



University of Windsor

Economic Impact Assessment
FINAL REPORT

KPMG LLP
December 2020

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Glossary

City or Windsor	City of Windsor
County	Essex County
FTE	Full-time Equivalent
FTE Student	Full-time Equivalent Student
GDP	Gross Domestic Product
GSS	Graduate Student Society
I/O Model	Statistics Canada's Input-Output Model
OPUS	Organization of Part-time University Students
Province	Province of Ontario
Statistics Canada I/O Model	Interprovincial Input-Output Model of Statistics Canada
Study or Report	UWindsor Economic Impact Study 2020
University or UWindsor	University of Windsor
UWSA	University of Windsor Student's Alliance



1. Executive Summary

1.1 Report Objective

KPMG was engaged by the University of Windsor (“UWindsor” or the “University”) to conduct an Economic Impact Study (the “Report”) of the activities of the University. The objective of the report is to illustrate the transformative impact of the University at a local, provincial/regional and national level from both quantitative and qualitative perspectives.

The Report estimates the economic impact of UWindsor’s activities; not just from its operating and capital expenditures, but also through its role in attracting talent and tourism to the Windsor-Essex region, in human capital development, and in supporting research, innovation and community involvement. UWindsor’s impacts are discussed within a local, provincial/regional and national context.

1.2 Overview of the University of Windsor

The University of Windsor was formally established in 1963; however it dates back more than 150 years to the founding of Assumption College with which it has ties. Founded by Reverend Pierre Point, pastor of Assumption Parish, the College incorporated practical and experiential education with innovative pedagogy—a tradition that continues today.

UWindsor has since evolved into a high-ranking comprehensive university that is both learner-centered and research intensive, today enrolling more than 16,000 students in over 170 undergraduate and graduate programs. In addition to its core academic offering, UWindsor also offers extensive learning opportunities, through initiatives such as co-ops, internships, community service learning, practicums, field placements, applied research labs, and study abroad programs, all of which support students in attaining a well-rounded, real-world education.

1.3 Report Highlights

Economic Impacts

In its 2018-19 fiscal year, UWindsor’s operational expenses were \$359 million¹, and its capital expenses over the past five fiscal years amounted to \$219 million. In addition, expenditures are made by other organizations and individuals as a result of UWindsor’s presence, such as students from outside the local region, friends and family visitors, and visiting professionals for conferences held by the University. These expenditures, both by and as a result of UWindsor, contribute to the economy through expenditures on goods and services as well as through the creation of jobs locally, provincially, and nationally.

¹ Excluding associated groups such as the University of Windsor Students’ Alliance (the “UWSA”), Organization of Part-time University Students (“OPUS”), and Graduate Student Society (“GSS”).



As such:

- The total economic impact of UWindsor, based on \$523 million of operating, non-local student, and visitor expenditures, and \$46 million in annual average capital expenditures, is estimated to be **\$669 million in GDP throughout Canada**.
 - As a result of the \$359 million annual operational expenditures alone, **3,797 jobs** were generated in Canada, **95% of which were generated in Ontario**. These same operational expenditures also resulted in a GDP impact of **\$438 million in Canada**, of which **\$327 million occurred in Ontario**.
 - And as a result of \$46 million in annual average **capital expenditures** alone, an estimated **average annual impact** of **\$49 million to Canada's GDP** and over **2,225 jobs across Canada** was generated.

These estimated impacts from UWindsor's operating expenditures are based on UWindsor's 2018-19 fiscal year. Since capital projects generally are implemented over multiple years, economic impacts of UWindsor's capital expenditures were observed over a five-year period, between 2014-18, and an annual average impact was calculated.

- UWindsor has contributed toward human capital development in Ontario, approximated using incremental earnings of the University's alumni, using a methodology employed in similar studies by Canadian universities.
 - **\$3.16 billion in additional income** earned by UWindsor alumni due to their education at the University of UWindsor.
 - **\$4.74 billion impact of additional income** earned by UWindsor alumni due to their education at the University of UWindsor.
- UWindsor has contributed to **\$288 million to Ontario's annual GDP growth** by improving total factor productivity. To provide an approximation of the magnitude of this contribution, KPMG used a methodology used in similar studies by other Canadian universities. The share of UWindsor's research and development spending was applied to productivity gains in Ontario, arriving at a broad estimate. These impacts reflect research and development spending between 1971 and 2018.

Qualitative Impacts

Over the years, UWindsor has made many contributions to the economy both locally and nationally. As the University continues to grow and expand, and to further its goal of becoming more regionally and internationally relevant, these impacts will continue.

The qualitative measures summarized in this report help to demonstrate the many ways in which UWindsor generates economic and social impacts, including through:

- The provision of comprehensive and accessible educational services,
- Local impacts on the Windsor-Essex community,
- Impacts on the province of Ontario, and



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— Impacts through the research and innovation generated by the University.

The highlighted case studies demonstrate the depth and the breadth of UWindsor activities that support these measures, highlighting the wide variety of research and community contributions that the University provides.



2. Introduction

The University of Windsor (the “University” or “UWindsor”) is a public, comprehensive, research university located in Windsor, Ontario, Canada. The University is Canada’s southern-most university, located along North America’s busiest international border crossing, with its main campus overlooking the Detroit River. Recognized regionally as a comprehensive and accessible institution with student-focused learning environments, the University has continued to evolve its role in supporting the local Windsor-Essex region through its research and innovation, and program offerings that have impacts that echo both on the regional and global levels.

2.1 University of Windsor

UWindsor was formally established in 1963; however it dates back more than 150 years with its ties to Assumption College. Founded by Reverend Pierre Point, pastor of Assumption Parish, the College incorporated practical and experiential education with innovative pedagogy—a tradition that continues today.

The University has since evolved into a high-ranking comprehensive university that is both learner-centered and research intensive. The University supports four research institutes, and over 35 faculty research groups and centers serving the student population and contributing directly to their development. UWindsor is consistently among Canada’s top comprehensive Universities, and in acknowledgement of the University’s strengths and success, has earned a ranking of #30 in the Top 50 Canadian Research Universities List.

Today, UWindsor enrolls more than 16,000 students in over 170 undergraduate and graduate programs—ranging from art and social sciences to engineering and law, with each faculty subdivided into a number of departments and schools, including the schools of Social Work, Computer Science, Dramatic Arts, Visual Arts, and Music. On an ongoing basis, and as part of the University’s Strategic Plan, UWindsor has also emphasized learning through co-ops, internships, community service learning, practicums, field placements, applied research labs, and study abroad programs, all of which support students in attaining a well-rounded, real-world education.

Ultimately, UWindsor is an internationally-oriented, multi-disciplined institution. By promoting collaborative creativity across a range of disciplines to develop exceptional thinkers and global citizens, the University strives to cultivate the leaders of tomorrow. UWindsor prides itself on its core values of openness, warmth, and support, attracting both local students from the region, in addition to international students from around the world.

2.2 KPMG Scope of Work

KPMG was engaged by UWindsor to conduct an Economic Impact Assessment (the “Study” or the “Report”) of the activities of the University. The objective of the Study is to illustrate



the economic impact of the University, using both quantitative and qualitative perspectives, at local, regional, and national levels.

Quantitatively, the Study seeks to measure the provincial and national economic impacts of:

- The University’s **operational activities** for 2018-19;
- The University’s **capital program** for 2014-18;
- Local **spending by students** from out-of-town for 2018-19; and
- Local **spending by visitors** who attended events and conferences or who visited out-of-town students in 2018-19.

Qualitatively, the report considers UWindsor’s impact at four distinct scales, as outlined below:

- **Student** impacts, as a result of UWindsor’s diverse program offering, which provides a comprehensive and accessible education for local, regional, and international students;
- **Local** impacts, associated with activities of UWindsor and student body in the Windsor-Essex region;
- **Regional** impacts, on Ontario of the UWindsor’s programming and research; and
- Impacts, as part of UWindsor’s contribution to and participation in global research networks and partnerships, development endeavours, and the application of innovative solutions to solve local, regional, and global challenges.

For the purposes of this Report, impacts are categorized into these areas to reflect common themes that will be repeated throughout this report. This will highlight the impacts of the UWindsor on the student experience, the local and regional economies, and on contributions to global research. Together, these themes will demonstrate UWindsor’s important role in students’ lives, the City of Windsor, the Province of Ontario, and at the national level.

Note that to undertake this report, a wide range of sources were used, including data provided by UWindsor, interviews with stakeholders identified by the University², and high-level desktop research. In conducting the quantitative analysis, data was collected for the 2018-19 fiscal year (May 1, 2018 to April 30, 2019) to ensure consistency of the analyses conducted. Where data was unavailable for the 2018-19 fiscal year, data from previous fiscal years was used and identified in the report where applicable. All inputs and assumptions used to conduct analyses were validated with the University prior to finalization.

2.3 Methodology

To quantify the economic impacts of UWindsor, Input-Output (“I/O”) modelling was employed. This methodology estimates the employment, labour income, and GDP impacts

² For a comprehensive list of stakeholders interviewed, see Appendix A



of various types of expenditures such as salaries and wages, purchase of goods and services, and indirect taxes.

For this report, four types of expenditures were analyzed to estimate economic impacts:

- **Operational expenditures** by UWindsor, including salaries and benefits, and purchases of goods and services for teaching, research, administrative and ancillary operations for 2018-19;³
- **Capital expenditures** by the University for the construction of new facilities, renewal of existing facilities, and purchases of furniture and equipment from 2014-18;
- **Living expenses** of non-local and international students for 2018-19; and
- Expenditures made by **visitors** to the University for 2018-19.

As noted previously, expenditure estimates are based on the University's enrolment data for the 2018-19 fiscal year.

Because capital projects are generally implemented over multiple years and can vary significantly in magnitude from year to year, economic impacts of UWindsor's capital expenditures are estimated based on capital investments over the five-year period from 2014-2018. All expenditure information gathered from UWindsor was adjusted to 2018 dollars and economic impacts presented in this report are also in 2018 dollars.

Overview of the Input-Output Model

An I/O model divides the economy into a matrix of industries and commodities. Relationships within the model map the production of commodities to industries and identify the primary or intermediate commodities that are used in the production of each final commodity. Final commodities are either used by consumers or sold as an export. The model then aggregates all of the expenditures on goods and services and in the supply chain as commodities are produced. Based on the commodity structure of a specific industry, an I/O model can estimate the employment, gross output, and the labour, business and government income (collectively, the value-added) as a result of expenditures in that industry.

