



Niagara Community
Observatory

THE BROCK UNIVERSITY EFFECT:

How thousands of students and millions of dollars energize the economy of Niagara communities.

A report on the economic impact of Brock University, 2017-18

Policy Brief #36, October 2018 | By Jeff Boggs and Lauren Peddle



ONE OF THE
**BEST
IN THE
WORLD**

**BROCK'S
SPORT
MANAGEMENT
PROGRAM**

- Business International Magazine

Brock
University

98%

**OF BROCK
GRADS ARE
EMPLOYED
2 YEARS
AFTER
GRADUATING.**

Brock
University

**TOP
FIVE**

**FOR STUDENT
SATISFACTION
IN CANADA**

Maclean's Magazine

Brock
University

**EXPERIENCE.
CAMPUS LIFE.**

**COME TO
BROCK.**



**EXPERIENCE.
INNOVATION.**

**COME TO
BROCK.**



**EXPERIENCE.
CAREER
SUCCESS.**

**COME TO
BROCK.**



INTRODUCTION

It is an empirically established and generally accepted fact that universities are not only institutions of higher learning, but also serve as economic engines in their local communities. While economic impact is the focus of this report, we should also keep in mind other dimensions of a university's presence in a region — the social, ecological, and civic dimensions of its effect on a community. Universities are hotbeds of global talent attraction to a region, often drawing the world's best and brightest to participate in the economic, social, and civic life, adding to its vitality. As the Niagara region continues its transition into a knowledge-driven economy, Brock University has become a critical asset in the region's stock of research, innovation, and entrepreneurship, the sheer force of which is capable of taking the region to its next milestone of socioeconomic reinvention.

The social impact of Brock University is immense, and researchers will be moving forward in the coming months to measure that effect on our community. However, our aim in this report is to highlight the economic dimension of Brock University's footprint in Niagara. One thing stands out: the university is a key contributor to the local economy. It should be noted, however, that for all of Brock's economic (as well as social, ecological and civic) contribution to the region, the relationship is symbiotic. Brock's success is inextricably intertwined with, and deeply rooted in, Niagara's vibrant local community and the remarkable support the university receives from community members.

Finally, it should be noted that this study is a pilot project that sets the initial template for a longer process over the years of finessing our understanding of Brock's economic and social footprint in Niagara.

Charles Conteh, PhD
Director,
Niagara Community Observatory

About the authors

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19,000+
REGISTERED STUDENTS

4,800
FACULTY AND STAFF

\$320 million
ANNUAL OPERATING BUDGET

PURPOSE

With more than 19,000 registered students, 4,800 faculty and staff, and an annual operating budget of \$320 million, exactly how much does Brock University contribute to the local economy?

Over this past summer, we were tasked with measuring Brock's economic impact. A secondary goal was to develop a set of procedures and supporting documentation moving forward so that the university could continue such in-house analysis.

For almost a decade, Canadian universities have been calculating their economic impact as part of

efforts to analyze and communicate their value to the community, and as part of an outreach strategy to government and other stakeholders. This allows us to demonstrate the value society receives from investments in higher education. Such a study is also useful to universities when setting priorities, as they must strategically choose between investments.

This policy brief contains our findings regarding Brock's economic impact on the Niagara region and Ontario. It is an overview of the full analysis, which can be found online.¹ These economic impacts are estimated using two different methods, and which capture some combination of static and dynamic economic impacts. Static impacts correspond to those estimated for the fiscal year under analysis, in this instance, 2017-18. Dynamic impacts correspond to those estimated over many decades.

Before turning to the methodology, we wish to emphasize that this is a pilot project. We expect that future iterations of this analysis will develop on the procedures used here, reflecting both advances in the field and identification of new data sources. As such, reports for future years may not be directly comparable with the findings we present. With that said, the findings in this report are based on the most conservative assumptions, as we opted to undercount rather than inflate Brock's economic impact.

METHODOLOGY

We follow the emerging convention of using two techniques — the Sudmant model and the Canadian Input/Output model — for estimating² a Canadian university's economic impact regionally and provincially.

