

Research, Creative Activity and Innovation



Definitions

Early Career Researcher

Researchers in the establishing phase of their careers – timeline varies from agency to agency, but generally understood to be within 5-10 years of terminal degree.

Highly Qualified Personnel (HQP)

Personnel hired by faculty researchers to support research activities, including students, fellows, technicians and personnel who are directly employed in a research capacity. The development of highly qualified personnel is an important goal of all research funding agencies, and of universities.

Research Enterprise

The campus-wide support system that facilitates research activities, ranging from infrastructure, administrative support to funding systems and research financial management.

Field-weighted citation impact

Field-weighted citation impact figures (FWCI) compare the number of citations of publications from a university versus the expected number of citations received by similar publications in the Scopus abstract and citation database, adjusting for journal, subject field, publication type, and year. For example, a FWCI of 1.00 indicates that a publication has been cited at the world average for similar publications, whereas a FWCI of 1.5 means that outputs have been cited 50% more than expected.

Facts and Figures

- Scholars at the University of Windsor pursue research and creative activity across a broad range of disciplines. The University is home to five University Research Institutes ([Cross-Border Institute](#), [Fluid Dynamics Research Institute](#), [Great Lakes Institute for Environmental Research](#), [Institute for Diagnostic Imaging Research](#), and [WE-Spark Health Institute](#)) and more than [75 Faculty-level research centres](#).
- There are [11 Canada Research Chairs](#) at the University of Windsor (5 in Science, 2 in Engineering, 2 in FAHSS, 1 in Education, and 1 in Law) as well as [2 NSERC Industrial Research and Ontario Research Chairs](#) and 1 Ontario Research Chair.

- The University also operates partnered external facilities including the Incubator Art Lab, and the Freshwater Restoration Ecology Centre (FREC) with the Town of Lasalle.
- In 2020-21, EPICentre, the University's entrepreneurial hub, supported 91 ventures, and engaged 2,865 people in 142 virtual learning opportunities.
- Windsor's relative research strength is reflected in the fact that in both annual research income and research publications, the University regularly ranks among the top 12 research universities in Ontario, and the top 15 non-medical research universities in Canada.
- Total annual external research revenue at UWindsor amounted to \$37 million in 2020/21.
- In 2021, University of Windsor researchers published over 1,190 peer-reviewed publications – the highest one-year count ever.
- In 2021, \$1.9 million in Mitacs funds supported student development as highly qualified personnel through research and innovation in collaboration with industry and partner organizations.
- Significant faculty renewal in the last 5-7 years has resulted in recruitment of new faculty and researchers.

Research and Creative Activity Data

Research productivity is an extremely complex field of discussion, and there is considerable debate regarding the legitimacy of various measures and data sources. It is important to acknowledge the limitations of any single source of data and the cultural assumptions regarding knowledge creation that are embedded in the data we consider and the conclusions we draw. It is, therefore, important that data such as these not be used to draw decontextualized conclusions about the quality or impact of the work of individual scholars, of disciplines or faculties, or of those working in knowledge traditions that are inadequately reflected in bibliometric data. This will be an important part of the discussions we need to have as we move forward with strategic planning at the University.

Aggregate data from the University's eCV system serves as an important and approximate illustration of the variety of scholarly work occurring among scholars on campus, for example including over 3,500 contributions in the creative activity category (the vast majority in FAHSS) that are not captured by standard bibliometric data, as well as nearly 400 books authored and over 2,300 book chapters that are imperfectly captured in international bibliometric data. These data underline the importance of adopting a wide lens in understanding the contributions scholars are making through their research and creative activity¹.

¹ These data are presented with a number of caveats. While it is expected that all faculty update their eCVs annually, their currency is typically verified on an eight-year cycle in keeping with program review processes. These are not unique identifier data: there will be duplication owing to collaborative publication. There continue to be numerous aspects of scholarly practice that are not fully captured within these data.

UWindsor publication and citation metrics, based on data from Scopus, the Elsevier publication data base², over a 10-year period, compared to Council of Ontario University (COU) and Comprehensive 15 (C15) peers, indicates that average publication rates at the University of Windsor typically rank between 13th and 15th among non-medical universities in Canada, and 11-12th among Ontario research universities. They also demonstrate steady growth in overall publication numbers (Figure 1).

