

Cape Breton University  
Annual Research Report  
2017

## Introduction

This document is the fifth Annual Research Report for Cape Breton University (CBU). The annual research report uses the fiscal year as the reporting period to be compiled when the Canadian Association of University Business Officers' (CAUBO) annual financial reports are released. The report covers the period from **April 1, 2016 to March 31, 2017**. While data in the report is shown in year-by-year graphic and tabular breakdowns, much of the data is also reported in three-year rolling totals. These figures better indicate trends in CBU's research climate and tend to take account of large individual grants that can have an inordinate effect on a single year's total.

CBU's research activities are very diverse and, therefore, difficult to quantify using one set of statistics or metrics in isolation from other sources of data and contextual description. To give a robust and complete picture of the research environment at CBU, the Annual Research Report examines numerous avenues of research work. The data examined reports on a varied range of activities including success in obtaining research funding, scholarly articles published, dissemination of research findings along with commercialization and industry engagement. In addition to these quantitative measures, the annual report also includes a number of stories from individual researchers and groups that exemplify the kind of innovative research for which CBU is recognized. In this way, the Office of Research and Graduate Studies (ORGS) is pleased to present what we feel is an accurate characterization of the current state of research at CBU.

Financial data were taken from the CAUBO website and procured from the CBU Finance Office in preparation of the 2017 CAUBO report. Data for academic publications were obtained from *Web of Science*<sup>1</sup>. Industry engagement metrics were taken from the annual Springboard Atlantic reports.

## 1. Research Highlights

The past year has brought many new research accomplishments. The following profiles offer a few examples of these outstanding achievements.

### **Dr. Edward Barre, Professor of Nutrition**

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The 2017 recipient of the President's Award of Excellence is **Dr. Douglas Edward Barre**. Dr. Barre is a Professor of Human Nutrition in the Department of Health Sciences and Emergency Management and is cross-appointed to the Department of Chemistry. Dr. Barre has produced an exceptional body of work that significantly contributes to human nutrition and human health research; specifically, to improving management of pre- and post-onset type 2 diabetes. Highly respected in his field, Dr. Barre regularly reviews manuscripts and grant applications for national and international publications and funding agencies. He has worked extensively with academics and healthcare professionals to transfer scholarly knowledge to practitioners and community members. His peer-reviewed scholarship includes over 40 publications in journals of international reputation and he has disseminated his research at national and international conferences. A successful independent and collaborative researcher, Dr. Barre has been described by his associates as a quiet achiever whose diligent pursuit of knowledge is coupled with a commitment to educating others.

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<sup>1</sup> *Web of Science*, previously known as *(ISI) Web of Knowledge*, is a Thomson Reuters product - world's leading citation database, covering authoritative, multidisciplinary content from 10,000+ high impact journals worldwide. It covers sciences, social sciences, arts and humanities, and includes Open Access journals and over 110,000 conference proceedings. Coverage: 1900-present available online.

## **Dr. Janice Esther Tulk, Senior Research Associate, Purdy Crawford Chair in Aboriginal Business Studies**

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**Dr. Janice Esther Tulk** is the Senior Research Associate with the Purdy Crawford Chair in Aboriginal Business Studies. Since joining the Chair in 2011, her research has focused on the Membertou model for economic development, the Unama'ki partnership model, best practices in Aboriginal economic development, cultural tourism in Mi'kmaw communities, and financial literacy levels of Indigenous secondary students. She maintains an active research agenda in folklore and music as well, particularly centered on Mi'kmaw music and culture, and industrial soundscapes. Dr. Tulk co-edited the textbook *Indigenous Business in Canada: Principles and Practices* (2016) and has published in the *Journal of Aboriginal Economic Development*, *Ethnologies*, *MUSICultures*, *Newfoundland and Labrador Studies*, *Culture & Tradition*, *Canadian Journal of Traditional Music*, and *Canadian Folk Music*. She has contributed to the anthologies *Drawn to Sound: Animation Film Music and Sonicity* (ed. Coyle) and *Folk Music, Traditional Music, Ethnomusicology: Canadian Perspectives, Past and Present* (ed. Hoefnagels and Smith). Dr. Tulk teaches in Indigenous Studies, Mi'kmaq Studies, and Folklore, with a specialty in Aboriginal tourism, Mi'kmaw expressive culture, Indigenous ways of knowing, and material culture. Dr. Tulk holds a PhD in Ethnomusicology from Memorial University, an MA (Music) from the University of Alberta, and a BMus (Honours) from Memorial University. She is the recipient of a SSHRC Postdoctoral Fellowship (2008-2010) and a SSHRC Canada Graduate Scholarship (Doctoral), and is a Fellow of the School of Graduate Studies, Memorial University of Newfoundland.