In Canada, the most authoritative and comprehensive I/O model is the Interprovincial Input-Output Model of Statistics Canada ("Statistics Canada I/O Model"). The Statistics Canada I/O Model can be used in two ways. If detailed expenditure data are available, a tailored production function can be developed for the target entity and the I/O model can then simulate economic impacts based on the associated commodity structure. If detailed expenditure data are limited or aggregated at a higher level, multiplier tables can be used instead. Multiplier tables are based on the aggregate production function of a given industry. For the purposes of this Report, Statistics Canada's I/O Multiplier Tables were used to estimate the economic impacts presented in this Report.

³ Excluding associated groups such as the University of Windsor Students' Alliance (the "UWSA"), Organization of Part-time University Students ("OPUS"), and Graduate Student Society ("GSS").



The Statistics Canada I/O Multiplier Tables used in this analysis represent the most recent versions publicly available and are calibrated to Canada's economy in 2016. This means economic impacts are based on the commodity structure of industries in 2016. Statistics Canada's I/O Model is managed and calibrated solely by Statistics Canada, including the assumptions that are built into the model.

In this Report, employment, GDP, and labour income impacts as a result of the University's expenditures are highlighted. A definition of each of these metrics is provided below:

- **GDP impact** is a measure of economic output from the production of goods and services, measured in dollars. It measures the total amount of "value-add" that individual producers contribute to the purchased inputs to generate their output. GDP impacts can be broken down into segments corresponding to labour income, government revenues and income to businesses. This Report separately reports labour income, in addition to reporting overall GDP impact;
- **Labour income** impact is defined as all compensation paid to employees (e.g. including wages, salaries, employer social contributions, bonuses and performance pay, etc.). Labour income is measured in dollars and is a component of the GDP impact; and
- **Employment impact** estimates the number of jobs created.

Economic impacts can be further broken down into three categories: (i) direct; (ii) indirect; and (iii) induced impacts. A definition of each type of impact is provided below:

- **Direct impacts** are those economic impacts generated by UWindsor and can be observed through an analysis of its employee base, payroll, taxes paid and the difference between the value of sales and purchased inputs;
- **Indirect impacts** are those economic impacts generated by its suppliers further-up the supply chain. For example, suppliers to UWindsor have their own employees and purchase commodities from other suppliers in turn. These expenditures ultimately result in income to labour, income to businesses or governments, or in the import of a good or service from another jurisdiction; and
- **Induced impacts** are the direct and indirect impacts that result from the subsequent spending by employees of their wages and salaries. This includes spending by employees both within UWindsor and within its upstream supplier base. It is important to note that induced impacts should be interpreted with some caution as they are affected by a household's propensity to save, amongst other variables. For example, when an economy experiences high unemployment household saving rates tend to increase and induced economic impacts will decrease. Therefore it is important to be mindful that induced economic impacts may not always materialize to the extent shown.



3. Activities and Expenditures of the University

In the 2018-19 fiscal year (May 1, 2018 to April 30, 2019), UWindsor operating expenditures amounted to more than \$359 million, with an additional \$225+ million in capital investments in its campus and research initiatives over the last five years (2014-18).

This section provides an overview of expenditures incurred as a result of UWindsor’s activities, whereas section 4 provides an estimation of economic impacts as a result of these expenditures.

3.1 Summary of Expenditures

The following table summarizes the expenditures used in this Report, including operating, capital, non-local student, and visitor expenditures.

Table 1: Expenditures related to the University of Windsor

	Operating	Capital	Non-local Student Expenditures	Visitor Expenditures
Description	<ul style="list-style-type: none"> ▪ Salaries and wages ▪ Benefits ▪ Goods and services ▪ Recurring minor capital 	<ul style="list-style-type: none"> ▪ New construction ▪ Major facility renovations 	<ul style="list-style-type: none"> ▪ Housing ▪ Food ▪ Books and Supplies ▪ Personal Spending ▪ Transportation 	<ul style="list-style-type: none"> ▪ Accommodation ▪ Food and beverages ▪ Transportation ▪ Entertainment ▪ Retail
Data Period	2018-19	2014-18	2018-19	2018-19
University	\$359 million	\$228 million	\$134 million	\$30 million

These expenditures form the basis of analysis for economic impacts estimated and presented below.

Operating Expenditures

UWindsor generated nearly \$359 million in operational expenditures in 2018-19, excluding associated groups such as UWSA, GSS, and OPUS. In 2018-19, 64% of UWindsor’s total operating expenditures were spent on salaries and employee benefits for direct 2,610 jobs. This includes staff, faculty, and part-time employees on the University campus. While UWindsor’s expenditures result in economic impacts, in and of themselves, these expenditures also result in benefits to the local economy and business communities through

local talent retention and knowledge transfer. The following figure provides a breakdown of UWindsor’s main operating expenditures by category.

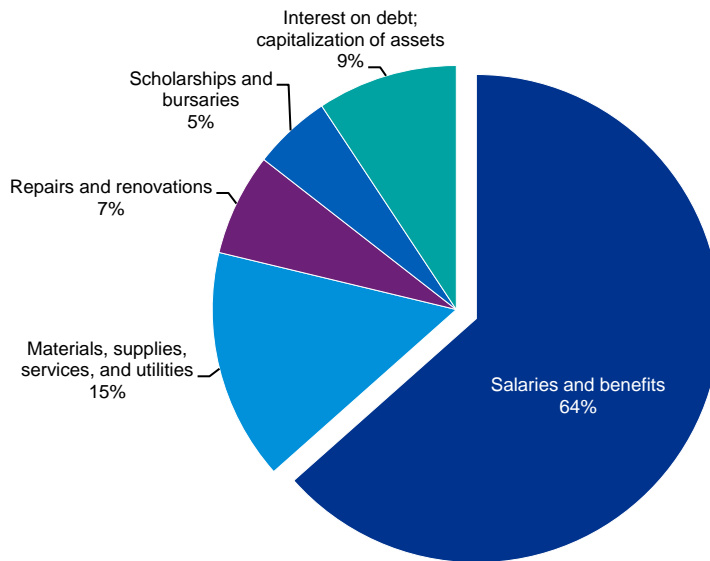


Figure 1: Operating Expenditures (2018)⁴

Student organizations such as UWSA, GSS, and OPUS represent an additional source of operating expenditure. While these expenditures are not large in comparison to the university’s own direct expenditures, these organizations are an integral component of the student experience at UWindsor. Together, these three student organizations provide critical services and advocacy across all student populations, including undergraduate, graduate, and part-time students.

Investments in Capital Projects and Infrastructure

Over the five-year period from 2014-2018, UWindsor has made a total of \$228 (2018 dollars) million in expenditures on the construction of new, or the renewal of existing, infrastructure and other capital assets. A sample of recent and upcoming planned projects include:

⁴ Salaries and benefits figure reflects salaries and benefits (\$252,327) less pensions (\$85,626).

- **Lancer Sports and Recreation Centre**, a \$73 million facility that incubates athletic excellence, and provides recreational services for staff and students and the community at large.
- **Essex Hall** expansion, which provided \$30 million for a new Science Centre of Research - Essex (CORE) Research and Innovation centre attached to the back of the existing Essex Hall. The new facility brings together students, professors, industry and researchers to work together toward developing innovative solutions to bring to market.
- **Leddy Library** project, which involved transformation of the main floor into a new Student Research Collaboratory. The new space is a flexible space, for collaborative learning, meetings, and events, with state-of-the-art technology to enable innovation.

With some advanced features, the Ed Lumley Centre for Engineering and Innovation became the new home for the Faculty of Engineering in 2012. The facility is equipped with more than 80 teaching and research labs, spanning across 300,000 square feet, including a 20,000 square foot Industrial Courtyard for joint industry/academic research.



\$166 million

New capital projects and other renovations



\$62 million

Computers, software, furniture, equipment, and other costs

Figure 2: Capital Expenditures (2014-2018, 2018\$)

There are also several capital projects under construction across campus, to be completed in the coming years; they include:

- **Student Centre** renovations, including \$5 million for dining and wellness area upgrades, expected to be completed in 2020 and 2021, respectively.
- **Faculty of Law** renovation, an estimated \$30 million investment.

Non-local Student Expenditures

In 2018, UWindsor had 10,572 undergraduate and 3,934 graduate full-time students, and 1,711 part-time undergraduate students and 104 part-time graduate students.

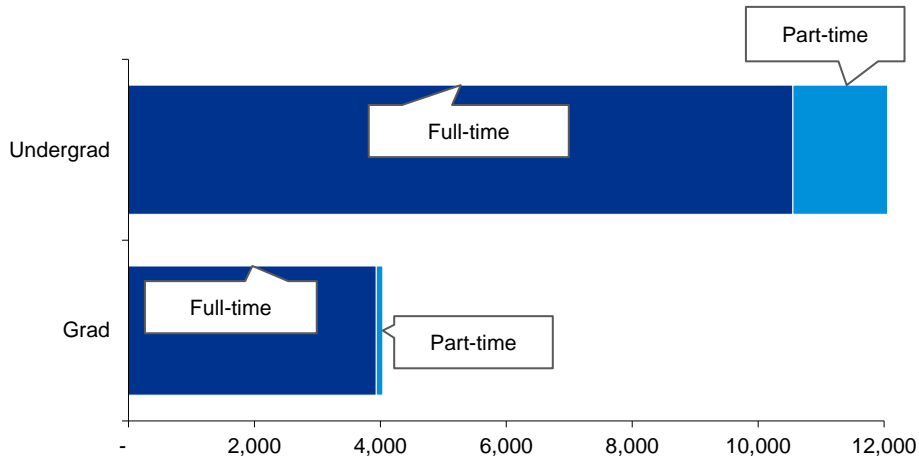


Figure 3: Student Enrolment Summary (2018-19)

To standardize the measurement of student enrolment across full- and part-time students, enrolment figures were converted into full-time equivalent students (“FTE students”), with two part-time students considered to be the equivalent of one FTE student. Using this method, more than 15,400 FTE students were enrolled at UWindsor in 2018-19. In the same year, international students accounted for approximately 23% of the total student population (including undergraduate and graduate students). 23% of the student population also come from other parts of Canada outside of the local region—21% move to Windsor from other parts of Ontario, while another 2% move from other parts within Canada.

The figure below presents the make-up of FTE students attending UWindsor in 2018-19.