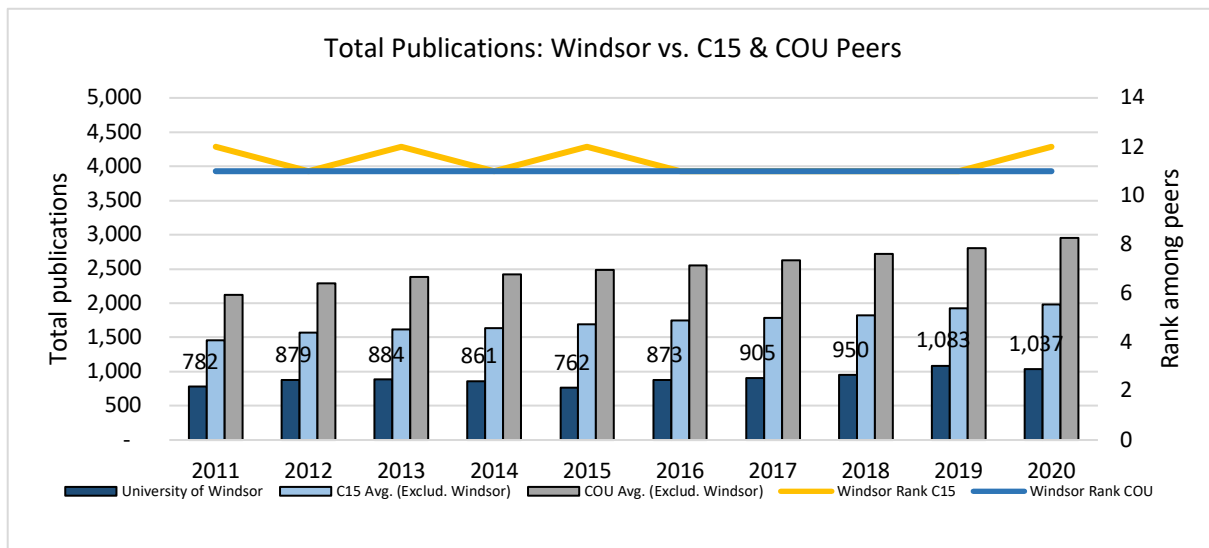


Figure 1

Field-weighted citation impact figures (FWCI) compare the number of citations of publications from a university versus the expected number of citations received by similar publications in the Scopus abstract and citation database, adjusting for journal, subject field, publication type, and year. For example, a FWCI of 1.00 indicates that a publication has been cited at the world average for similar publications, whereas a FWCI of 1.5 means that outputs have been cited 50% more than expected. University of Windsor data shows a modest improvement in FWCI since 2011 (Figure 2). The overall impact of the University’s research outputs has improved since 2011 (i.e., Windsor’s FWCI score has grown from 1.10 in 2011 to 1.24 in 2020), however, Windsor has consistently scored below C15 and COU FWCI.

² Elsevier’s Scopus is an extensive abstract and citation database with enriched data and linked scholarly literature across a wide variety of disciplines. SciVal is an analytics tool that uses Scopus to provide comprehensive access to the research performance of over 20,000 research institutions and their associated researchers from 230 nations worldwide. It is important to understand that these data have significant limitations, among them, disciplinary variations in the completeness of the journals included in the database. For example, there may be less comprehensive data in fields where publication is typically in national-level journals because of the nature of the topic, or in fields where publication relies more heavily on book or book chapter publication, where some publishing houses may not be included. That said, these data are used by many international rankings systems and therefore do have a concrete impact on institutional reputation.