## **Dr. Margaret Dechman, Associate Professor of Sociology**

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**Dr. Margaret Dechman** is an Associate Professor of Sociology at Cape Breton University. She specializes in the analysis of processes of social exclusion over the life course and the implications of such exclusion for the development and perpetuation of our most entrenched and costly social problems. Dr. Dechman is best known for her role as principal investigator of the Family Mosaic Research Project that tracked the lives of 700 Nova Scotian children from birth to early adulthood. Since joining Cape Breton University in 2010, she has focused her attention on issues of major local concern - injection drug use, harm reduction, outreach health, and crime prevention. She has collaborated with the Ally Centre of Cape Breton, Cape Breton Police Service, Addictions Services, Public Health, and Dalhousie Department of Community Health and Epidemiology on research and evaluation pertaining to: the provision of effective health care for individuals whose lives have become entangled in dangerous self-directed drug use, the development of programs and services for youth experiencing homelessness and/or who have come in conflict with the law, and the improvement of outcomes for adult offenders. While published in academic journals and books, Dr. Dechman also presents her research through public/professional forums in an effort to reduce stigma and inform the practice of those involved in frontline health care, policing, and correctional services. Within the past year, she has delivered seven public talks for local communities and community health boards; accepted invitations to present at meetings/conferences on evidence-based policing, communicable disease control, pain management, and emergency health services; and sat on the Steering Committee for the Development of Provincial Service Models for Needle Distribution and Disposal and Safe Consumption Sites and the Nova Scotia Patient, Family and Public Advisory Council.

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**Dr. Graham Reynolds, Professor Emeritus of History, Viola Desmond Chair in Social Justice**


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**Dr. Graham Reynolds** is a Professor Emeritus of History and the Viola Desmond Chair in Social Justice at Cape Breton University. He is currently holding a full-time term position in the Department of Cultural & Creative Studies and is teaching courses in history and education. Dr. Reynold's has been active over the past number of years as the Viola Desmond Chair in Social Justice and he recently published *Viola Desmond's Canada: A History of Blacks and Racial Segregation in the Promised Land* (Fernwood, 2016). His book received the Robbie Robertson Atlantic Canada Book Award for Non-Fiction and has been adopted by the Nova Scotia Department of Education for use in Canadian history and African Canadian history courses throughout the province. Dr. Reynolds is currently working with CBU alumna Wanda Robson, Viola Desmond's youngest sister, in writing a biography of the life and times of Viola Desmond.

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**Chris MacKenzie, Student Researcher**


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**Chris MacKenzie** is a fourth-year student completing his Chemistry (Honours) degree at CBU. Currently, he is working with Dr. Matthias Bierenstiel on a thesis around the development of dinuclear copper complexes which exhibit anti-cancer properties. MacKenzie also completed his summer research with Dr. Stephanie MacQuarrie on biochar. His project focused on development and testing of biochar for the absorption of volatile gasses and found that the brand of biochar they were working with was capable of this task. The intent is to work toward chemically modifying the biochar to make for a more effective, and potentially selective, absorber. This could have many applications, namely in capturing odorous emissions from landfills and composting sites.