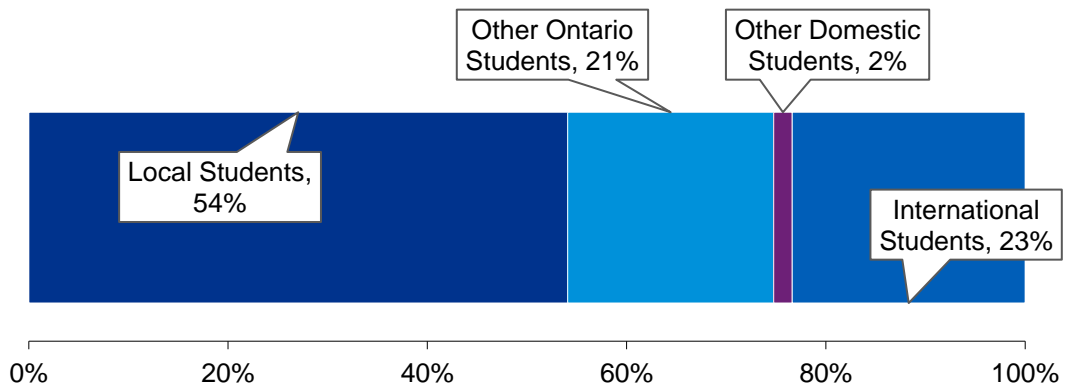


Figure 4: FTEs by Origin (2018-19)



As illustrated in Figure 4, a large proportion of students originate from outside of the Windsor area, whether it be from elsewhere in Ontario, Canada, or globally. For the purposes of this study, local students have been defined as those living within the Tri-County Area, which includes the counties of Chatham-Kent, Sarnia-Lambton and Windsor-Essex. Local students are also assumed to live at home and commute to the University for classes and for other program activities. Non-local students are defined as students living outside of the local region, including international students, prior to attending UWindsor.

To estimate the economic impact of expenses incurred by students, expenditure profiles were developed and assumed for each FTE student, based mainly on information from Common University Data Ontario, with additional information gathered from UWindsor staff⁵. The expenditure profile assumptions were tailored for students at the undergraduate and graduate level. In total, student expenditures made by non-local students were estimated to be \$134 million in 2018-19.

Table 2: Non-Local and International Student Living Expenses (2018-19)

Non-local Student Spending Profile (Per Student)	Undergrad	Graduate	Total (\$ millions)
Annual Expenditures			
Accommodation	\$6,508	\$10,800	\$59.5
Food	\$5,300	\$7,950	\$45.8
Books and Supplies	\$1,500	\$1,200	\$9.7
Personal (excluding travel home)	\$1,700	\$2,550	\$14.7
Transportation	\$450	\$675	\$3.9
Total (excluding tuition and supplementary fees)	\$15,458	\$23,175	\$133.6

Note: Totals may not add up due to rounding.

Visitor Expenditures

Conferences and events, and visits by friends and families of non-local students, all contribute to visitor expenditures in the region of Windsor-Essex that can be attributed to UWindsor. KPMG made two assumptions for estimating the economic impacts from visitors with regards to visitors per student type:

- Each FTE non-local student (not from Windsor-Essex but within Canada) correlates to two domestic visitors per year; and
- Each FTE international student correlates to one international visitor per year.

⁵ Where available, provided by Common University Data Ontario. Where unavailable, provided by the University of Windsor.



The total amount of visitors to the Windsor-Essex region for the year 2018-19 was estimated by KPMG to be nearly 37,000, including friends and family of non-local students, using the assumptions noted above, along with visitors attending sporting events, alumni events, and orientation week as estimated by UWindsor. Table 3 summarizes the estimated number of visitors to Windsor-Essex.

Table 3: Estimated Number of Visitors to Windsor–Essex as a result of UWindsor (2018-19)

	Domestic Visitors	International Visitors	Total
Number of Students (FTE)	3,470	3,602	7,072
Number of Visitors per Student	2	1	NA
Total Number of Visitors as a result of Non-Local Students Enrolled at the University	6,940	3,602	10,542
Number of Visitors due to Events and Conferences Held at the University	23,026	3,602	26,628
Total Number of Visitors	29,966	6,882	36,848

Source: Provided by University of Windsor; KPMG Calculations.

Visitor spending profiles were developed based on average spending per person for an individual visiting Windsor, segmented according to whether they are from a domestic or an international locale. Visitor expenditure data from the Ontario Ministry of Tourism, Sports, and Culture was used, along with the assumptions above on the number of domestic and international overnight visitors to Windsor, to determine the economic impact of visitors to the local Windsor economy. The Ontario Ministry of Tourism, Sports, and Culture estimates that international visitors spend more than local visitors per trip to Windsor. Accordingly, the friends and family of international students at UWindsor are also assumed to spend more than domestic student visitors. The expenditure profile assumptions are summarized below.



Table 4: Estimated Average Visitor Expenditure Profile (2018\$)

	Average Domestic Visitor Spend per Person Visit	Average International Visitor Spend per Person Visit	Total Visitor Spend (\$ millions)
Accommodation	\$147	\$314	\$6.6
Public & Local Transportation	\$234	\$18	\$7.1
Vehicle Rental & Operations	\$111	\$88	\$4.0
F&B at Stores	\$54	\$73	\$2.1
F&B at Restaurants/Bars	\$168	\$196	\$6.2
Recreation & Entertainment	\$36	\$31	\$1.3
Retail & other	\$37	\$137	\$2.0
Total Visitor Spending	\$788	\$857	\$29.5

Source: The University of Windsor; Tourism Expenditures from the Ministry of Tourism, Tourism Regions, Region 1; Ontario Inflation from Statistics Canada, Consumer Price Index (2002=100), CANSIM Table 326-0020, Annual (average) 2016 and 2018; KPMG Calculations

The inputs and assumptions presented in this section are then used as the basis for estimating economic impacts, presented in the next section of this report.



4. Economic Impacts of the University

While the previous section of the report presented estimates of the expenditures resulting from UWindsor's activities and student enrolment, this section quantifies the economic impacts resulting from these expenditures.

4.1 Overview of Economic Impacts

The following sections summarize the economic impacts into impacts associated with each of UWindsor's major expense categories, known as activities. These activities are:

- **Operating expenditures**, which includes spending that UWindsor incurs as a result of normal business operations. Cost categories include staff salaries, maintenance and repairs, utilities, etc. These expenditures do not include student organizations such as UWSA, GSS, OPUS.
- **Capital expenditures**, which include spending that UWindsor incurs associated with one-time hard (e.g. land, buildings, physical equipment) and soft (e.g. website upgrades) costs.
- **Non-local student expenditures**, which include cost categories such as housing, food, books and supplies, personal expenses, and transportation.
- **Visitor expenditures**, which include cost categories such as accommodation, transportation, food and beverage, recreation, retail, etc.

The below is a summary of the economic impacts.



The following analysis is based on \$523 million in combined operating and personal expenditures, which includes categories such as UWindsor's operational expenditures (e.g. salaries, utilities, maintenance, etc.), non-local student spending (e.g. housing, textbooks), and visitor expenditures (e.g. food, accommodations), that can be directly attributed to UWindsor generated spending. Thus, this total includes one year (2018) of operating, non-local student, and visitor expenditures, in addition to a one-year average of annual capital expenditures (based on the last five years, 2014-2018).

Based on these expenditures and KPMG analysis, it is estimated that UWindsor generated an impact on National GDP of \$620 million in 2018-19. The estimated GDP impact includes all direct, indirect, and induced impacts. Through these same expenditures, UWindsor generated \$333 million in labour income and 6,123 jobs, also measured at the national level (see Table 5 for summary).

Table 5: Expenditures and National Impacts Summary (2018\$)

	Expenditure (\$ millions)	GDP Impact (\$ millions)	Labour Income Impact (\$ millions)	Employment (Jobs)
Operating & Personal Expenditures				
Operating Expenditures	359	438	238	3,797
Non-local Student Expenditures	134	151	77	1,825
Visitor Expenditures	30	30	18	500
Total Operating & Personal Expenditures	523	620	333	6,123
Capital Expenditures				
Capital Expenditures (2014-18)	228	244	154	2,226
Average Annual CapEx	46	49	31	445
Total	569	669	364	6,568

Source: Statistics Canada Interprovincial Input-Output (2016) Multiplier Table; KPMG Calculations
Note: Totals may not add up due to rounding.



Based on the same expenditure inputs as the national impacts presented above, at the provincial level, it is estimated that the University generated GDP impacts of \$497 million in 2018-19, including direct, indirect and induced impacts. Also at the provincial level, UWindsor generated \$283 million in labour income and 5,817 jobs (see Table 6 for summary).

These Ontario impacts are a subset of the national impacts summarized above in Table 5.

Table 6: Expenditures and Ontario Impacts Summary (2018\$)

	Expenditures (\$ millions)	GDP Impact (\$ millions)	Labour Income Impact (\$ millions)	Employment (Jobs)
Operating & Personal Expenditures				
Operating Expenditures	359	327	194	3,605
Non-local Student Expenditures	134	142	72	1,739
Visitor Expenditures	30	27	17	472
Total Operating & Personal Expenditures	523	497	283	5,817
Capital Expenditures				
Capital Expenditures	228	226	144	2,057
Average Annual CapEx	46	45	29	411
Total	569	542	312	6,228

Source: Statistics Canada Interprovincial Input-Output (2016) Multiplier Table; KPMG Calculations
Note: Totals may not add up due to rounding.



4.2 Economic Impacts of Operating Expenditures

Expenditures as a result of UWindsor’s ongoing operating expenditures, as exemplified by the 2018-19 fiscal year, are estimated to contribute \$438 million to Canada’s GDP and to generate employment of over 3,797 jobs, as summarized in the table below.

Table 7: Operating Impacts Summary (2018\$)

	UWindsor	
	Ontario	Canada
GDP Impact (\$ millions)		
Direct	346	346
Indirect and Induced	-19	92
Total	327	438
Labour Income Impact (\$ millions)		
Direct	228	228
Indirect and Induced	-34	10
Total	194	238
Employment Impact (FTEs)		
Direct	2,610	2,610
Indirect and Induced	995	1,187
Total	3,605	3,797

Note: Totals may not add up due to rounding.



4.3 Economic Impacts of Capital Expenditures

Expenditures as a result of UWindsor’s capital investments in new or renewed infrastructure over the last five years (2014-18) are estimated to contribute \$244 million to Canada’s GDP and to generate employment of over 2,225 FTEs, as summarized in the Table 8.