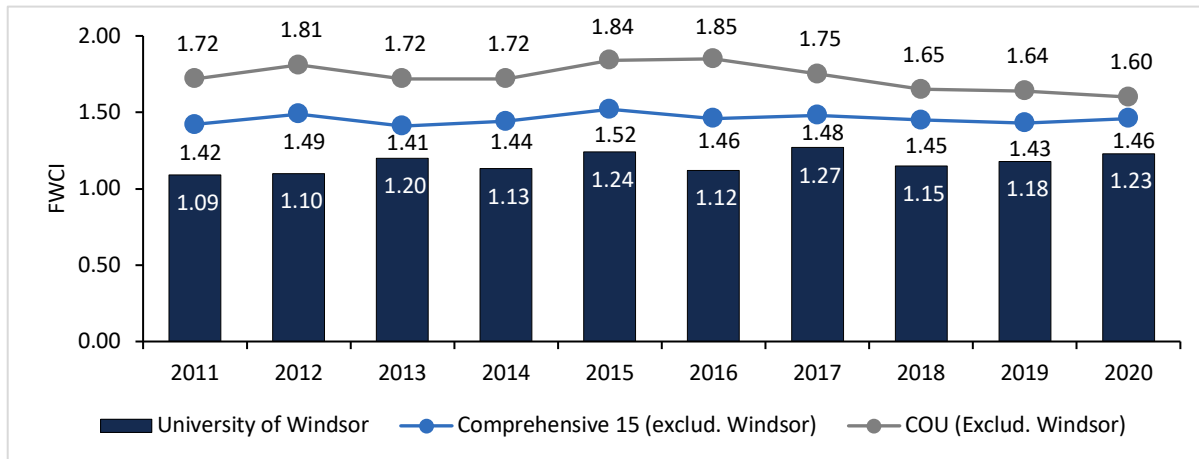


Figure 2

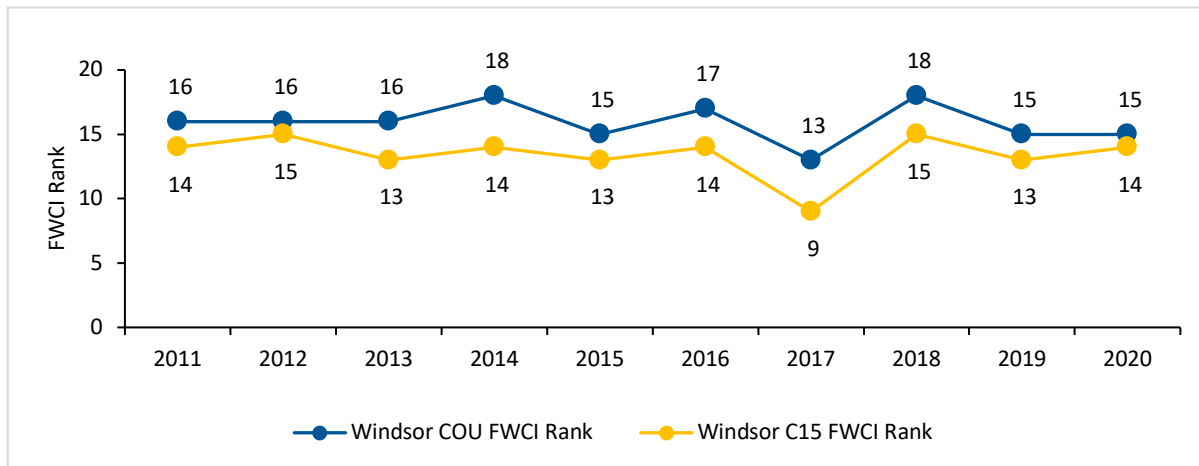


Figure 3

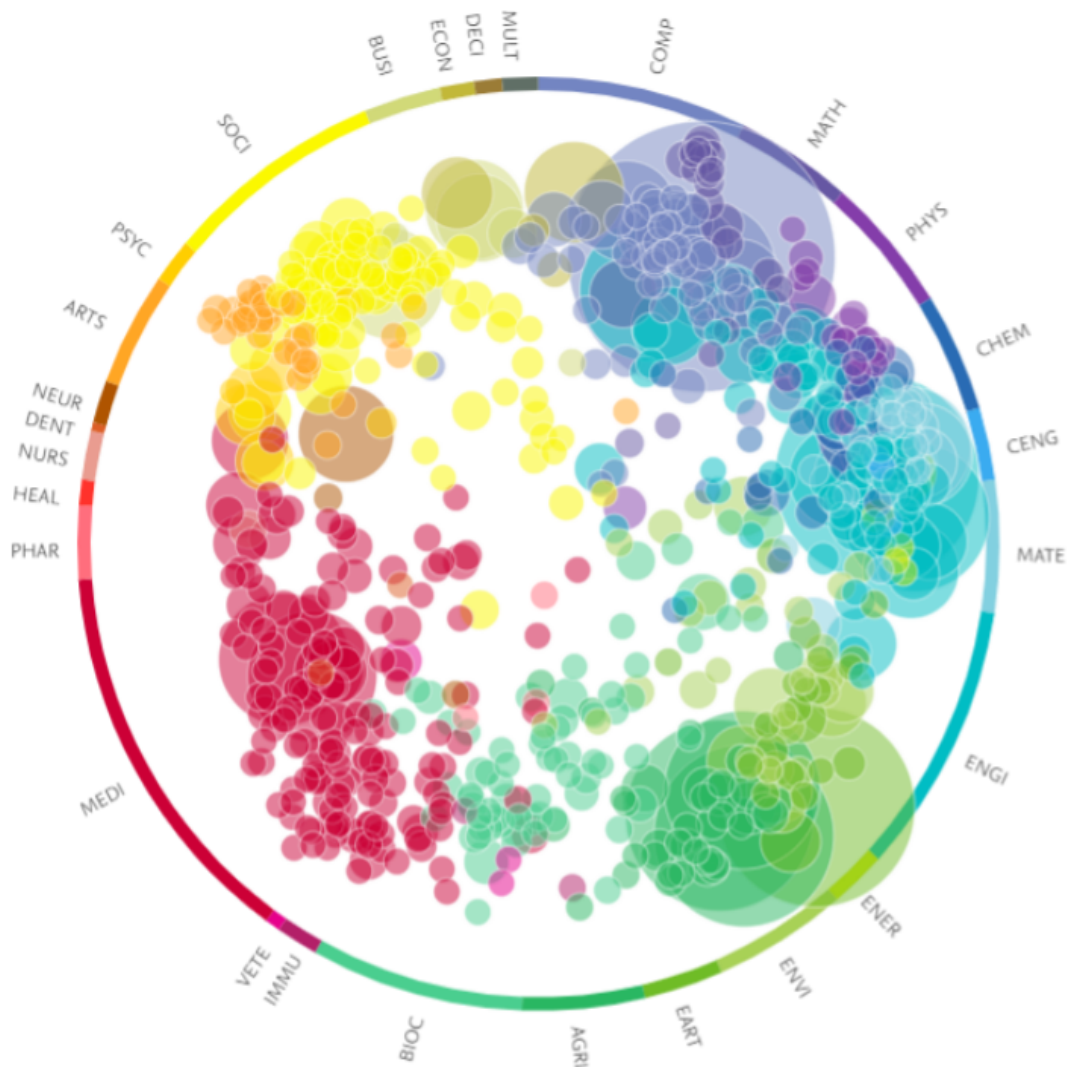
A number of factors impact FWCI, including the number of authors on a publication and the number of international collaborators involved. Figures like FWCI are also influential because of their strongly weighted use in international reputational rankings.