## 2. Research Funding

A direct comparison of research funding between universities is not always possible because each situation at every university is unique. However, despite the challenges of comparing universities, this practice is still meaningful as it allows us to get a sense of CBU's standing in relation to similar institutions both regionally and nationally. As a comparison group, we chose universities on the basis that they may be 'peers' of CBU because they provide a similar range of programs or are of a similar size in terms of overall student numbers. These institutions are Acadia University, Bishop's University, Brandon University, Mount Allison University, Mount Saint Vincent University, Nipissing University, Saint Francis Xavier University, Saint Mary's University and Université de Moncton. The data for these individual universities are presented in anonymous form in the following tables and charts. The total research funding presented below was taken from Table 3.1 from the annual CAUBO reports<sup>2</sup>. The number of faculty at each university was taken from the Statistics Canada University College Academic Staff Survey<sup>3</sup> in the absence of any current consistent sources of such information.

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<sup>2</sup> There was a change in reporting practice for CBU in 2011. To enable an accurate comparison, the values for 2008 – 2010 were adjusted to use the current reporting practice. The unmodified values are reported in the 2017 Research Report.

<sup>3</sup> The survey was discontinued after 2010-2011 and released again this year for 2016-2017. The data from 2011-2014 were assumed to be the same as the 2010-2011 data. A new census has been completed this year that will offer more accurate figures in this regard. For this current report, the faculty numbers for 2014-2016 are taken from the 2016-2017 report. This leads to slight inaccuracies in the comparisons. The number of university academic staff members for Cape Breton University's reporting include both CBUFA and NSGEU faculty.

**Table 2.1 Total Annual Research Funding per Faculty Member**

University <sup>a</sup>	2010-12	2011-13	2012-14	2013-15	2014-16	2015-2017 <sup>b</sup>
<b>CBU</b>	\$21,832	\$22,528	\$28,033	\$30,496	\$35,528	\$ 39,562
<b>A</b>	\$12,263	\$15,719	\$13,877	\$14,339	\$12,561	
<b>B</b>	\$10,092	\$10,828	\$12,341	\$12,653	\$13,214	
<b>C</b>	\$22,331	\$19,579	\$19,508	\$21,003	\$20,217	
<b>D</b>	\$26,506	\$27,142	\$28,087	\$28,192	\$29,401	
<b>E</b>	\$13,588	\$13,721	\$14,903	\$14,372	\$14,404	
<b>F</b>	\$28,737	\$31,404	\$33,489	\$34,384	\$36,071	
<b>G</b>	\$23,020	\$22,309	\$24,336	\$29,381	\$36,301	
<b>H</b>	\$32,840	\$31,893	\$33,291	\$34,547	\$32,980	
<b>I</b>	\$31,476	\$32,054	\$33,806	\$32,797	\$33,685	
<b>Average</b>	\$23,801	\$23,841	\$25,415	\$26,666	\$28,133	
<b>CBU Rank</b>	7	5	5	4	3	

<sup>a</sup> Average over the three year period indicated.

<sup>b</sup> 2016-17 Data for other universities will not be available until June 2018.