Table 8: Capital Impacts Summary (2018\$)

	UWindsor	
	Ontario	Canada
GDP Impact (\$ millions)		
Direct	129	129
Indirect and Induced	97	115
Total	226	244
Annual average impact over five years	45	49
Labour Income Impact (\$ millions)		
Direct	90	90
Indirect and Induced	54	64
Total	144	154
Annual average impact over five years	29	31
Employment Impact (FTEs)		
Direct	1,130	1,130
Indirect and Induced	927	1,096
Total	2,057	2,225
Annual average impact over five years	411	445

Note: Totals may not add up due to rounding.



4.4 Economic Impact of Non-Local Student Expenditures

Over the years, UWindsor has been drawing an increasing number of non-local students, particularly international students. Since 2006, the proportion of international students at the University has more than doubled, and currently sits at approximately 23%, representing approximately 100 countries. One of the goals of UWindsor is to attract and retain the best international students in a sustainable method, providing research and graduate training opportunities retain graduates in the region. Table 9 shows the estimated overall economic impacts of non-local students on the Canadian and more narrowly, the Ontario market.

Table 9: Non-local Student Spending Impacts Summary (2018\$)

	UWindsor	
	Ontario	Canada
GDP Impact (\$ millions)		
Direct	82	82
Indirect and Induced	60	69
Total	142	151
Labour Income Impact (\$ millions)		
Direct	40	40
Indirect and Induced	32	37
Total	72	77
Employment Impact (FTEs)		
Direct	1,159	1,159
Indirect and Induced	580	666
Total	1,739	1,825

Note: Totals may not add up due to rounding.



4.5 Economic Impacts of Visitors to the University

The University received over 30,000 Canadian out of town visitors, and over 6,000 international visitors UWindsor sponsored events such as graduations, alumni weekends, campus visits, and sports events in the 2018-19 year. Using data from the Ontario Ministry of Tourism, Sport, and Culture, it is estimated that visitor spending generated \$30 million in national GDP impact and 500 jobs in employment impact across the nation.

Table 10: Visitor Spending Impacts Summary (2018\$)

	UWindsor	
	Ontario	Canada
GDP Impact (\$ millions)		
Direct	15	15
Indirect and Induced	13	16
Total	27	30
Labour Income Impact (\$ millions)		
Direct	10	10
Indirect and Induced	7	8
Total	17	18
Employment Impact (FTEs)		
Direct	348	348
Indirect and Induced	125	153
Total	472	500

Note: Totals may not add up due to rounding.

These economic impacts are a result of a diverse range of visitors to UWindsor, including many visitors who attend student and alumni events such as homecoming weekend, campus visits, and Orientation Week. In 2018, UWindsor estimated that convocation events alone drew nearly 17,500 visitors. Adding to these major student-centric events, UWindsor hosts many conferences and events that are held in the University and City, including athletic events and conferences.

UWindsor hosts many athletic events locally, and across the region, which draw many out of town visitors to the City and University. Events range from Prospect Fighting Championships to Varsity games and playoffs. Furthermore, UWindsor hosted two national championships, Ontario championships, and Olympic trials. When attending these events, visiting teams of competing athletes typically travel with supporting staff (coaches, physicians, and other support), as well as event attendees (friends and family spectators), all of whom are also included in visitor totals, and ultimately increase the amount of visitor spending and economic impacts.

Additionally, conferences and symposiums draw local and out of town visitors with a goal of knowledge sharing and information dissemination. Recent relevant events include the New



Kids on the Blockchain and the Georgie-Odette Leadership (GOL) Symposium. GOL is an annual event targeted at students and business professionals that brings together proven business leaders to speak on various aspects of successful leadership.

4.6 Local Economic Impacts on Windsor-Essex

As UWindsor is located in the City of Windsor within the Windsor-Essex region, some of its expenditures are assumed to have relatively localized impacts on Windsor-Essex.

These expenditure types are summarized into three categories and the table below:

- Salaries and employer contributions paid to employees living in Windsor-Essex.
- Expenditures of non-local student residing in Windsor-Essex; and
- Expenditures of visitors to the UWindsor to attend events and activities, or to visit non-local students.

Table 9: Local Expenditures Summary (2018\$)

Expenditures (\$ millions)	
Annual Expenditures	
Salaries & Benefits	207
Non-local Student Expenditures	134
Visitor Expenditures	30
Total	371

In 2018-19, approximately \$228 million in salaries were paid to employees, of which 91% reside in Windsor-Essex, totaling over \$207 million in salaries and benefits to employees living in the local area. As these employees reside in Windsor-Essex, it can reasonably be assumed that a large portion of these employees' incomes are spent on goods and services provided by businesses in the local area. A significant portion of the associated economic impact is also likely to occur in the local area, although the exact proportion is difficult to estimate.

In addition, much of the spending generated from non-local students can also be generally assumed to be localized to Windsor-Essex, surrounding the campus. Therefore, it is assumed in the table above that all non-local student spending occurs within Windsor-Essex, which amounts to \$134 million in 2018-19. These expenditures support local businesses and contribute to the local economy's vibrancy and vitality. A significant portion of the associated economic impact is also likely to occur in the local area, although the exact proportion is difficult to estimate.

Similarly, in 2018-19, UWindsor attracted more than 36,000 visitors to the region. This includes visitors to non-local students and attendees at events held at UWindsor. Since it is further assumed that all visitor spending occurs in Windsor-Essex, \$30 million in visitor



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expenditures can be assumed to occur within Windsor-Essex. As above, a significant portion of the associated economic impact is also likely to occur in the local area, although the exact proportion is difficult to estimate.



5. Qualitative Impacts

In the prior section, we focused on economic impacts that are directly linked to spending by UWindsor and by its students and visitors. These types of economic impacts are relatively straight-forward to quantify and are the direct result of expenditures made. In the following section, we focus instead on impacts that are linked to the outcomes achieved through the university's activities rather than to the university generated spending. Many of these outcomes are intangible in nature and thus economic impacts may be assessed using a more qualitative perspective.

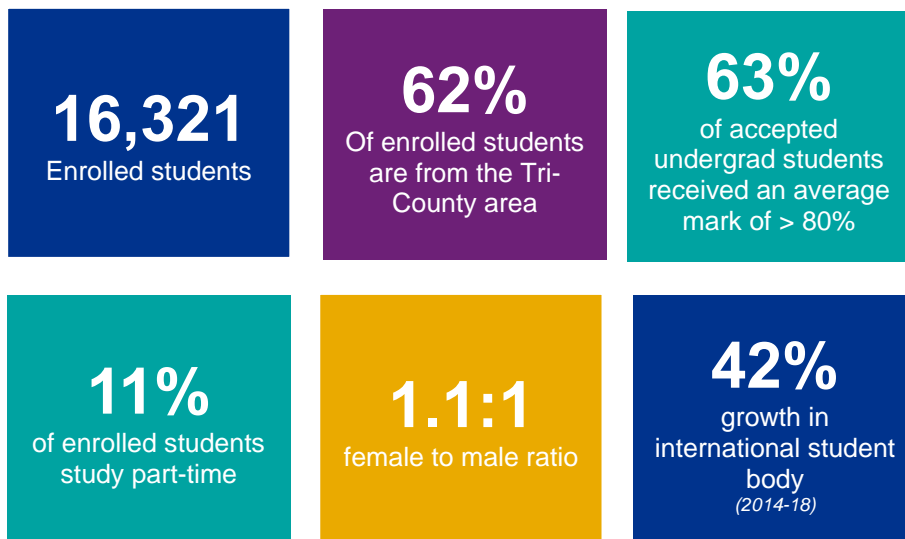
In the following section, we present these other social and economic impacts at four scales, they are:

1. Impacts to current and prospective students;
2. Impacts to the local community;
3. Impacts to the regional economy; and
4. Impacts as a result of UWindsor's research, development, and innovation activities

Each of these themes are described briefly below, and in further detail in subsequent sections of this chapter.

5.1 Impacts on current and prospective students

The UWindsor offers a very comprehensive range of program offerings to current and prospective students seeking undergraduate, graduate, post-graduate, certificate, diploma, or additional qualification studies. Other institutions in Ontario with similar-sized student bodies typically offer a less diverse range of program offerings.





The comprehensive programming offered by UWindsor provides prospective local candidates who wish to pursue higher education or advancement studies an option to do so while still staying in the Windsor area to fulfill work and family commitments. As highlighted in previous chapters of this report, the University's enrolment has grown steadily over the recent past, and its student body also continues to diversify with increasing enrolment from international students seeking all levels of education at UWindsor.

The Faculty of Nursing **CLINICAL LEARNING CENTRE (CLC)** is home to a Simulation Lab that provides students with the opportunity to interact with palliative simulation suite technology and primary care facilities. These are designed together to provide students with the opportunity to gain "real-life" experiences within the safety of simulations. Nursing students in all four years of the BScN and Nurse Practitioner programs are provided access to simulated patients, who are physiologically modelled to respond to treatment and medication as a real patient would. These patient scenarios provide real-time feedback to help students improve their skills.

“
I felt the simulation was a great learning experience. The rapidly changing patient condition allowed us to use our critical thinking skills. It was wonderful!!
”

The **EPICENTRE** is a university-wide business incubator that serves as the hub for entrepreneurial activities on campus. The EPICentre aims to support the transformation of "people into entrepreneurial thinkers, and innovative ideas into successful economic and social enterprises" through training, mentorship, and networking, providing the tools and skills training to enable entrepreneurs to launch and grow their initiatives. The EPICentre has funded nearly **28 student ventures**, provided **1,000+ mentoring hours**, and helped create **64 jobs from 43 start-ups**. The centre also collaborates with **20 regional partners**, and has engaged **52 mentors**.

WINDSOR LANCER TRACK AND FIELD is one of the most successful track and field teams in the history of Canadian Interuniversity Sport (CIS). Over the years, the team has won **25 CIS National** and **47 Ontario University Athletics Conference** Track and Field and Cross Country Titles. UWindsor has hosted major track and field competitions, drawing attendance and visitation to Windsor, including the Ontario Federation of School Athletic Associations Championships, U



SPORTS Track & Field Championships, and Ontario University Athletics Track & Field Championships.

The presence of both international and local students, combined with the broad range of programming that attracts candidates with diverse interests and backgrounds, contributes to a vibrant and varied student body, faculty and staff, bringing further enrichment to student and staff experiences.



In October 2018, UWindsor released its **STUDENT MENTAL HEALTH STRATEGY**, a culmination of a full-year process to surface **39 recommendations** that guide actions toward a mentally healthier student body over the next five years. Key themes of the strategy include resilience, Indigenous students, wellness promotion, suicide prevention, a multi-campus approach, collaboration and partnerships, and a multi-lens approach to strategy implementation.