Both techniques have been used at other Canadian universities in recent years. Using these makes easy a comparison of Brock's impact with other universities' impact, though for reasons of focus we do not make these comparisons.

In particular, two studies — one by Brandon University in 2017 and one conducted by

1 The full and detailed report, with references, can be found at brocku.ca/niagara-community-observatory/policy/

2 We use the layperson's definition of estimation, not the more technical definition of the statistician.

Walter Sudmant at the University of British Columbia in 2009 (the namesake of the Sudmant model) — provided guidance as we ‘reverse-engineered’ their methodology.³ We refer to the first document as the Brandon Report, whereas the monikers Sudmant Report or UBC Report are applied to the second. The UBC Report was then emulated by other Canadian universities, including the University of Alberta, the University of Saskatchewan, and Western University.

These methods allow us to model how a university impacts the local and provincial economy. Also, they both capture more than just direct economic impacts of a university’s expenditures.

How economic impact analysis works

Brock University directly injects money into the local economy through its operating and capital expenditures. This initial expenditure is known as the **direct impact**. As this money circulates through the economy, it has a **multiplicative impact**. Economic impact analysis estimates this cumulative effect.

Economic multipliers allow us to approximate the multiplicative effects of Brock’s direct spending. For instance, the Sudmant model uses a 1.5 multiplier. This implies that for every \$1 spent by a university, there is 50 cents of additional value as the initial dollar circulates through the economy.

Both the Sudmant and the Canadian Input/Output models measure this **indirect economic impact** by estimating the impact of an initial expenditure as a source of subsequent expenditures in an economy. For instance, the university purchases \$10,000-worth of printers from a local business, and in turn that business uses this money to purchase goods and services in the form of inventory, employee wages, utilities, and so on.

The basic components used to calculate economic impact in a university setting are operations and capital expenditures (collectively called institutional spending), visitor spending, and student spending.



The difference between the two models, however, is in how they calculate total economic impact. The business of multipliers is complicated by whether one calculates just the indirect impact, or also the **induced impact** (how the workforce down the line spends its increased income). In the case of the \$10,000-worth of printers mentioned above, induced impacts capture the third and higher recirculation of that initial \$10,000 through the economy. Thus, the utility workers buy groceries, purchase hockey equipment for their children and pay mortgages. In turn this money percolates even more deeply throughout the economy until its impact is exhausted. The Sudmant multiplier incorporates this induced effect (but does not break it out separately), whereas the Canadian Input/Output model allows one to use or leave it out. When using the Canadian Input/Output model, we follow best practice, which is that the induced impact should not be calculated in an “open” economy. An open economy is one where many transactions exist between the location being analyzed and neighboring locations. This is certainly the case with Niagara, where we found that while more than 93 per cent of Brock’s transactions are

³ This reverse-engineering was further aided by consultation with Dr. Kim Lemky, Genevieve Maltais Lapoint, and Deb Berkan, currently at Brandon University, and with Dr. Gervan Fearon, formerly of Brandon.

within Ontario, a goodly share of those take place outside of Niagara. Therefore, for our purposes we are using only direct and indirect impact to calculate total outcomes in the Canadian Input/Output model.⁴

One other difference is that the Sudmant model calculates dynamic impact — the economic impact over as many as four or five decades (in our case since 1970 and 1978) — whereas the Canadian Input/Output model calculates only the static impact (the impact for one fiscal year). Sudmant uses research impact, and the differential in employment incomes for those with a degree, as components in the calculation of dynamic impact.

The third difference is the use of multipliers. While the Sudmant method uses one single multiplier of 1.5 to capture direct, indirect, and induced impacts of spending, the Canadian Input/Output method uses the year, the location, and industry-specific multipliers found in supply-and-use tables provided by Statistics Canada. This is a more conceptually and empirically sound measurement as it rests on