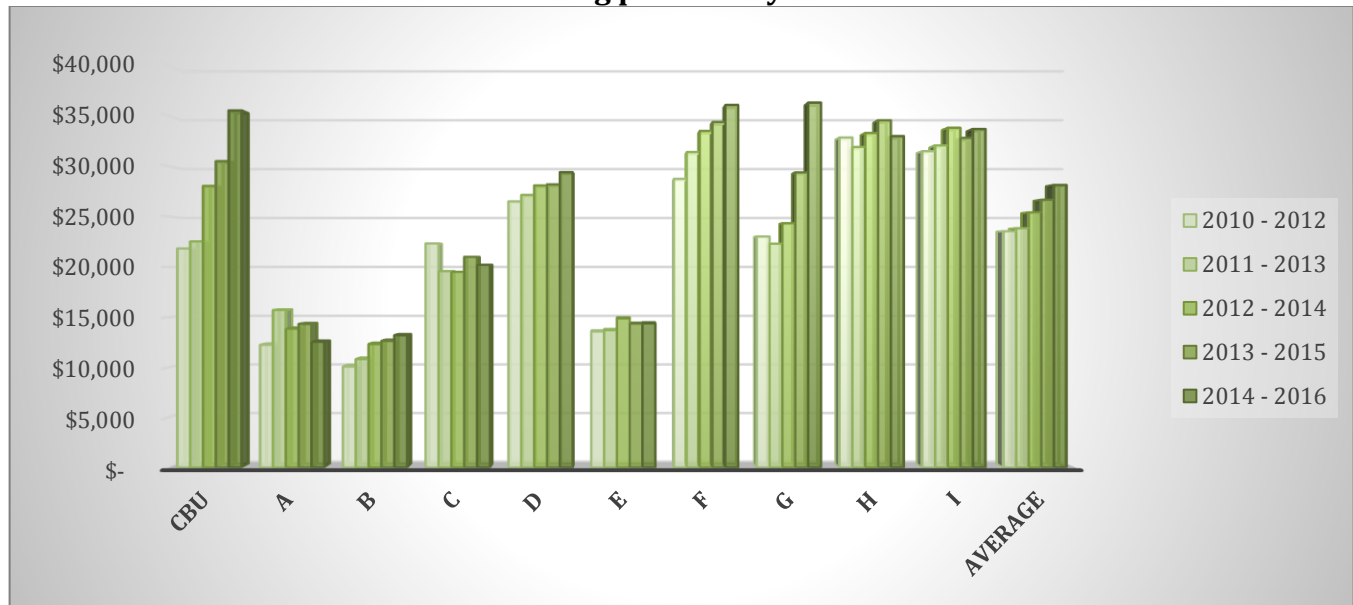
**Chart 2.1 Total Annual Research Funding per Faculty Member**

Table 2.1 and Chart 2.1 show the average annual funding over the three-year period per faculty member between 2010 and 2016; at CBU, data is available for the 2015-17 period as well. The trend over the last four years has, in most cases, seen a modest increase (less than incrementally in step with past figures), stagnation, or decrease. The jump in CBU's funding per faculty member puts our position within our peer group at an unprecedented third place.

In addition to looking at the total research funding, it is also informative to analyze the distribution of CBU research funding. Table 2.2 shows the breakdown of CBU research funding by source.

**Table 2.2 CBU Annual Research Funding <sup>a</sup>**

<b>Funding Source</b>	<b>2010-12</b>	<b>2011-13</b>	<b>2012-14</b>	<b>2013-15</b>	<b>2014-16</b>	<b>2015-17</b>
<b>SSHRC</b>	\$198,000	\$173,000	\$217,000	\$196,000	\$246,000	\$307,000
<b>NSERC</b>	\$134,000	\$173,000	\$157,000	\$173,000	\$199,000	\$231,000
<b>CIHR</b>	\$13,000	\$14,000	\$13,000	\$11,000	\$0	\$50,000
<b>CFI</b>	\$183,000	\$289,000	\$284,000	\$341,000	\$369,000	\$404,000
<b>CRC</b>	\$419,000	\$350,000	\$291,000	\$258,000	\$274,000	\$283,000
<b>Other Federal</b>	\$482,000	\$462,000	\$760,000	\$1,281,000	\$1,803,000	\$2,161,000
<b>Provincial</b>	\$321,000	\$340,000	\$891,000	\$915,000	\$919,000	\$551,000
<b>Not for Profit</b>	\$219,000	\$126,000	\$173,000	\$156,000	\$265,000	\$422,000
<b>Donations</b>	\$0	\$0	\$0	\$0	\$33,000	\$33,000
<b>Business</b>	\$246,000	\$395,000	\$385,000	\$421,000	\$660,000	\$1,064,000
<b>Miscellaneous</b>	\$465,000	\$450,000	\$276,000	\$331,000	\$266,000	\$428,000
<b>Total Tri-Agency</b>	\$345,000	\$360,000	\$387,000	\$380,000	\$445,000	\$588,000
<b>Tri-Agency +CFI+CRC</b>	\$947,000	\$999,000	\$962,000	\$978,000	\$1,088,000	\$1,275,000
<b>Total Federal</b>	\$1,435,000	\$1,461,000	\$1,722,000	\$2,259,000	\$2,891,000	\$3,437,000
<b>Total</b>	\$2,685,000	\$2,771,000	\$3,448,000	\$4,082,000	\$5,035,000	\$5,934,000

<sup>a</sup> Average over the three-year period indicated.