The University continues to explore and implement flexible course delivery methods to accommodate its diverse student body, as evidenced in the growing number of online and hybrid (online plus in-classroom) courses offered to students and professionals. Online, part-time, and hybrid course offerings can be particularly important for working professionals such as teachers, who may be seeking additional qualifications – thereby increasing their earning potential. Skill enhancements have downstream impacts on the local economy while enhancing the quality of education for grade-school students across Ontario and beyond.

The Faculty of Education provides students with opportunities to enhance their credentials through **ADDITIONAL QUALIFICATION (AQ) COURSES AND THE INTERNATIONAL EDUCATOR CERTIFICATE FOR INTERNATIONAL BACCALAUREATE (IB) QUALIFICATION**. Additional Qualifications Courses are accredited by the Ontario College of Teachers (OCT). With over 80 AQ courses on offer, students are able to build their professional development portfolio, and enhance exposure to specialized teaching opportunities. While the IB Qualification offers a global perspective on education, allowing qualifying students to teach in any International Baccalaureate school around the world.



UWindsor has contributed to human capital development, which can be approximated using incremental earnings of the University’s alumni (salary differentials). Below is a broad estimate of the incremental earnings of UWindsor’s alumni living in Windsor-Essex. This methodology is presented in Appendix D.

	Ontario	Windsor
Estimated additional income earned by UWindsor alumni due to their education at the University of UWindsor	\$3.16 billion	\$1.02 billion

Furthermore, in order to estimate the total direct, indirect and induced impact of this income on GDP, a multiplier is applied to the total additional earnings. In similar studies by Canadian universities, a multiplier of 1.5 is employed.^{6 7 8}

	Ontario	Windsor
Estimated impact of additional income earned by UWindsor alumni due to their education at the University of UWindsor	\$4.74 billion	\$1.52 billion

Figure 5: Impact of Additional Earnings

Moreover, from interviews and desktop research conducted, it was noted that UWindsor’s program delivery methods continue to be refined and made more relevant to the workforce of the future. Increasingly, UWindsor has integrated experiential learning opportunities as part of student coursework, providing students with hands on learning experiences through field work, leadership programs, service learning, and within the programs themselves, cases of which are demonstrated below.

5.2 Impacts on the local community

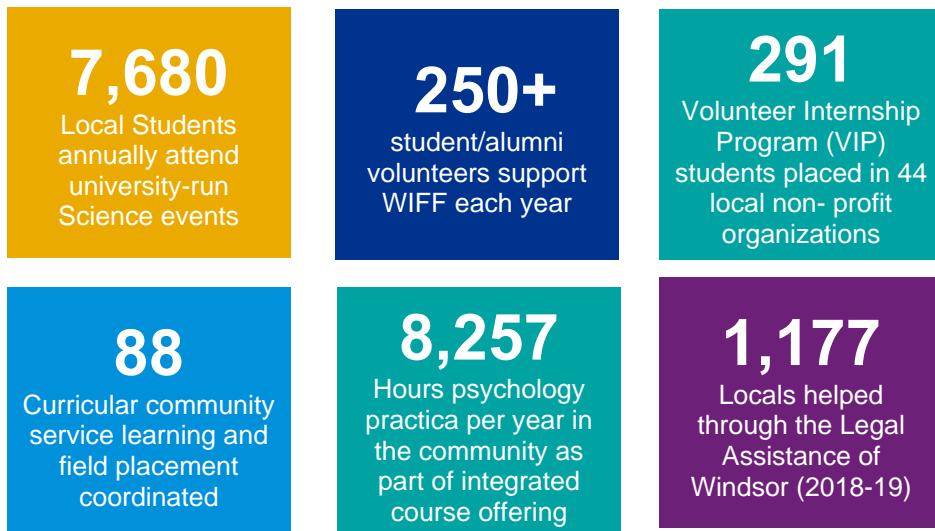
The University further complements its broad program offering by incorporating applied learning opportunities for students to experience and practice classroom lessons in the local community. For example, UWindsor hosts and sponsors legal aid clinics, health fairs, United Way initiatives, and other community-oriented events such as nursing clinics and science fairs for primary and secondary school students. In particular, UWindsor has had a long-standing relationship with the Windsor Film Festival, which attracts international, regional, and local attendees and involves over 250 students from the University across its planning and operations every year.

⁶ Sudmant, W. “The Economic Impact of the University of British Columbia,” Planning and Institutional Research, University of British Columbia, September 2009.

⁷ Briggs, A., Jennings, J. “The Economic Impact of the University of Alberta: A Comparative Approach,” University of Alberta, September 2012.

⁸ Díaz, V., Mercier, P., Duarte S. “University of Ottawa, 2012 Economic Impact Study,” Institutional Research and Planning, University of Ottawa, May 2012.

The **WINDSOR INTERNATIONAL FILM FESTIVAL (WIFF)** is a cultural, non-profit organization that showcases Canadian and international films and filmmakers with an aim of strengthening and enriching the community in arts and culture. Each year, the event—which attracts over **20,000 attendees**—engages students from across campus, including **250+ from the Odette School of Business**, MBA students who conduct market research, promote the festival, and manage logistics, along with music students who perform at events, and interns from the Arts Management to support event-day operations. Nearly **3,000 UWindsor students** have played a role in planning and delivering WIFF over the years.



These applied learning initiatives help students, staff, and faculty build local ties with the community in which they live. They also foster relationship building in the community for when students graduate and transition to working in the local community. Often, international students attending UWindsor are introduced to Canada for the first time when they arrive at Windsor; these community learning experiences become particularly important in assisting students to begin setting roots for the first time in a foreign country.

Professor of Social Work, Dr. Jayashree Mohanty, is studying **NEWCOMER INTEGRATION INTO CANADA**. Her research aims to understand why some newcomers to Canada thrive in academic and professional settings, while others

struggle. Dr. Mohanty is completing this research in collaboration with UWindsor professors Dr. Jane Ku (sociology) and Dr. Wansoo Park (social work), along with Dr. Esther Goh from the National University of Singapore, who is an expert in resilience related to parent-child relationships. Together, these researchers are partnering with the Windsor-Essex Local Immigration Partnership (WELIP), a local organization tasked by Immigration, Refugees, and Citizens Canada with ensuring that there are plans in place for service delivery to newcomers to the region. This partnership helps to identify and recruit candidates for the study. WELIP will also support the team in making findings available to service providers upon completion in 2021.



For more than 40 years, the UWindsor **STUDENT'S LAW SOCIETY (SLS)** has been providing pro bono legal services to low-income residents of the City of Windsor and Greater Essex County. SLS has earned a reputation for being a dependable source for quality legal representation that is responsive to the needs of its clients and broader community. In addition to direct legal services, SLS also hosts workshops that provide general legal information to the community around topics such as Landlord and Tenant Law, Criminal Law, Family Law, and

Provincial offenses. Each year, among the many student-volunteers involved, 17 students hold elected student executive positions and represent SLS both on and off campus.

UWindsor Law also partners with Community Legal Aid ("CLA") and Legal Assistance of Windsor to provide placements opportunities for law students through the **CLA VOLUNTEER PROGRAM**. As part of this program, students gain practical experience as caseworkers, which may involve appearances before the Ontario Court of Justice, Superior Court-Small Claims Court and the Landlord and Tenant Board, providing essential legal services to the community.

The University has also played a key role in helping to revitalize the City of Windsor's downtown core. For example, UWindsor recently completed several capital projects to rehabilitate historic buildings. While these have been repurposed to deliver courses, they also host a range of arts and culture events such as theatre and orchestral performances around the year – attracting visitors and show attendees to the downtown core, enlivening local establishments and other hospitality services.

As a leader and community steward, UWindsor has been supporting **DOWNTOWN REJUVENATION** through adaptive reuse opportunities in Downtown Windsor. As part of the establishment of a downtown campus, UWindsor is investing in the adaptive reuse of heritage buildings. These buildings have been restored and re-opened to the public through events and programming, classrooms, student lounges, and studios, and reflect investments of \$13.1 million in the Alan Wildeman School of Creative Arts, \$43.0 million in the Armouries, and \$31.4 million in Windsor Hall in the former Windsor Star Building, to name a few.



5.3 Impacts on the regional economy

Regionally, the University of Windsor is a key contributor of talent and innovation for businesses and start-ups. Anecdotally, many UWindsor graduates go on to work in highly competitive markets throughout the Greater Toronto Area, in fields of legal and health services. The UWindsor also offers programs that provide students with opportunities to obtain dual or joint degrees with a counterpart institution in Detroit, Michigan, across the adjacent United States-Canada border. As reported in the Wall Street Journal, approximately 1,600 nurses⁹ commute daily from Windsor to Detroit. As this demonstrates, many professionals have the opportunity to practice in US jurisdictions, and continue to reside in Canada, generating economic impacts as a result of household expenditures from jobs held in the US.

The **WE-SPARK HEALTH INSTITUTE** was founded in 2019, through the partnership of four local institutions including the University of Windsor, Hôtel-Dieu Grace Healthcare, St. Clair College, and Windsor Regional Hospital. The institute aims to “enhance the health, well-being and care of people through transformative research and knowledge translation.” WE-SPARK leverages collaboration and partnerships to drive toward innovative research, programs, and outcomes that improve healthcare in the Windsor-Essex region and support research all over the world.



⁹ Wall Street Journal, “Coronavirus Threatens Detroit’s Pipeline of Canadian Nurses” April 4, 2020.



DETROIT MERCY LAW

Established in 1983, the **CANADIAN & AMERICAN DUAL JD PROGRAM** is a partnership between the UWindsor Faculty of Law and University of Detroit Mercy School of Law. Enabling students to earn two law degrees in three years, it is the only program of its kind in North America. Due to UWindsor's unique border-adjacent location, the law schools are located just four miles apart, fostering seamless integration between the schools. Its nearly **750 all-time graduates** are eligible to be licensed in both Canada and the United States.



Founded under the direction of Dr. Bill Anderson, Ontario Research Chair in Cross-Border Transportation Policy, the **CROSS-BORDER INSTITUTE ("CBI")** aims to make a better Canada-U.S. border. CBI conducts research for federal and provincial government agencies; collaborates with university research centres in Canada, the US, Poland, the UK, Japan and India; and collaborates and consults with private sector firms involved in cross-border commerce. CBI also works with municipal and civic organizations in Windsor-Essex to promote regional development as a hub for cross-border logistics. As of 2020, research at CBI focuses on issues such as traffic simulation and modelling; supply chain analysis and finance; customs immigration and border policy; simulation and modeling for sustainable transportation; applications of blockchain and machine learning in transportation and logistics; and driver behavior and traffic safety.