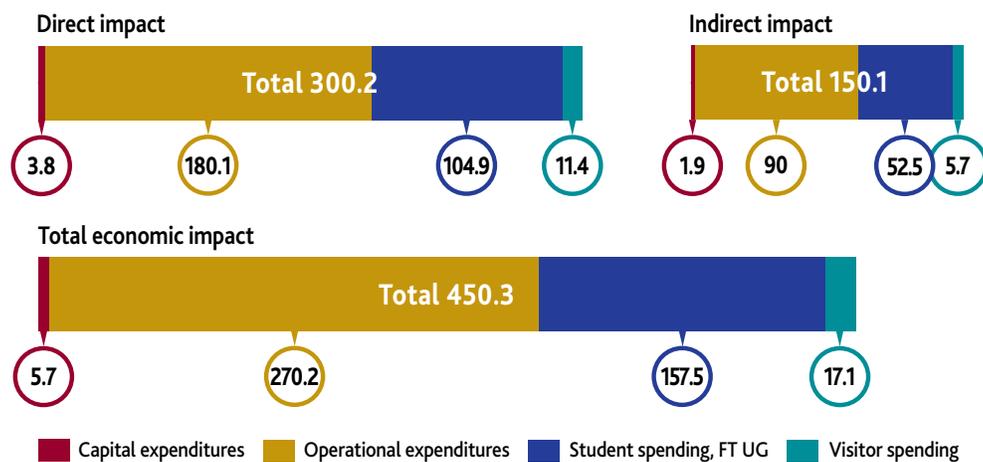
its explicit estimation of the inter-industry linkages in the Canadian and Ontario economy. The heart of the Canadian Input/Output method is the supply-and-use tables. These allow one to track the average impact of one expenditure to a given industry (e.g., commercial construction) on other industries (e.g., construction equipment manufacturing, diesel fuel refining, fast-food dining).

We opted to calculate four static impacts using the Sudmant method: operations (including payroll); capital; visitor spending; and student spending. For the Canadian Input/Output method, we used three: operations (including payroll); capital; and student spending. We did not estimate visitor impact using the Canadian Input/Output method because we lack sufficiently detailed estimates of visitor spending.

For the purposes of this assessment, “simple” multipliers were used to capture direct and indirect impacts of expenditures. This avoids overestimation of impact which are associated with the inclusion of induced impact multipliers.

RESULTS

Brock’s impact in Niagara (Sudmant Model, \$ millions)



⁴ As literature on economic impact multipliers indicates, using economic impact multipliers which include both indirect and induced (secondary and tertiary impacts of spending) overestimates outcomes, whereas indirect multipliers alone tend to underestimate outcomes. Due to the open nature of Niagara’s economy, as well as these other factors, we opt to use simple multipliers (i.e., those which incorporate both direct and indirect impacts only).

Brock University had a total economic impact on Niagara of \$450.3 million in the fiscal year 2017-18. Its initial spending in Niagara of \$300.2 million included:

- \$180.1 million in operational expenditures, including \$165 million in payroll
- \$3.8 million in capital expenditures
- An estimated \$104.9 million in total student spending (full-time, undergraduate)
- An estimated \$11.4 million in visitor spending.⁵

2017-18 total impact per student in Niagara
\$25,204

Using economic impact multipliers to calculate the indirect impact as \$150.1 million (the money generated throughout the economy by that initial spending), and adding that to Brock's initial spending, we get our final total impact of \$450.3 million to the Niagara economy, or **\$25,204 per student**. At this point, we must note that the vast majority of Brock students are here for just eight months, though we are measuring for an entire year.