From 2010-12 to 2015-17, the Tri-Agency funding has shown an increase from \$345,000 to \$588,000, with the majority (ranging 88% to 100% over the 7-year period) coming from NSERC and SSHRC combined funding. While CBU's Tri-Agency funding increased, it continues to account for a smaller percentage of the total research funding. Given this trend, some researchers at small institutions may choose to seek funding from sources other than the Tri-Agency.

The Canadian Foundation for Innovation (CFI) funding increased during the 2015 – 2017 cycle as it has since 2010. Recently, CBU's CFI allocation increased to \$400,000 for the current cycle thanks to allocation changes CFI made that support small institutions. Canada Research Chairs (CRC) funding decreased from \$419,000 in 2010-12 to \$258,000 in 2013-15 and increased slightly to \$283,000 in 2015-17. This is due, in part, to a reduction of CBU's chair allocation from five to four (in 2008) to three (in 2010). Currently, CBU has been allocated three Canada Research Chairs: one Tier 1 Chair and two Tier 2 Chairs, utilized as four Tier 2 Chairs <sup>4</sup>. Changes in the allocation are directly due to changes in the total Tri-Agency funding CBU secures. The funding received from the Nova Scotia government through the NSRIT (our provincial matching body for CFI funding) has decreased in 2015-17 as we depleted the three-year cycle funding envelope. Looking forward, we have implemented a new internal CFI competition and intend to access the entirety of our new allocation envelope. CFI has changed parameters for the type of applications they fund, and so future projects will have an increased emphasis on collaboration with multiple applicants and users.

Business funding has continued to grow, reaching \$1,064,000 in 2015-2017. This increase can be attributed to the significant increase in Verschuren Centre (VC) industrial contracts. The sustained growth in this area of funding also reflects the work undertaken by the Industry Partnerships & Research Commercialization Manager in generating this income. Other federal funding has continued to increase from 2012 to the 2016 reporting period, sitting now at \$2,161,000.

Overall, from 2010-12 to 2015-17, the total research funding has grown from \$2.7 to just under \$6 million. Up until 2013, that total had stabilized around \$2.8 million, but a significant jump in the