The **VISUAL ARTS AND THE BUILT ENVIRONMENT ("VABE")** program is a partnership between the UWindsor SoCA Visual Arts and the University of Detroit Mercy School of Architecture. It gives students enrolled in the four-year UWindsor Bachelor of Fine Arts program the opportunity to pursue the study of architecture in their final year as part of the University of Detroit Mercy Bachelor of Science in Architecture program. Through this program, students learn about the built environment, drawing on their foundations in fine arts. The program attracts students interested in public art, urban design, architecture and sustainability.

Recently As another example, the University’s research contributes to associations with regional and national mandates, such as the Windsor-Essex Road Safety Working Group and the Canadian Automated Vehicle Institute. The University’s research contributes to safety advancements of these groups, and aims to make driver-vehicle interactions more effective, thereby enhancing road safety in the face of future mobility solutions.



The **CENTRE FOR HYBRID AUTOMOTIVE RESEARCH AND GREEN ENERGY (“CHARGE”) LAB** focuses research on five core areas for Electric Vehicles (EV), including electric machine design, electric machine testing, machine drives and control, inductive and conductive charging, and electric vehicle simulation and testing. The centre also facilitates collaboration

among and between researchers, government, and industry by leveraging partnerships with stakeholders such as CanmetMATERIALS, Ford Motor Company, and D&V electronics.

139,050

Master of Social
Works practicum
hours (2018-19)

65%

of Science
undergraduates take
part in research

\$8.7M+

In student co-op
earnings

Food, beverage, and nutraceutical companies located across southwestern Ontario also benefit from UWindsor’s research and scientific services. Many services directly help these companies pursue export markets – with greater economic impacts seen in the local region as a result of these businesses’ subsequent expansion. For example, UWindsor’s Extension Science Program was established in late 2017 with over \$750,000 of provincial funding to support students who take a hands-on approach applying scientific testing methods on behalf of industry partners. In this program, students receive training that is directly relevant to the industry and which is otherwise often difficult to secure for students attending or recently completing undergraduate programs. At the same time, industry partners are able to secure testing services for their products in a timely fashion, minimizing the lengthy travel time and costly logistics that often come with having food and beverage products tested and certified.

The Faculty of Science **WINE LAB** will provide unique training experiences for undergraduate students, with classes focussed on the analysis of wine’s basic chemical and physical properties. The Wine Lab will serve as a hub to connect students to the wine industry, creating opportunities for collaborative research and exposure to potential career pathways. The Wine Lab received **funding from the Ministry of Advanced Education and Skill Development, and the Windsor Essex Economic Development Corporation** to complete a regional gap analysis and to foster relationship building between academia and the industry.



5.4 Impacts of the University’s research, development, and innovation activities

The University’s impact and footprint extends far beyond the borders of US and Canada – particularly in respect of the breadth and depth of research and development. UWindsor has continued to secure sizeable funding from the federal government to support leading edge research in a wide variety of fields. Much of the research that UWindsor participates in has impacts in far off geographies such as Asia and China in particular, as well as in parts of Western Europe and the US.

UWindsor, through the education and training of its students, has contributed to productivity within and growth of the economy. To provide an approximation of the magnitude of this contribution, the share of UWindsor’s research and development spending was applied to productivity gains in Ontario, arriving at a broad estimate. The research and development spending reflect research endeavours by staff, faculty and students between 1971 and 2018. As such, the University has contributed to Ontario’s annual GDP growth by improving total factor productivity by approximately \$288 million in 2018 dollars.

	Factor of the previous item (\$millions)		
Nominal GDP growth in Ontario (1971-2018) ^a			\$598,403
Growth attributable to Total Factor Productivity (TFP) ^b	x	20%	\$119,681
Exclusion of international and other provincial R&D effects ^c	x	69%	\$82,580
Share of Ontario R&D by Ontario Universities ^d	x	37%	\$30,673
Share of Ontario University R&D by the University of Windsor ^e	x	1%	\$288

Figure 6: Research Impacts on Ontario GDP



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Source: KPMG Calculations using the following:

- Statistics Canada. CANSIM Tables 384-0015 and 36-10-0222-01 (formerly 384-0038).
- OECD, 1996. "Technology, Productivity and Job Creation", Vol. 2, Analytical Report.
- Martin, Fernand, 1998. "The Economic Impact of Canadian University R&D" in Research Policy, 27 (7), pp. 677-687.
- Statistics Canada. CANSIM Table 27-10-0273-01 (formerly 358-0001); January 2018.
- Canadian Association of University Business Officers. "Financial Information of Universities and Colleges 2017-2018". Using Research Expenditure as a proxy to measure research output as a share of Ontario Universities.

Furthermore, the University actively fosters and strengthens informal relationships and formal partnerships with other leading research teams in relevant fields and it contributes to research and knowledge in these fields.



UWindsor prides itself on continuing to pursue research in globally relevant issues such as:

- Freshwater and aquatic resource management through the Great Lakes Institute for Environmental Research (GLIER);
- Leading edge automotive research in collaboration with Fiat Chrysler in the Applied Research and Development Centre (ARDC) and Ford Motor Company in the development of higher efficiency diesel motors and electric motors, and for improved workplace safety and ergonomics; and
- SARE Centre, the Sexual Assault Resistance Education Centre, a non-profit founded by Dr. Charlene Senn to provide training and support services in the administration and delivery of the EAAA—Enhanced Assess, Acknowledge, Act—sexual assault resistance program.

Recently, UWindsor hosted the Energy and Sustainability 2018 Summit, which examined topics and the convergence of issues in climate change, waste and recycling, green buildings, green economy, and social sustainability.

Founded by Canada Research Chair in Sexual Violence, Dr. Charlene Senn, the Sexual Assault Resistance Education Centre, known as the SARE Centre, provides a platform to disseminate Dr.

SARECentre
Sexual Assault Resistance Education Centre

Senn's critical work related to sexual assault resistance. The Centre offers training and resources around her *Flip the Script* or EAAA training program, which "affirms men's responsibility to stop rape, while empowering female students with the knowledge and skills to fight back against a sexual attack."¹⁰ The program has seen uptake globally, including in the United States, Australia, and throughout Europe.

Most notably, UWindsor founded GLIER in 1981, focused on addressing the environmental challenges faced by large freshwater lakes and watersheds by leveraging multi-disciplinary teams. Every year, the University of Windsor works directly with academic delegations from China on freshwater and aquatic research. As a result of the ongoing research, UWindsor and Southwest University in China formed the China-Canada Three Forges Water Science Centre – the only Institution in the world created to focus on research into protection of the Three Gorges Reservoir and accompanying ecosystem.



Located on the Detroit River in Windsor, the **GREAT LAKES INSTITUTE FOR ENVIRONMENTAL RESEARCH (GLIER)** is comprised of ten researchers spread throughout 19 laboratories focussed on large freshwater lakes and their watersheds. GLIER is the leading freshwater aquatic research facility in North America. Globally,

GLIER launched an international partnership with China's Southwest University, to study the Yangtze River basin and issues related to its high nutrient content. The partnership is support by the Chinese Ministry of Science and Technology and Canada's International Science and Technology Partnership.

¹⁰ Canada Research Chairs. (www.chairs-chaire.gc.ca/chairholders-titulaires/profile-eng.aspx?profileId=4407).



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UWindsor and Southwest University in Chongqing, China collaborated to create the **CHINA-CANADA THREE GORGES WATER SCIENCE CENTRE (CCTW)**, a research project dedicated to the protection of the Three Gorges Reservoir and its ecosystem. Across China alone, the University of Windsor has 30 university partnerships.



The University's growing network of research partnerships and continued track record of securing public and private funding demonstrate UWindsor's established position in academic and applied research fields. This, in combination with the focus on generating local and regional impacts by appealing to a wide range of prospective and currently enrolled students, highlights the comprehensiveness of the socio-economic impacts that result from UWindsor's programming, expenditures, and day-to-day activities.

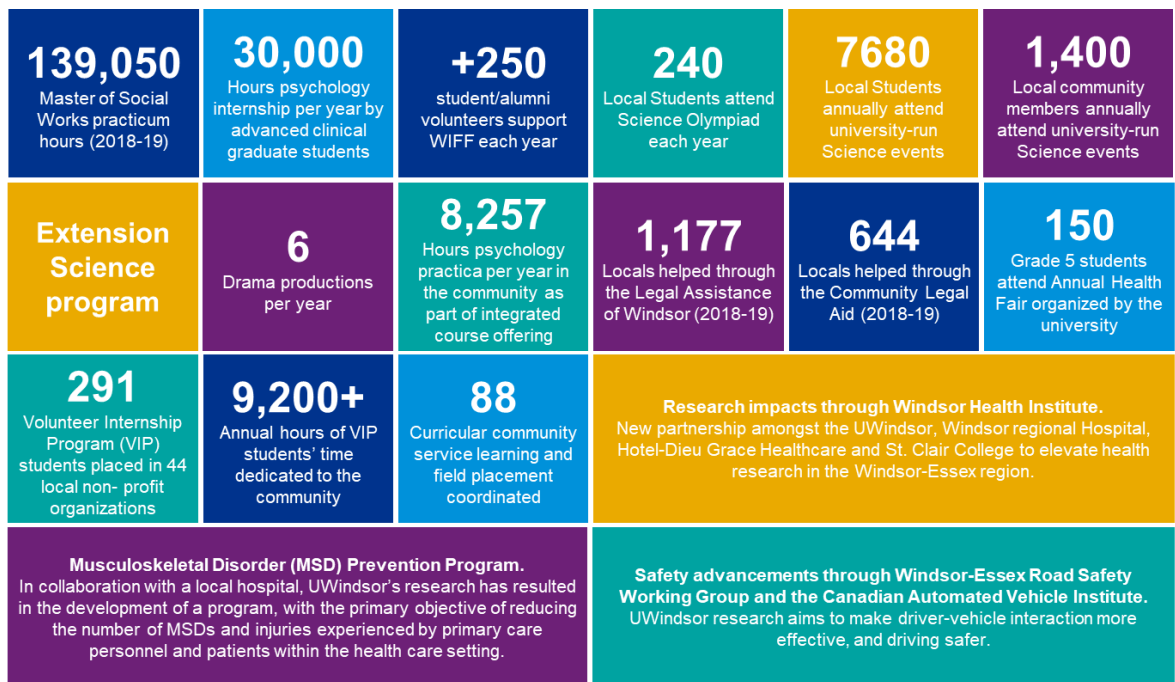
In 2018/2019 UWindsor received \$29.8 million in **RESEARCH FUNDING**, including Federal, Provincial, International, and corporate funding. Sample projects include:

- The Institute for Diagnostic Imaging Research led by Dr. Maev received \$5.5M from NSERC and various industrial partners to support a collaborative research and development grant in 2018.
- DNA Sequencing for Water Monitoring, led by Daniel Heath, Chris Weisener and Doug Haffner from GLIER received \$500K in NSERC funding in 2016.
- Optimization of Metal Forming Processes, led by Dr. Daniel Green received \$305K in NSERC and his industrial partners in 2017.
- The Reciprocal Learning in Teacher Education and School Education between Canada and China led by Dr. Shijing Xu received \$3M (over 2013-2020) as a SSHRC Partnership Grant Project.
- The CHARGE Lab received \$4.3M (\$1.9M from NSERC and \$2.4M from industry partners, including Ford Motor Co, Nemak Corp., and D&V Electronics) to support Dr. Narayan Kar's research and development of the next generation of electronic motors by 2025.
- Housed within GLIER, GEN-FISH is the largest freshwater fish genome research project in Canadian history. The project received more than \$9.1M in funding, including \$4M from Genome Canada.



