simulation model does not estimate indirect tax revenue derived from products and production in its direct impact assessment. In this report, we have estimated tax revenue generated from personal income taxes associated with labour income.<sup>11</sup>

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<sup>9</sup> Data is derived from Statistics Canada CANSIM table 383-0030 – labour statistics by business sector industry and by non-commercial activities consistent with the industry accounts, provinces and territories.

<sup>10</sup> Statistics Canada catalogue product 15F0046X – National and Provincial Multipliers.

<sup>11</sup> Personal income tax values have been derived by applying average personal income tax rates in each province/territory by labour income. Average personal tax rates have been derived based on data available from Statistics Canada's CANSIM table 384-0040 - Current accounts - Households, provincial and territorial, annual.