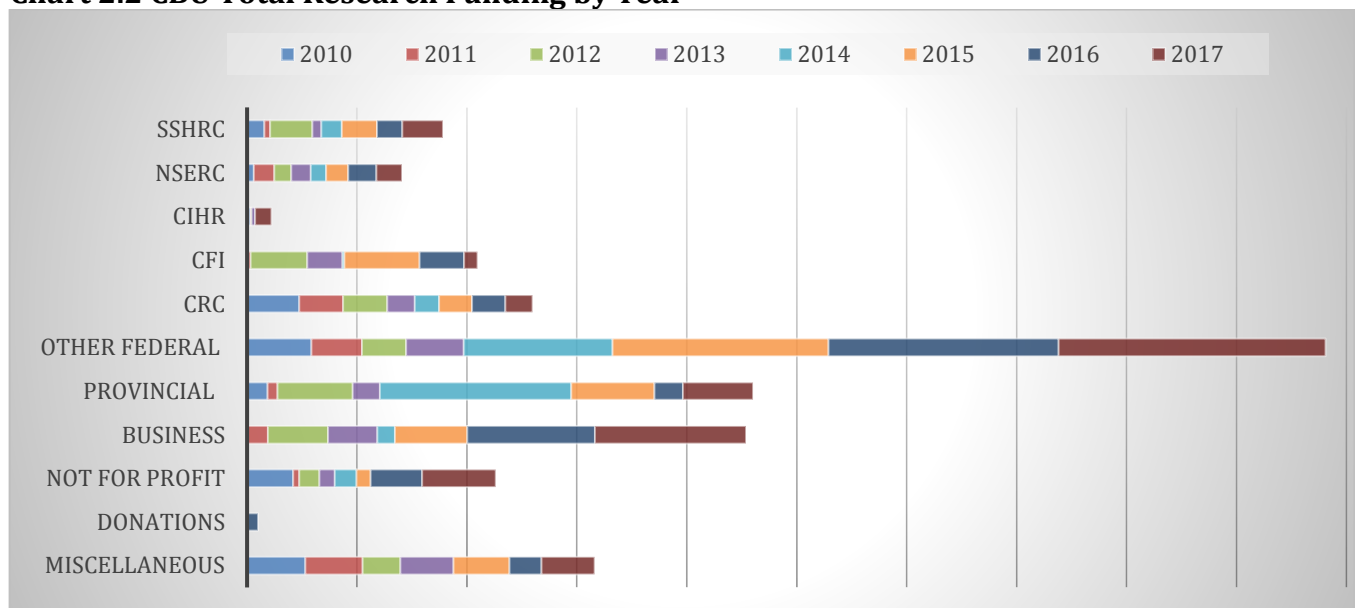
<sup>4</sup> Total of Tier I and Tier II Chairs with Tier I counting as two Tier II Chairs.

last few years has caused this number to nearly double. Table 2.3 shows that for the last three years, CBU's total research funding has in fact been in excess of \$5.5 million.

**Table 2.3 CBU Research Funding by Year (in 000s)**

Funding Source	2010	2011	2012	2013	2014	2015	2016	2017
SSHRC	\$157	\$53	\$384	\$ 81	\$187	\$320	\$230	\$371
Health Canada	\$17	\$0	\$0	\$0	\$0	\$0	\$0	\$0
NSERC	\$62	\$186	\$153	\$179	\$138	\$202	\$257	\$233
CIHR	\$30	\$4	\$6	\$33	\$0	\$0	\$0	\$150
CFI	\$0	\$31	\$517	\$320	\$16	\$686	\$405	\$121
CRC	\$458	\$400	\$400	\$250	\$223	\$300	\$300	\$250
Other Federal	\$586	\$459	\$402	\$525	\$1,353	\$1,965	\$2,091	\$2,429
Provincial	\$187	\$89	\$686	\$245	\$1,743	\$756	\$259	\$637
Business	\$0	\$190	\$548	\$446	\$162	\$656	\$1,162	\$1,373
Not for Profit	\$420	\$56	\$181	\$140	\$199	\$129	\$467	\$671
Donations	\$0	\$0	\$0	\$0	\$0	\$0	\$100	\$0
Miscellaneous	\$530	\$522	\$342	\$485	\$0	\$508	\$291	\$484
<b>Total</b>	<b>\$2,447</b>	<b>\$1,990</b>	<b>\$3,619</b>	<b>\$2,704</b>	<b>\$4,021</b>	<b>\$5,522</b>	<b>\$5,562</b>	<b>\$6,719</b>

**Chart 2.2 CBU Total Research Funding by Year**



### 3. Industry Engagement

This past year, connections continue to be fostered with local, regional and national partners. The opportunity to work with both industry and community partners emphasizes the many new and exciting ways research can extend beyond the university. The leadership from faculty experts and CBU researchers often offer students at both the undergraduate and graduate level the opportunity to get involved in applied research projects.

Industry collaboration projects have continued to grow with many initial meetings evolving into longer term collaborations. These collaborations provide our partners with access to labs and expert resources that can often be difficult to procure outside of a university. To support this research, we continue to benefit from access to a number of provincial and federal programs such as those offered by Springboard Atlantic Inc., NSERC, Innovacorp, NRC/IRAP and Mitacs.