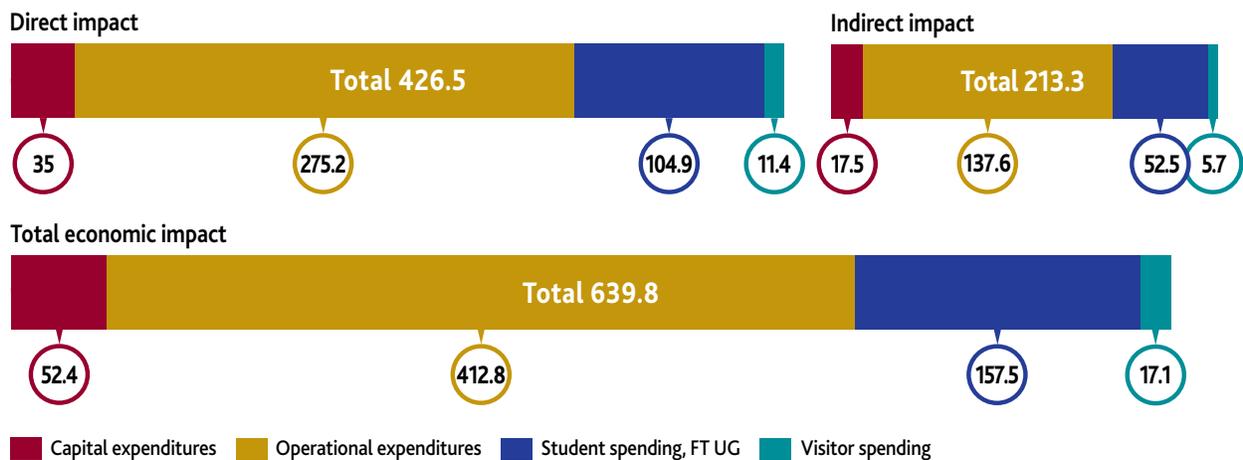
Brock University had a total economic impact on all of Ontario (including Niagara) of \$639.8 million in the fiscal year 2017-18. Its initial spending of \$426.5 million throughout Ontario included:

- \$275.2 million in operations expenditures (including \$165 million in Niagara payroll and \$40 million in payroll to those living outside Niagara)
- \$35 million in capital expenditures
- An estimated \$104.9 million in student spending
- An estimated \$11.4 million in visitor spending

2017-18 total impact per student in Ontario
\$35,833

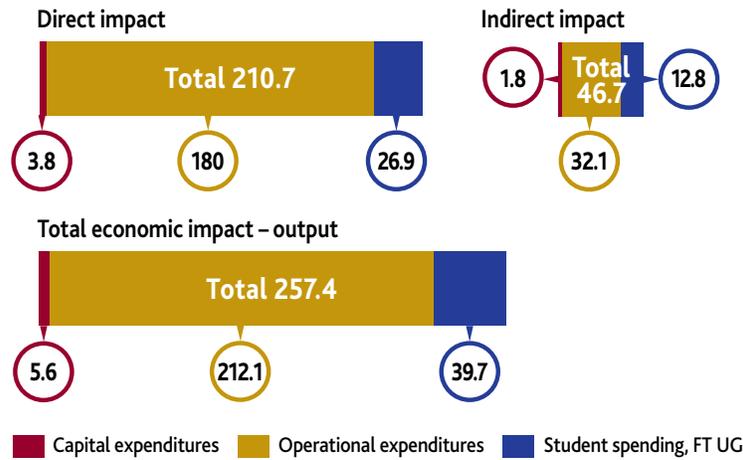
Using economic multipliers to calculate an indirect impact of \$213.3 million, and adding that to Brock's initial spending, we get a total economic impact of \$639.8 million to the Ontario economy, or **\$35,833 per student**.

Brock's impact in Ontario (Sudmant Model, \$ millions)



⁵ **Visitor spending** is an estimate. While Brock's Conference Services tracks the number of visitors using their facilities, they are not the only unit on campus supplying (and tracking) the needs of visitors. BUSU and Athletics are examples of other units which attract visitors to campus. In light of these data shortcomings, we adopted the simpler procedure used in the original Sudmant method, taking total student headcount in Winter 2018 after the final withdrawal date, assume each student would have eight (8) visitors and assume each visitor spends \$80 (an amount calculated by the Ontario Ministry of Tourism). As in the previous cases, we multiply this value by 1.5 to estimate the total impact. A deeper discussion of this methodology can be found in the online report.