Publications by Subject Area




























Scopus also provides opportunities to consider publication by discipline (see Figure 4). Bubbles closer to the centre reflect a higher degree of multi-disciplinarity. Appendix A provides an analysis of UWindsor publications related to the United Nations Sustainable Development Goals, for additional consideration.

Publications - by Subject Area and Topic Cluster

Entity: University of Windsor · Year range: 2016 to 2021 · Data source: Scopus, up to 23 Feb 2022 ·



Publications - by Subject Area and Topic Cluster

 COMP	Computer Science	 PHAR	Pharmacology, Toxicology and Pharmaceutics
 MATH	Mathematics	 HEAL	Health Professions
 PHYS	Physics and Astronomy	 NURS	Nursing
 CHEM	Chemistry	 DENT	Dentistry
 CENG	Chemical Engineering	 NEUR	Neuroscience
 MATE	Materials Science	 ARTS	Arts and Humanities
 ENGI	Engineering	 PSYC	Psychology
 ENER	Energy	 SOCI	Social Sciences
 ENVI	Environmental Science	 BUSI	Business, Management and Accounting
 EART	Earth and Planetary Sciences	 ECON	Economics, Econometrics and Finance
 AGRI	Agricultural and Biological Sciences	 DECI	Decision Sciences
 BIOC	Biochemistry, Genetics and Molecular Biology	 MULT	Multidisciplinary
 IMMU	Immunology and Microbiology		
 VETE	Veterinary		
 MEDI	Medicine		

Each bubble represents a Topic Cluster. The size of the bubble indicates the output of the entity in the Topic or Topic Cluster.

The position of the bubble is based upon the All Science Journal Classification (ASJC) categories of the journals in which the Scholarly Output is published. The more influence an ASJC has over a Topic, the closer it will bring the Topic to its side of the Wheel of Science. As a result, the Topics closer to the center of the Wheel are more likely to be multidisciplinary, compared to the Topics towards the edge of the Wheel.

Figure 4

Research Revenue

University researchers have seen steady growth in overall research and in Tri-Council agency revenue since 2016-17 (Figure 5)³. These funds enable research, creative activity, and innovation; collaboration across numerous institutions, organizations, and industry partners; and student opportunities to engage in research and to develop high-quality technical and intellectual skill sets. Under the University’s Strategic Mandate Agreement 3, research revenues, particularly revenues from the Tri-Agency and industry partnerships growth, or decline, will also impact operating revenues for the University.

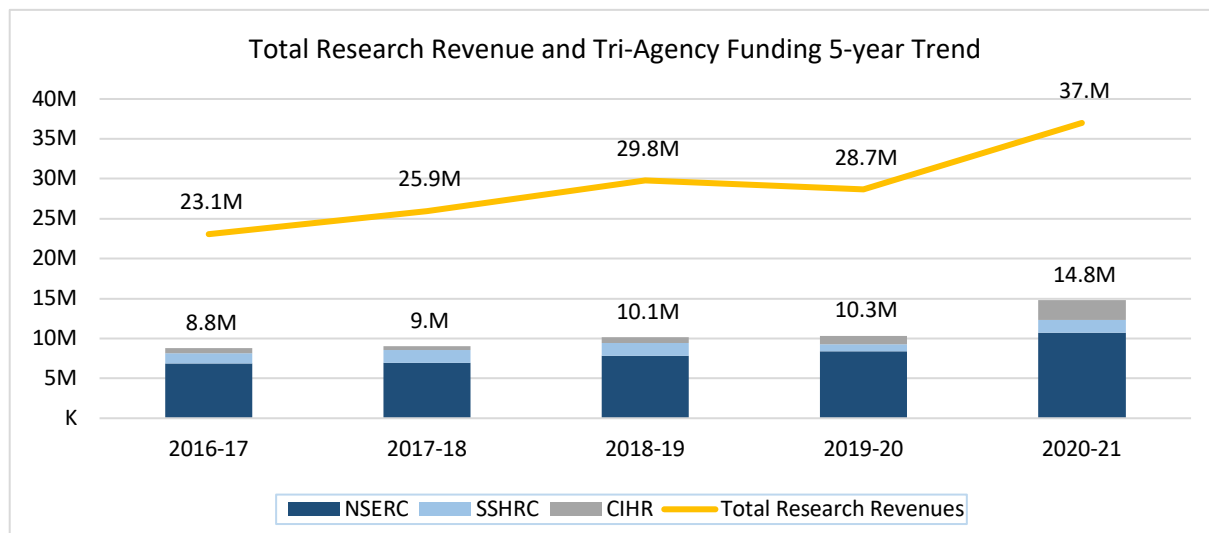


Figure 5

Note: Natural Sciences and Engineering Research Council (NSERC); Social Sciences and Humanities Research Council (SSHRC); Canadian Institutes of Health Research (CIHR).