**Table 3.1. Industry Engagement Activities**

Activity	2012-13	2013-14	2014-15	2015-16	2016-17
<b>NRC-IRAP Projects</b>	2	14	13	22	21
<b>Tri-Agency Industry Partnership Grants</b>	2	3	6	6	12
<b>Provincial Funded Industry Projects</b>	3	4	5	6	7
<b>R&amp;D Contracts (no sponsored funding)</b>	-	14	10	9	17
<b>ACOA AIF Projects /subcontract</b>	1	1	1	1	1
<b>Industry Workshops</b>	8	9	9	12	14

Researchers from across the institution have contributed to projects both large and small by providing expertise in the social sciences and humanities, business and science disciplines aimed directly at partner research and development questions. To support existing collaborators and to encourage new partnerships, we continue to lead regular industry-university workshops, seminars and educational sessions on campus and within the community. These sessions are led by internal and external experts and are designed to increase the expertise within the community, while developing new opportunities for collaborations.

#### 4. Knowledge Dissemination and Mobilization

It has become increasingly important for faculty to use a variety of methods for knowledge mobilization to attract awards and nominations. During the 2017 reporting period, CBU researchers disseminated their work through forums that included: articles; books and book chapters; conference presentations, posters and proceedings; keynote and invited talks; as well as community event presentations. In addition, they shared their research through social media, websites, blogs, and displays. CBU researchers also engaged in policy creation, provided expert advice to media and made television and radio appearances.

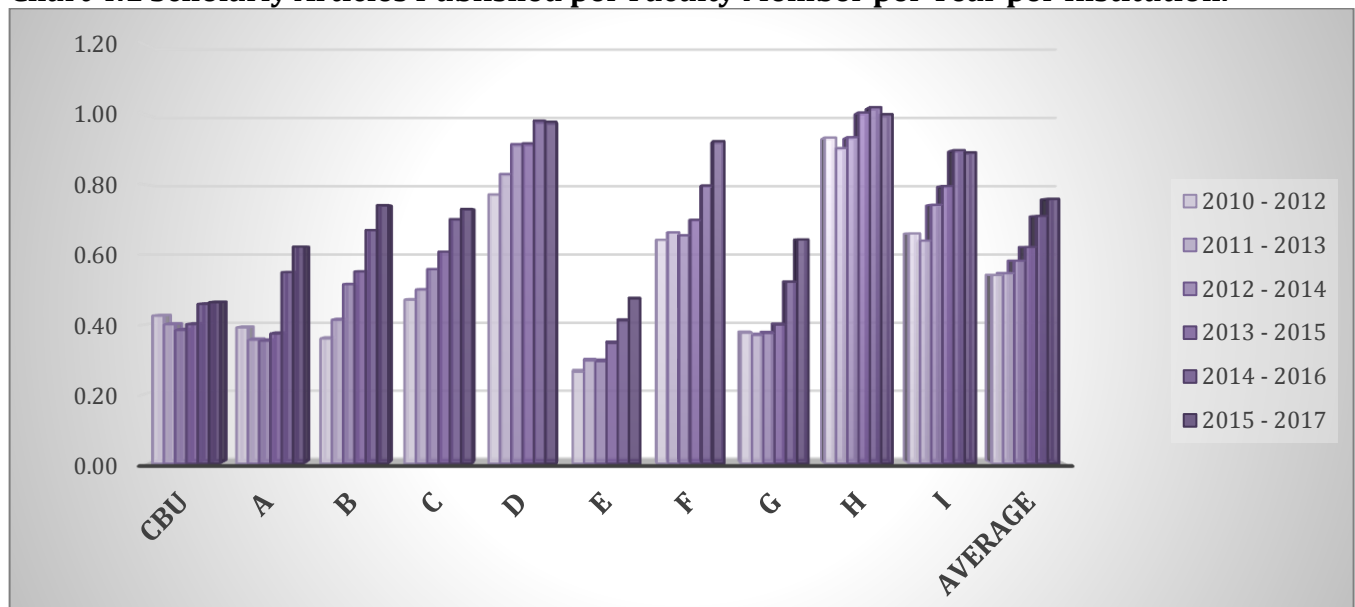
Table 4.1 and Chart 4.1 show the number of scholarly articles published for the period between 2010-12 and 2015-17 obtained from *Web of Science*<sup>1</sup> for the comparison group. It is important to note that the *Web of Science* database does not capture all publications and hence this data does not represent a complete picture of publication activity. While the numbers of scholarly articles published annually has increased significantly in the last two years, CBU continues to be ranked low in its comparison group. To achieve a position within the top five ranked universities would require doubling the annual scholarly articles. The trends in the numbers of scholarly articles published per faculty per year over the three-year average correlate closely with the amounts of Tri-Agency funding trends.