Brock's impact in Niagara (Input/Output Model, \$ millions)



Using the Canadian Input/Output model, **Brock University had a total economic impact on Niagara of \$257.4 million in the fiscal year 2017-18.** Its initial spending in Niagara of \$210.7 million included:

- \$180 million in operations expenditures (including \$165 million in Niagara payroll)
- \$3.8 million in capital expenditures
- An estimated \$26.9 million in student spending
- Visitor spending was not included in this model

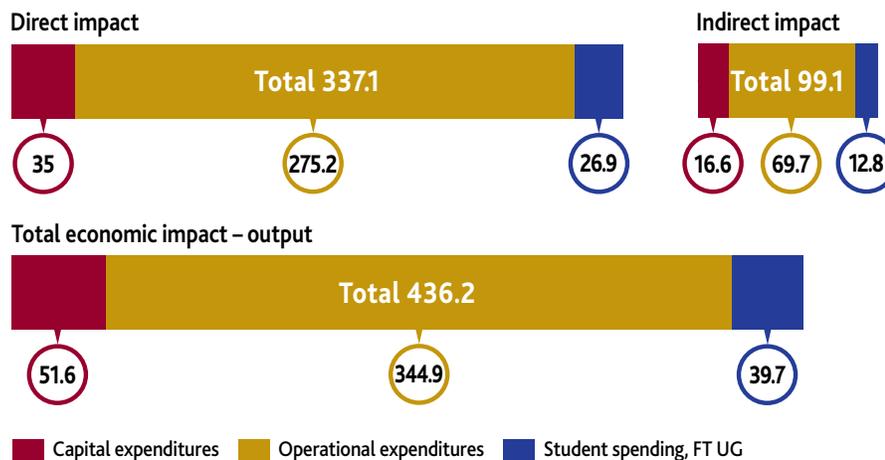
Using economic multipliers to calculate an indirect impact of \$46.7 million, and adding that to Brock's initial spending, we get a total economic impact of \$257.4 million to the Niagara economy, or **\$14,407 per student**, using the Canadian Input/Output model.

Using the Canadian Input/Output model, **Brock University had a total economic impact on Ontario (including Niagara) of \$436.2 million in the fiscal year 2017-18.** Its initial spending of \$337.1 million across Ontario included:

- \$275.2 million in operations expenditures (including \$165 million in Niagara payroll plus the \$40 million in wages to people living outside Niagara)
- \$35 million in capital expenditures
- An estimated \$26.9 million in student spending
- Visitor spending was not included in this model

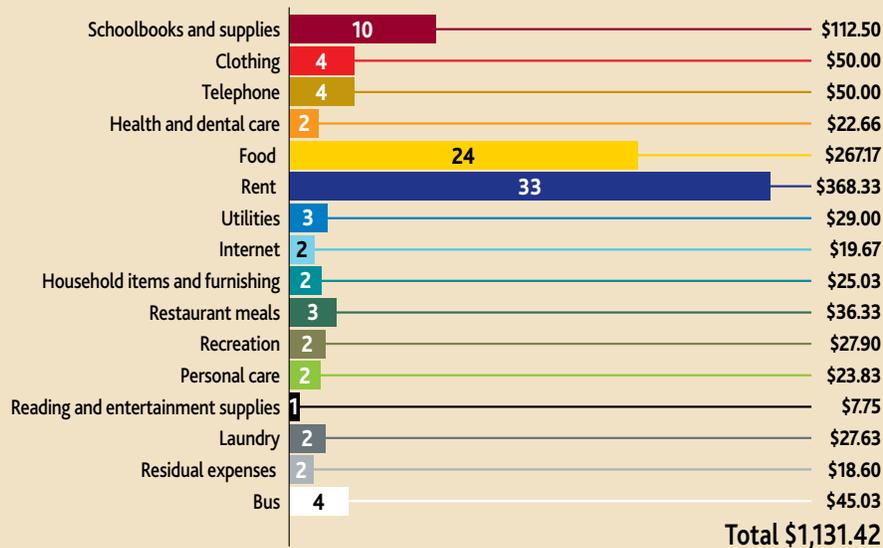
Using economic multipliers to calculate an indirect impact of \$99.1 million, and adding that to Brock's initial spending, we get a total economic impact of \$436.2 million to Ontario, or **\$24,414 per student**.