Table 1. Success Rate of Applications processed through ORIS (Five-Year Trend)

	2016-2017	2017-2018	2018-2019	2019-2020	2020-2021
ORIS Total applications ⁴	786	759	745	814	857
Total successful awards	569	511	551	591	664
Success rate	72.4%	67.3%	74.0%	72.6%	77.5%

³ 2020-21 increase in research revenue should not be considered indicative of a trend. COVID-19 resulted in delays in transfers from 2019-20, and numerous special envelopes of emergency funding allocated for targeted COVID-19 research and funded tri-council extensions.

⁴ University of Windsor. ORIS Annual Reports – Research Revenues: <https://www.uwindor.ca/research-innovation-services/328/newsletters>

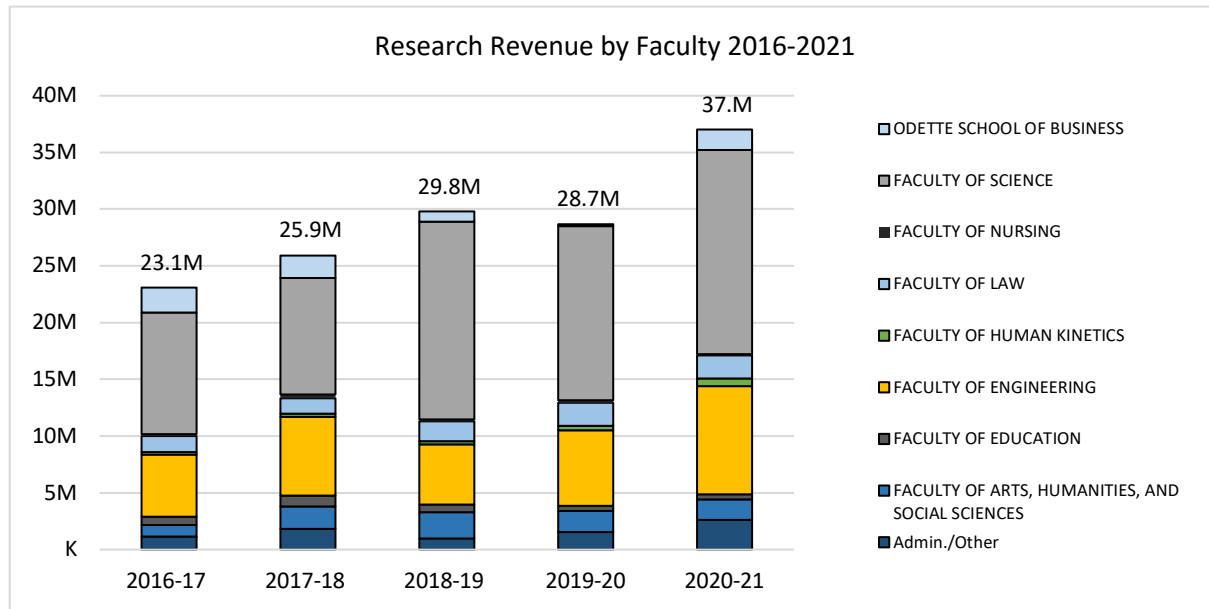


Figure 6

Student Research Experience

- 23% of final-year undergraduate students at the University of Windsor reported that they participated in faculty research during their time at the University (compared to 19% of students at peer universities⁵). Programs including the Undergraduate Research Experience Grants, Outstanding Scholars, and the UWill Discover Undergraduate Research program, as well as many Faculty-level initiatives, support these opportunities.
- In 2020/21, the University of Windsor had a total of 182 submissions for the Mitacs Accelerate program, valued at almost \$2.8 million, which ranked the University 27th out of 72 universities in Canada.
- Satisfaction with research supervisors has remained very high as more than 90% of Doctoral and Research Master’s respondents said their advisor was available for regular meetings, gave constructive feedback and was knowledgeable about degree requirements⁶.
- About two-thirds of graduate students in research-based programs reported positive experiences with internships, practicum and experiential learning opportunities. Both Research Master’s and Doctoral respondents notably reported more opportunities for [high-impact practices](#) than students in other Ontario Universities⁶.
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⁵ National Survey of Student Engagement. (2020). NSSE 2020 Summary Report. https://www.uwindsor.ca/institutional-analysis/sites/uwindsor.ca.institutional-analysis/files/nsse_2020_report.pdf

⁶ Canadian Graduate and Professional Student Survey. (2016). 2016 CGPSS Summary of Results. https://www.uwindsor.ca/institutional-analysis/sites/uwindsor.ca.institutional-analysis/files/cgps_2019_report.pdf

- Almost 3 in 5 (58%) Doctoral respondents are very satisfied with the opportunities in their program to collaborate on research with faculty members compared to 51% of Doctoral students in Ontario. UWindsor research Master’s students are less satisfied with these opportunities than their Ontario peers (46% compared to 52%; CGPSS, 2016).