5.5 Conclusion

Over the years, UWindsor has made many contributions to the economy both locally and nationally. As the University continues to grow and expand, and to further its goal of becoming more regionally and internationally relevant, these impacts are sure to continue. The diagram below summarizes some of the key impacts with respect to key outputs and activity measures.



The qualitative measures summarized in this report help to demonstrate the many ways in which UWindsor generates economic and social impacts, including through:

- The provision of comprehensive and accessible educational services;
- Local impacts on the Windsor community;
- Impacts on the province of Ontario; and
- Impacts through the research and innovation generated by UWindsor.

The case studies highlighted throughout this section demonstrate the depth and the breadth of UWindsor activities that support these measures, highlighting the wide variety of research and community contributions that the University provides. To recap, we have provided below a summary of the specific cases and impacts profiled above, categorized by impact area.



Impacts to current and prospective students

This reflects impacts from providing a comprehensive and accessible education for local, regional, and international students, with specific activities or initiatives highlighted below:

- Clinical Learning Center (CLC)
- EPICentre
- Windsor Lancer Track and Field
- Student Mental Health Strategy
- Additional Qualification (AQ) Courses and the International Educator Certificate for International Baccalaureate (IB) Qualification

Impacts on the local community

Activities by UWindsor that benefit the local community include support in respect of the following:

- Windsor International Film Festival (WIFF)
- Newcomer Integration to Canada Study
- Student's Law Society (SLS)
- Downtown Rejuvenation

Impacts of the regional economy

Impacts on Ontario are supported through the following:

- Canadian and American Dual JD Program
- Cross Border Institute
- Visual Arts and Built Environment ("VABE") Program
- Wine Lab
- Centre for Hybrid Automotive Research and Green Energy ("CHARGE") Lab

Impacts of the University's research, development, and innovation activities

Impacts result from UWindsor's contribution to and participation in global research networks and partnerships, development endeavours, and in the application of innovative solutions to solve local, regional, and global challenges. Relevant examples or initiatives include the following:

- Sexual Assault Resistance Education Centre ("SARE") Centre
- Great Lakes Institute for Environmental Research ("GLIER")
- China-Canada Three Gorges Water Science Centre ("CCTW")
- Research Funding



Summary

Overall, as universities prepare for the challenges of the future, UWindsor is uniquely placed to be a front runner in meeting these challenges. This reflects its unique location at a major border and the depth and breadth of its educational programming. Impacts realized through UWindsor's research, which on average (five-year) receives nearly \$27M in funding, contributes far-reaching impacts in diverse fields, ranging from fish genome research, to sexual health and rape prevention education, to electric vehicles and motor innovation.

UWindsor also plays a critical role in developing human capital in Windsor-Essex. This is due in part to the University's approach to applied and experiential learning, as well as to its community partnerships, which allow students to partake in applied learning experiences. These connect students directly with the community through, variously, legal aid programs, nursing placements, and engineering competitions. The University is also engaged in a wide range of partnerships, including for example with universities in China, which further support knowledge sharing and human capital development. The knowledge gained through these partnerships and collaborations provides students with a competitive advantage upon graduation, thus helping to provide the community they serve with critical social services.

Active community involvement has also been a cornerstone of the University's mandate. This is outlined not only in UWindsor's strategic priorities, but is also demonstrated in its involvement in building and developing the region. This involvement has been significant, particularly through the University's support of WIFF, elementary school science fairs, and various community campaigns, among many others. The student population at UWindsor is involved in numerous local organizations and initiatives, with thousands of hours allocated by students to social issues such as for legal aid, mental health awareness, and social work needs. Students also volunteer through ProsperUs—a United Way campaign—to identify students through grade school, providing ongoing financial aid and mentorship, preparing them for entrance into University. Faculty and staff members are also involved members of the community, dedicating a portion of their time to service, as volunteers and board members of local organizations, with 40% of the Nursing Faculty donating to United Way campaigns.

Through its programmed activities for incoming students and their families, as well as for local residents through the hosting of workshops and events for professional development, the University draws thousands of visitors on a yearly basis. Further, UWindsor offers many public community partnerships, providing a space for potential future entrepreneurs to receive the necessary help in bringing these ideas to fruition. In addition to this, the University also offers use of its spaces and facilities downtown to host theater and art exhibits. The University opens the doors of its athletic facilities for training and competitions such as city and provincial sports and tournaments, as well as for community event such as Youth Science Canada, First Robotics Canada, and summer camps. The events support additional visitor traffic to the City of Windsor, which has been taken into account in the visiting spending estimates identified in this report.



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As UWindsor strives for continuous improvement, these impacts will be key to attract, retain and educate talented students, retain well-qualified faculty and staff, and to grow its research and program capabilities. As it does so, UWindsor will continue to generate positive social and economic impacts for students, the local and regional economies, and the research sphere.



6. Conclusion

UWindsor contributes to the local, regional, and national economies through their various activities, including annual operations and capital investments. These impacts are reflected in the results and commentary on economic impacts presented in this Report. In particular, the following economic impacts as a result of UWindsor's capital and operational activities include:

- The total economic impact of UWindsor, based on \$523 million of operating, non-local student, and visitor expenditures, and \$46 million in annual average capital expenditures, is estimated to be **\$669 million in GDP throughout Canada**.
 - As a result of the \$359 million annual operational expenditures alone, **3,797 jobs** were generated in Canada, **95% of which were generated in Ontario**. These same operational expenditures also resulted in a GDP impact of **\$438 million in Canada**, of which **\$327 million occurred in Ontario**.
 - And as a result of \$46 million in annual average **capital expenditures** alone, an estimated **average annual impact** of **\$49 million to Canada's GDP** and over **2,225 jobs across Canada** was generated.
- UWindsor has contributed toward human capital development in Ontario, approximated using incremental earnings of the University's alumni, using a methodology employed in similar studies by Canadian universities.
 - **\$3.16 billion in additional income** earned by UWindsor alumni due to their education at the University of UWindsor.
 - **\$4.74 billion impact of additional income** earned by UWindsor alumni due to their education at the University of UWindsor.
- UWindsor has contributed to **\$288 million to Ontario's annual GDP growth** by improving total factor productivity. To provide an approximation of the magnitude of this contribution, KPMG used a methodology used in similar studies by other Canadian universities. The share of UWindsor's research and development spending was applied to productivity gains in Ontario, arriving at a broad estimate. These impacts reflect research and development spending between 1971 and 2018.

Additionally, UWindsor is an active stakeholder in the Windsor-Essex region and the province of Ontario:

- Partnering in community-based research supporting public, non-profit, and community organizations in order to provide accessible knowledge and research, while at the same time providing UWindsor students with opportunities for experiential learning. As UWindsor continues to initiate and participate in community-based initiatives, it will further support quantitative and qualitative impacts generated on the local, regional, and national economies.



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- Engaging in community events and activities such as community-focused events, community placements, mentoring programs, and charity projects.
- Supporting local businesses by educating and providing a skilled labour force for the region and investing in the rejuvenation of Downtown Windsor.

These additional impacts are qualitatively captured in this Report, and demonstrate the UWindsor's significant contributions at multiple scales.



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Appendices

- Appendix A: Interviewed Stakeholder List
- Appendix B: Interview Questions
- Appendix C: UWindsor Program Offerings
- Appendix D: Human Capital Impacts Methodology



Appendix A: Interviewed Stakeholder List

Name	Title	Date
Anna Kirby	VP Planning & Administration (Acting)	Ongoing
Patti Weir	Dean, Grad Studies	Tuesday, Oct 22 – in-person meeting
Colin McLellan John Regier	Capital and Operating Projects	Tuesday, Oct 22 – in-person meeting
Ken Montgomery	Dean, Education	Tuesday, Oct 22 – in-person meeting
Chris Waters	Dean, Law	Tuesday, Oct 22 – in-person meeting
Mike Harvey	Athletics	Tuesday, Oct 22 – in-person meeting
Rita Lacivita	VP HR	Wednesday, Oct 23 – in-person meeting
Rob Gordon	President	Wednesday, Oct 23 – in-person meeting
Michael Khan	Human Kinetics	Wednesday, Oct 23 – in-person meeting
Chris Houser	Dean, Science	Thursday, Oct 24 – in-person meeting
Kirsten Morris	Co-op	Thursday, Oct 24 – in-person meeting
Heather Pratt	ED Research and Innovation	Thursday, Oct 24 – in-person meeting
Linda Patrick	Dean, Nursing	Thursday, Oct 24 – in-person meeting



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Marcello Guarini	Dean, Arts	Thursday, Oct 24 – in-person meeting
Douglas Kneale and Jeff Berryman	Provost Office	Thursday, Oct 24 – in-person meeting
Jeremiah Bowers	Student Union President	Friday, Oct 25 – conference call
Wen Teoh	Epicentre	Monday, Nov 11 - conference call



Appendix B: Interview Questions

Faculty and Staff

Background

1. Please provide us with some background information on your role at the University of Windsor.

Economic Impact of Windsor

2. What are the top impacts that the University has generated for the region, Ontario, and/or Canada?

Please think about impact in terms of both economic wealth creation, as well as social improvement. Please consider different sources of impact - from financing capacity, students, alumni and partners, research and innovation (e.g. research stations), and industry partnerships.