Brock's impact in Ontario (Input/Output Model, \$ millions)





Estimated student monthly spending breakdown (%)

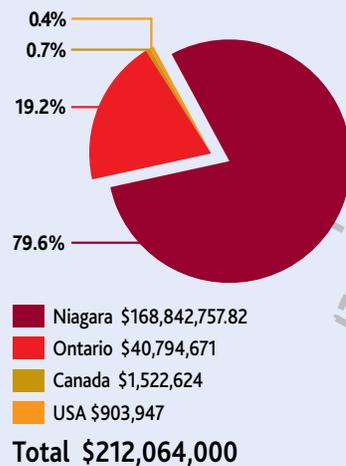


Student spending is estimated by identifying, through Brock’s Office of Institutional Analysis, current Brock students who live somewhere in the Niagara region. This estimate is provided for the four semesters — Fall, Winter, Spring, Summer — but always after the corresponding final withdrawal date.

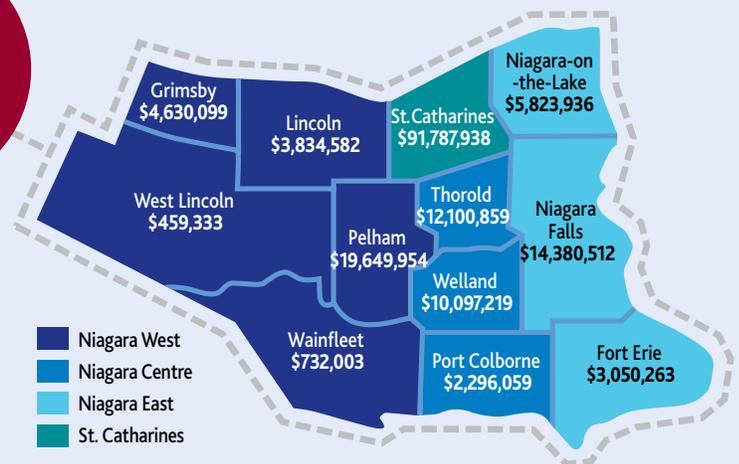
Using these criteria, in an average semester approximately 7,700 of Brock’s 19,000 students are counted as residing off-campus in Niagara. While we suspect this procedure undercounts the number of off-campus students, it provides a more conservative estimate of the student impact.

This estimated number of students living in Niagara is then multiplied by the estimated monthly living expenses (excluding fees and tuition, aside from the U-Pass bus pass and healthcare). We estimated monthly living expenses using the 2017 Niagara Living Wage Report and Brock University’s Office of Student Accounts and Financial Aid website. We then multiplied the total dollar value by 1.5 to estimate the total impact.

Brock University employs 1,700 full-time and 3,100 part-time employees. Our payroll numbers capture total Brock payroll for the 2017-18 fiscal year. While we did not have access to individual data for reason of confidentiality, we utilized aggregate data for staff and faculty, whether full time, part time, contract, unionized, or non-unionized. Brock is one of the largest employers in the region, and our infographic illustrates our reach into all 12 municipalities.



Payroll by municipality



Sudmant’s Dynamic Impact: Degree Premium

As discussed earlier, the Sudmant method also calculates dynamic impact (impact over decades), such as the income differential of a person with an undergraduate degree.

Degree premium is a pay differential expressed over time to calculate an annual ROI for students who have graduated from Brock’s undergraduate programs between 1978 and June 2018. We calculate this using two variations found in the literature. In its simplest terms, an earned income differential is the cumulative value of a (in this case, university) degree over the assumed full-time working lifespan⁶ of the undergraduate degree holder, relative to other possible educational choices⁷ over that person’s lifetime. Furthermore, it incorporates the actual costs of attending university in terms of the degree’s present value. A more detailed explanation can be found in our online report.

Three features stand out. First, the degree premium between a bachelor and high school degree is the largest, with a total value of \$2.83 billion. This is broadly consistent with the relevant literature. Second, the size of the total premium is larger for younger cohorts than for older cohorts. This reflects the fact that Brock’s largest cohorts have been its most recent cohorts, with enrollment numbers fluctuating around 18,000 for roughly the past decade. Third and finally, the degree premium is smallest between a bachelor versus a certificate or diploma below bachelor level, at \$1.48 billion. That category includes holders of a college diploma, as well as other post-graduate certificates held by persons whose highest degree is less than a bachelor. We feel that in terms of comparisons, this category is probably the most reasonable for comparing to university degree holders.