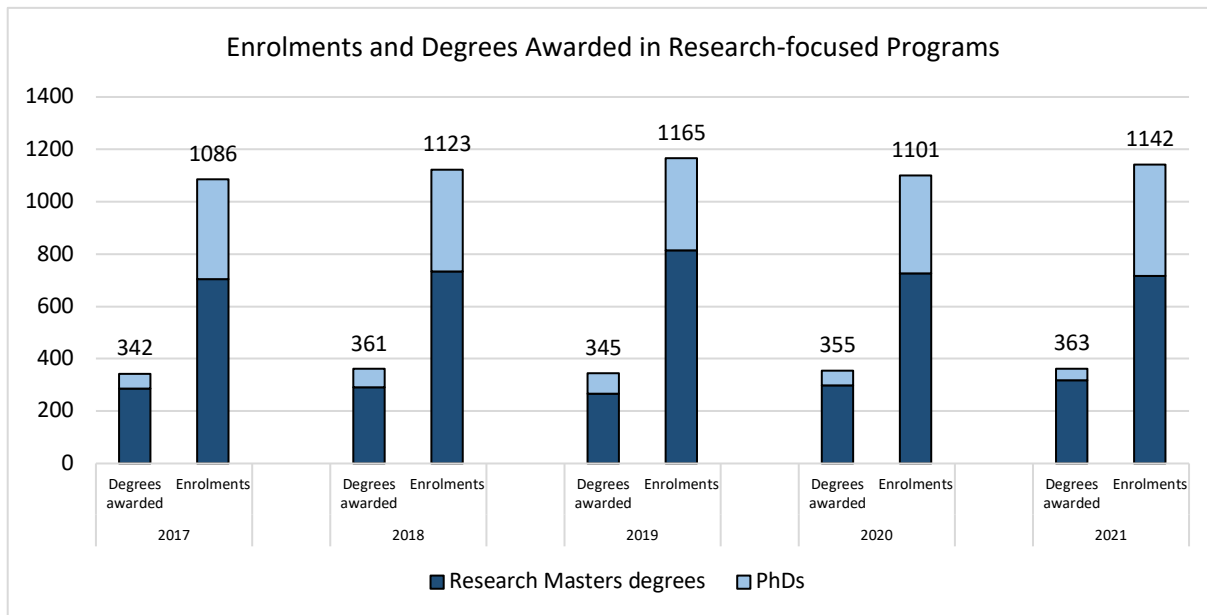


Figure 7

Equity, Diversity and Inclusion

The University of Windsor is a signatory to the [Tri-Agency Dimensions Charter](#), and has established a Canada Research Chairs (CRC) Equity, Diversity and Inclusion Action Plan, which involves the establishment of equity and diversity targets that meet or exceed CRC national targets. Currently the University has met these targets in the designated groups of women and people who identify as visible minorities⁷. In several categories the small number of chairs at the University means that the target setting tool does not identify formally as a gap (persons with disabilities, Indigenous peoples) or there is no external data with which to establish a target (sexual orientation and gender minorities). In all of these cases, however, the University is actively seeking to improve the diversity of recruitment practices. The Office of the VP, RI has implemented mandatory unconscious bias and employment equity training for all CRC search committee members. The University has also established an [Equity, Diversity and Inclusion Research Policy](#). The Office of Research and Innovation Services provides a wide variety of EDI training workshops on a range of related topics, and is working with the Office of the VP, EDI to enhance its practice.

⁷ Please note that the terms used in this section are derived from the Tri-Council documentation.

Research Support

- The Office of Research Services was established in 2000, led by an Associate Vice-President, Research. These responsibilities were previously managed through the Office of Graduate Studies and Research. The position of Vice-President, Research was established in 2007. Innovation was added to the role in 2014, now the Vice-President, Research and Innovation (VP, RI).
- The Office of Research and Innovation Services supports and promotes research at the University of Windsor, in all faculties, schools, and research centres and institutes. [The Office of Research and Innovation Services staff members](#) provide services in:
 - Identifying funding sources and research opportunities for faculty;
 - Providing information about funding sources, programs, deadlines, application material, regulations and policies;
 - Acting as liaison with funding agencies on behalf of researchers;
 - Reviewing applications for research grants to ensure consistency with the agency's conditions and the University's policies;
 - Assisting in the development, submission and tracking of grant proposals and contracts;
 - Providing assistance to faculty in structuring budgets;
 - Establishing research accounts (supported once established through Research Finance);
 - Administration of internal competition for research support;
 - Organizing and conducting workshops to assist in writing and preparing proposals;
 - Ensure ethical considerations are addressed and certification provided as required;
 - Compiling University research reports;
 - Maintenance of statistics on research funding at the University of Windsor;
 - Publicizing opportunities and research-related events to the University research community.
- In 2021, ORIS supported 670 applications to external funding programs (a 20% increase from the previous year). Of those, 72% were successful. 96 research contracts were established, and six new invention disclosures supported. See the [University of Windsor Annual Report on Research Activities](#).
- [Research ethics](#), [animal care](#), and [safety oversight](#) are critically important to the University and many faculty and staff members make key contributions to these efforts.