3. Are you (or the research centres associated with your faculty) involved in any unique projects, partnerships, initiatives or policies that have a positive economic impact on the region?
 - o Please describe examples of current, past and/or prominent interdisciplinary research initiatives that have impacted the Windsor-Essex region, Ontario, and/or Canada.
4. Please elaborate on sponsored research: where does the funding come from and what are some sample research output? How does this impact the community?
5. Are there examples of processes, products or other IP that has been commercialized and/or is assisting businesses as a result of UWindsor? Are there any other metrics or specific examples that you would like us to highlight?
6. Please highlight any partnerships with industry leaders, specifically in Windsor or more generally in Ontario. Please describe any research partnerships that you have facilitated or observed between Windsor and the broader community (this may include domestic and international industry partners, local businesses, government agencies and more)? What were the key achievements from these partnerships?
7. Could you elaborate further on the Office of Research & Innovation Services? What kind of research partnerships have taken place? Do industry needs intersect with the University's academic curriculum?
8. How has the Ontario-Jiangsu Student exchange, in which UWindsor students can participate, helped with knowledge transfer or business applicability during student years at the University or post-graduation?



9. What impact do you anticipate the new agreement between Detroit Mercy Law and Windsor Law to have on the University and on the city?
10. What are the top programs students have been enrolling in? Which industry hires the most amount of graduates?
11. How do you think the region of Windsor-Essex would be affected if the University was not there?
12. What role have community collaborations (for example, Social work and Clinical Psychology) played in community and economic development?

Concluding Remarks

13. Is there any additional information we have not discussed that would be relevant to this report?

Business & Industry Partners

Background

1. Please provide us with some background information on your role at Windsor.

Economic Impact of Windsor

2. What are the top impacts that Windsor has generated for the region, Ontario, and/or Canada?

Please think about impact in terms of both economic wealth creation, as well as social improvement. Please consider different sources of impact - from financing capacity, knowledge and expertise of the faculty, students, alumni and partners, research and innovation (e.g. research stations), industry partnerships.

3. Please elaborate on the partnership between you and the University. How have you benefitted from the student knowledge transfer, and has a partnership with the University helped with your competitive advantage? If so, how?
4. What role has the Entrepreneurship, Practice, and Innovation Centre (EPICentre), a joint effort between the University, alumni, and industry played in helping address business needs and in addressing key socioeconomic challenges in the region?
5. What trends have you witnessed in the types of projects the University has been taking on with the help/support or in collaboration with business and industry? Have any of these projects brought economic benefits to the region?



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Concluding Remarks

6. Is there any additional information we have not discussed that would be relevant to this report?



Appendix C: UWindsor Program Offerings

Faculty of Education

Consecutive B.Ed Program
Concurrent B.Ed program
B.Ed./Diploma in Technological Studies

Minor in Organizational Learning and Teaching

Faculty of Arts, Humanities, and Social Sciences

Acting
Aeronautics
Architecture
Art
Arts and Science
Built Environment
Child Psychology
Communication, Media, and Film
Criminology (Honours)
Developmental Psychology (Honours)
Disability Studies
Disability Studies and Psychology
Disability Studies and Social Work
Drama and Communication, Media and Film,
Drama and Education
Drama in Education and Community
Dramatic Art
Education (Concurrent Programs)
English and Education
English Language and Literature
English Literature and Creative Writing
Family and Social Relations
Film Production and Media Arts
Forensics Combined Degree
French Studies
French Studies and Education
Greek and Roman Studies
History
History and Education
Interdisciplinary Arts and Science
International Relations and Development Studies
Liberal Arts and Science

Liberal Arts and Professional Studies
Media Art Histories and Visual Culture
Modern Languages
Modern Languages and Education
Music
Music Honours
Music and Communications
Music and Creative Writing
Music and Education
Music and English
Music and French
Music and Psychology
Philosophy
Philosophy and Criminology
Political Science
Political Science, Bilingual Specialization
Political Science, Law and politics
Specialization
Psychology
Psychology and Education
Social Work
Social Work and Disability Studies
Social Work and Women's Studies
Sociology
Undeclared
Visual Arts
Visual Arts and the Built Environment
Visual Arts and Communication, Media and Film
Visual Arts and Music
Visual Arts and Education
Women's and Gender Studies
Women's Studies and Social Work



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Faculty of Engineering

Civil Engineering
Electrical and Computer Engineering
Engineering
Engineering Technology
Environmental Engineering
Industrial Engineering
Industrial Engineering with a Minor in
Business Administration
Mechanical Engineering

Mechanical Engineering with a Materials
Option
Mechanical Engineering with an
Aerospace Option
Mechanical Engineering with an
Automotive Option
Mechanical Engineering with an
Environmental Option

Faculty of Graduate Studies

Actuarial Science
Applied Computing
Applied Economics and Policy
Automotive Engineering (International
MAsc)
Biological Sciences (PhD and MSc)
Business Administration (MBA, JD/MBA)
Chemistry and Biochemistry (PhD and
MSc)
Civil Engineering (PhD, MSc, MEng)
Communication and Social Justice
Computer Science (PhD and MSc)
Criminology
Earth Sciences (PhD and MSc)
Economics
Education and Educational Studies (joint
PhD)
Electrical Engineering
Engineering Materials (PhD, MAsc,
MEng)
Environmental Science (PhD and MSc)
Film and Media Arts

History
Human Kinetics/Kinesiology
Industrial Engineering
Industrial and Manufacturing Systems
Engineering (PhD)
Law/Management
Mathematics and Statistics (PhD and
MSc)
Mechanical Engineering – Automotive
Option
Mechanical Engineering (PhD, MAsc,
MEng)
Medical Biotechnology
Nursing (PhD, MScn, MN, Graduate
Diploma)
Oncology/Palliative Care
Philosophy
Physics (PhD and MSc)
Political Science
Psychology (PhD and MA)
Social Work (PhD, MSW, MSW/JD)
Visual Arts

Faculty of Human Kinetics

Sports Management

Movement Science

Faculty of Law

Juris Doctor
Canadian and American Dual JD

JD/MBA
Master of Social Work/JD



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Master of Laws

Faculty of Nursing

Collaborative Honours Bachelor of
Science in Nursing

Odette School of Business

Bachelor of Commerce (Honours
Business Administration)

Bachelor of Commerce (Honours
Business Administration) Co-operative
Education Program

Faculty of Science

B.Sc. Honours Biological Sciences
B.Sc. Honours Molecular Biology and
Biotechnology
Combines B.sc Honours Program in
Behaviour, Cognition, and Neuroscience
B.Sc. Honours Biology and Biochemistry
B.Sc. Chemistry Major or Honours
B.Sc. Honours Chemistry and Physics
B.Sc. Honours Biochemistry or Honours
Biology and Biochemistry
Bachelor of Computer Science (General)
Bachelor of Computer Science (Honours
and Co-op)
B.Sc. Honours Computer Science with
Honours Software Engineering
Specialization
B.Sc. Honours Computer Information
Systems and Co-op
Bachelor of Computing Science with
Honours Applied Computing and Co-op
B.Sc. Honours Environmental Science

Honours B.E.S. (Bachelor of
Environmental Studies)
Bachelor of Arts Economics General
Bachelor of Arts Economics Honours
Bachelor of Science Economics Honours
Bachelor of Forensic Science
Combined B.A. in Forensics
Concurrent General Bachelor of
Science/Bachelor of Education
B.Sc. General Science
Bachelor of Mathematics and Honours
Mathematics and Statistics
Bachelor of Mathematics
Concurrent General Bachelor of
Mathematics/Bachelor of Education
B.Sc, Honours Physics with co-op
B.Sc. Honours Physics (Physics and High
Technology) with co-op
B.Sc. Honours Physics (Medical Physics)
and Co-op



Appendix D: Human Capital Impacts Methodology

To estimate the UWindsor's impact on human capital development in the Province of Ontario and Windsor-Essex, KPMG estimated the increase in salaries and the subsequent impact of the additional compensation as a result of the education received at the University of Windsor. This was calculated by measuring the incremental salary received by a UWindsor alumni completing one of:

1. A diploma certificate (e.g. CEGEP, non-university)
2. An undergraduate (e.g. Bachelor's) degree
3. A graduate (e.g. Master's, PhD) degree

If a UWindsor graduate had been conferred both a diploma and a bachelor's degree, only one would be counted. If a UWindsor graduate had been conferred more than one post graduate degree, only the highest level of degree conferred was counted.

In order to estimate the salary differential for alumni graduated with a diploma, the median income difference between individuals with a diploma and individuals with high school education were calculated based on the Statistics Canada 2016 Census for Ontario¹¹.

In order to estimate the salary differential for alumni graduated with an undergraduate degree, the median income difference between individuals with a bachelor's degree and individuals with high school education were calculated based on the Statistics Canada 2016 Census for Ontario.

In order to estimate the salary differential for alumni graduated with a graduate degree, the median income difference between individuals with a graduate degree and individuals with a bachelor's degree were calculated based on the Statistics Canada 2016 Census for Ontario.

As this data was reported in 2015 dollars, salaries were inflated to 2018 dollars¹². This was then multiplied by the number of diplomas and undergraduate degrees conferred in Ontario.

It was assumed that 5.3% of alumni were unemployed based on the October 2019 average unemployment rate for Ontario¹³.

¹¹ Statistics Canada, 2016 Census of Population, Statistics Canada Catalogue no. 98-400-X2016253. (2016)

¹² Statistics Canada. Table 326-0020 Consumer Price Index, Ontario, All items (2016)

¹³ Statistics Canada. Table: 14-10-0287-03 Labour force characteristics by province, monthly, seasonally adjusted, Ontario (October 2019)



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Impact of Certificate Training

Median income of those with a diploma (college)	\$56,169
Median income of those with high school education	\$47,287
Salary differential	\$8,882
Number of UWindsor alumni with diploma living in Ontario	1,883
Total differential for UWindsor alumni with law training	\$16,721,620

Impact of Undergraduate Degree Training

Median income of those with a Bachelor's degree	\$73,668
Median income of those with high school education	\$47,287
Salary differential	\$26,381
Number of UWindsor alumni with Bachelor's degree living in Ontario	109,728
Total differential for UWindsor alumni with undergraduate training	\$2,894,750,607

Impact of Graduate Degree Training

Median income of those with a graduate degree	\$89,227
Median income of those with a Bachelor's degree	\$73,668
Salary differential	\$15,559
Number of UWindsor alumni with graduate degree living in Ontario	16,108
Total differential for UWindsor alumni with graduate degree training	\$250,630,218

Reported Impacts

Total additional income earned by UWindsor alumni in Ontario due to their education at UWindsor	\$3,162,102,445
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