⁶ We assume all undergraduate university degree-holders begin degree-relevant employment at age 25 and continue until 65, equaling a 40-year employment career.

⁷ These other educational choices include: completing high school only; completing a college degree; or a “university degree or diploma below bachelor level”. We calculated these differences between groups by subtracting the corresponding two median employment incomes.

CONCLUSION

Our study found Brock's economic impact through its operations was \$450.3 million at the regional level and \$639.8 million for Ontario, using the Sudmant model which is specialized for university assessment. It is clear that a significant portion of the overall impact takes place within the region.

Economic impact occurs in various manners, so several different analyses were conducted and can be found in our full report. The contributions to incremental wage gains, for example, while not discussed in this document, was estimated at between \$1.48 billion and \$2.83 billion depending on the comparison group and technique.

Brock is a key driver of economic activity and gains in the standard of living within the Niagara region. In future iterations, we plan to detail Brock's direct and indirect tax contributions to the Niagara Region, including those flowing through its payroll.

Finally, Brock University's full economic impact and contributions very likely remain greater than those identified in this study. Nonetheless, our conservative findings still provide an important and meaningful measure of the role Brock plays in economic and community development. In 2019, a companion study will be conducted to further elaborate on the university's community engagement and contributions.

COMMUNITY ENGAGEMENT

This report has focused on economic impact and is the first stage of an ongoing analysis as the University is currently putting together a second research team to measure its social impact through community engagement.

Brock's community engagement impact — and that of its students, alumni, faculty and staff — provides invaluable benefits across Niagara and beyond. Community engagement impact is attained through the sharing of expertise, ideas and community service, as well as relevant spaces and resources. Various levels of social, cultural and economic impact are established, supported and maintained throughout the region via Brock's research and knowledge mobilization efforts, focus on student experience, and the services that we offer to the community.

These are some of the things at which Brock researchers will be looking more closely in the coming months:

1. Research and knowledge mobilization

Knowledge mobilization activities at Brock have become an increasingly important aspect of our community and an integral part of Brock's

community engagement strategy. Such efforts include products (e.g., toolkits/ educational materials), events (e.g., public lectures) and networks (e.g., social media engagement) that add evidence to substantiate and/or strengthen research outcomes and engage end-user participation.

Where possible, Brock's academics work alongside relevant community partners to support the co-creation of knowledge in areas related to specific social needs. This includes advanced research at the University responding to the needs of local businesses for research and development supports. As well, Brock's partnerships support the capacities of municipalities and policy developers to support the needs of residents.

2. Student experience

Brock students' community engagement includes both curricular opportunities, such as formal co-op placements and experiential education opportunities, as well as co-curricular volunteer opportunities. Annually, Brock students work in partnership with more than 100 local organizations to meet specific societal needs. This equates to more than 3,000 students providing more than 85,000 hours of service to the Niagara community.

3. Service to the community

Brock supports its local community through the use of its facilities, specialized programming, and organizational support. The University's facilities are available to the community, whether through renting space at low to no cost, or through its community recreation activities such as children's camps, swimming, and movement programs. Brock is the site for many high school graduations and not-for-profit and public sector AGM's and monthly meetings. Brock is also the 2021 Canada Summer Games Village, donating our facilities to house the 5,000 athletes.

Brock's staff, faculty and students play key roles on numerous boards and committees throughout the community, lending our knowledge, expertise and time.

Further details on the role Brock plays in the community can be found in the Appendix of our online report.

Meaghan Rusnell
Brock University
Community Engagement Committee

Niagara Community Observatory

Members of the research team for this report on the economic impact of Brock University, 2017-18, were:

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Mary Jasinski, and Meaghan Rusnell

The Niagara Community Observatory at Brock University is a public-policy think-tank working in partnership with the Niagara community to foster, produce, and disseminate research on current and emerging local issues.

More information on our office, and an electronic copy of this report with references, can be found on our website brocku.ca/nco



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