Recent Campus Consultation and Planning Focused on Research and Creative Activity:

In 2018, the University undertook consultations to identify key research and research support priorities. This process identified the following priorities, based on the identification of four “Grand Challenges”: safeguarding healthy Great Lakes; fostering sustainable industry; understanding and optimizing borders; and building viable, healthy, and safe communities, along with the following actions:

- Promote research and innovation and pursue new opportunities to address the University of Windsor's Grand Challenges;
- Attract, retain, and support the continued success of world-class scholars;

- Develop the highly qualified personnel who will become next-generation scientists, engineers, artists, community leaders, and decision makers by providing exceptional experiential learning through hands-on research;
- Foster and build on collaborative partnerships with key community, government and non-government organization, and industry stakeholders at the regional, provincial, national, and international levels;
- Facilitate the cross-transfer and fertilization of knowledge, technology, expertise, and artistic creativity for the betterment of society. Obtain, develop, and support state-of-the-art infrastructure;
- Celebrate and encourage equity, diversity and inclusion to promote awareness and understanding through hiring practices that reflect the University's commitment, and by supporting research, scholarship and creativity that advances this objective for society.

In January 2022, in preparation for the search for a new Vice-President, Research and Innovation, the University undertook a campus consultation seeking input into how the role should be framed for the coming years, based on the future directions and the changing priorities and needs of scholars across campus. While the consultation was focused primarily on leadership, the feedback provided considerable insight into campus priorities, concerns and aspirations for the research climate and culture on campus. Among the key priorities identified:

- A desire for clear, measurable goals and transparency in planning, decision making, and resource allocation.
- The importance of championing UWindsor research, celebrating its researchers, and raising the profile and reputation of the institution.
- The importance of collaborative decision making, consensus building, and making sure that all voices are heard in decision making processes.
- A balance between supporting work in existing areas of excellence and providing equitable support for researchers in all disciplines, particularly with an eye to supporting new, strategic areas of opportunity, and with an informed awareness of the need to support non-traditional forms of knowledge creation.
- The importance of supporting research and researchers through funding opportunities and course release.
- The importance of maintaining, upgrading, and enhancing research infrastructure, technologies, and space.
- Systematic support and mentorship for students, post-doctoral fellows, and early-career faculty, with an emphasis on ensuring an inclusive research culture.
- The importance of building community, industry and international partnerships.
- The importance of facilitating and supporting interdisciplinary collaboration and team-based research, on campus and beyond.
- Streamlining procedures and processes in order to better support researchers, and ensuring resource and staffing allocations to ensure that research is well supported.

- Taking meaningful action on equity, diversity and inclusion by supporting researchers from marginalized and historically under-represented communities, by championing equity, diversity and inclusion as a focus of research, and by working collaboratively with others on campus to build an equitable and inclusive campus across all facets of institutional practice.

Best Practices Resources

- [Dimensions Charter](#)
- [Scarborough Charter on anti-Black racism and Black inclusion](#)
- [Best Practices in Equity, Diversity and Inclusion in Research](#)
- [Responsible Conduct of Research Policy](#)
- [Tri-Agency Financial Administration Guide](#)

Thinking Questions

1. How can the research enterprise grow in the next 5 years in terms of inputs (institutional research support mechanisms and infrastructure, external research revenues) and outputs (new partnerships, HQP trained, publications, citations, patents filed, patents licensed, etc.)?
2. How can we measure quality/impact of research to ensure we are meeting needs of our community and society more broadly?
3. How can we more effectively mobilize knowledge across all disciplines?
4. What steps should be taken to put UWindsor at the leading edge and engaging with key industries/partners (and what are those key industries/partners?)
5. How can we attract and support more graduate students and postdoctoral fellows in research-intensive programs?
6. How can we leverage research to enable recruitment of undergraduates, graduate students, and postdoctoral fellows?

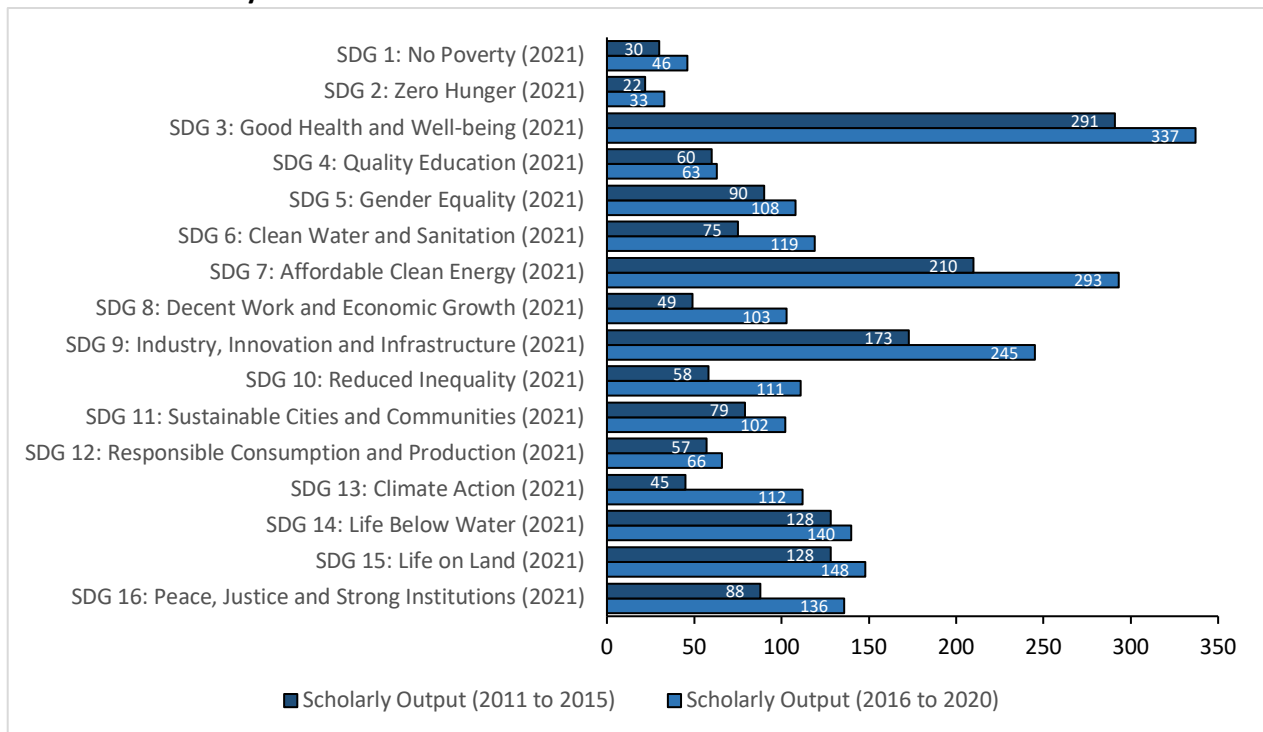
Appendix A

University of Windsor Sustainable Development Goals (SDGs) Publication Report

[The 2030 Agenda for Sustainable Development](#), adopted by United Nations members in 2015, provides a plan of action for our people, planet, prosperity, peace and partnerships, now and into the future. The Agenda contains 17 Sustainable Development Goals (SDGs) which are an urgent call for action by all countries. The Agenda recognizes that eradicating poverty and hunger must align with strategies that improve health and education, reduce inequality, and sustain economic growth – all while combatting climate change, conserving our oceans and protecting our forests.

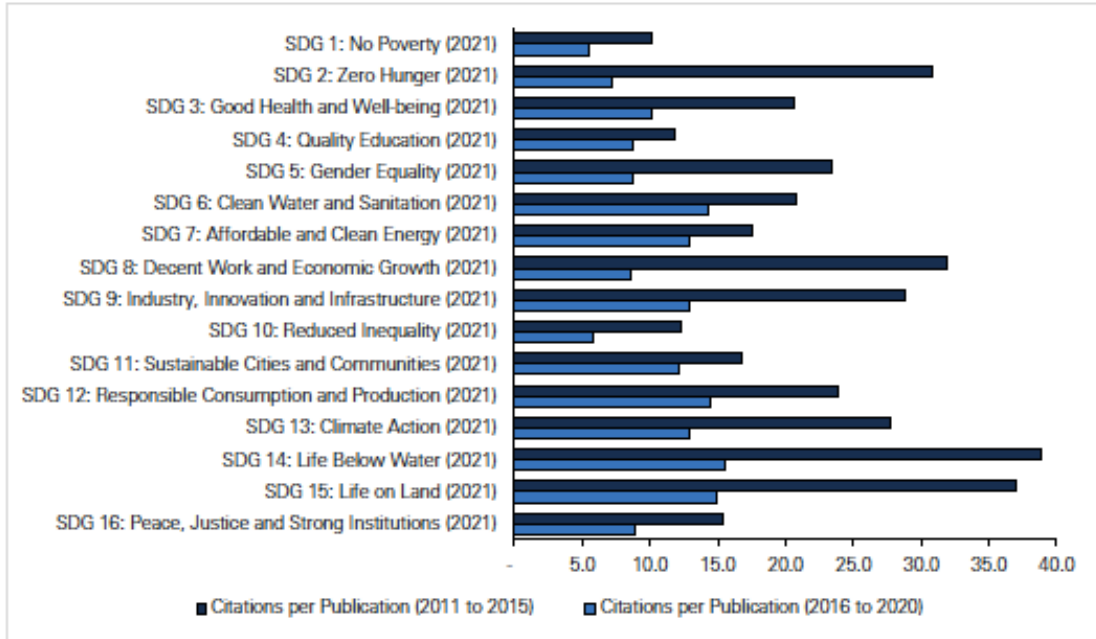
As the SDG framework continues to grow globally, it is increasingly used to evaluate the contribution of universities to society and has important implications for University rankings and funders. [Scopus](#), the largest database of peer-reviewed literature, uses SciVal analytics to produce a report against the UN SDGs to provide a way of seeing research areas against a common global framework. The publication report below highlights the total publications by SDG at UWindsor; total citations per publication; and average Field-Weighted Citation Impact (FWCI) per publication⁸.

Total Publications by SDG: 2011 to 2015 vs. 2016 to 2020



⁸ It should be noted that SciVal metrics are not appropriate in fields where scholarly communication takes place mainly outside of journals and conference literature. More information about using SciVal responsibility can be found in this [report](#).

Total Citations per Publication by SDG: 2011 to 2015 vs. 2016 to 2020



Average Field-Weighted Citation Impact per Publication by SDG: 2011 to 2015 vs. 2016 to 2020