**Table 4.1. Knowledge Mobilization – Academic Publications per Faculty Member per Year**

University <sup>a</sup>	2010-12	2011-13	2012-14	2013-15	2014-16	2015-17
<b>CBU</b>	0.43	0.40	0.38	0.40	0.46	0.46
<b>A</b>	0.39	0.36	0.35	0.37	0.55	0.62
<b>B</b>	0.36	0.41	0.52	0.55	0.67	0.74
<b>C</b>	0.47	0.50	0.56	0.61	0.70	0.73
<b>D</b>	0.77	0.83	0.91	0.92	0.98	0.98
<b>E</b>	0.26	0.30	0.29	0.35	0.41	0.47
<b>F</b>	0.64	0.66	0.66	0.70	0.80	0.92
<b>G</b>	0.38	0.37	0.38	0.40	0.52	0.64
<b>H</b>	0.93	0.90	0.93	1.01	1.02	1.00
<b>I</b>	0.66	0.64	0.74	0.80	0.90	0.89
<b>Average</b>	0.54	0.55	0.58	0.62	0.71	0.76
<b>CBU Rank</b>	6	7	7	7	9	10

<sup>a</sup> Average over the three-year period indicated.

**Chart 4.1 Scholarly Articles Published per Faculty Member per Year per Institution.**

## 5. Research Environment

The research culture at CBU continues to grow and encompasses researchers and disciplines across all academic schools. A significant degree of research at CBU involves collaborations across fields and involves partnerships among researchers at CBU, colleagues at other institutions, and partners from businesses, industries, non-profit organizations, community groups and others. Students are a central part of the university's research environment. CBU students have the opportunity to engage in fundamental and applied research gaining excellent skills and experiences that serve them not just if they choose to pursue graduate studies but for workplaces across all fields. During the 2016-17 reporting period, over 120 students worked with our researchers.

Student engagement also includes opportunities to develop the communication skills necessary to present their work to other researchers within and outside their field as well as to audiences beyond the academy. For example, students can present their work in the Summer Student Lecture Series, at sessions during CBU's Annual Research Month or participate in the Thesis SnapShot Series which allows students to refine and workshop their major research projects into a

short research pitch. There has also been an effort to better honour our researchers' successes and provide them with opportunities to share their work with the university and greater communities; the Inaugural Lectures being one example of a celebratory event. These lectures are delivered by newly appointed full professors during which they can share insights from their career accomplishments to their CBU colleagues as well as citizens in the local community.

### **Internal Funding**

The CBU research environment also provides support to researchers via its internal grant process which is overseen by the ORGS and provides funding for both Start-up and Research Policy (RP) Grants. Start-up grants, aimed at new tenure-track faculty, provide up to \$2,000. During 2016/17 two projects were granted support. RP grants are managed in a calendar year, with funding rounds held up to twice a year (winter and fall terms) to fund a maximum of \$8,000 per applicant. Thirty-two projects were funded during the 2016-17 winter and fall rounds with \$180,808 in total funding being awarded to CBU researchers.

## **6. Concluding Remarks**

The research culture at Cape Breton University continues to flourish. Our status as a small institution both influences the impressive scope and flexibility of the research culture at CBU and makes us proud of the important achievements of our researchers. CBU researchers have proven that their research is crucial, influential and necessary on local, national and international levels. In order for researchers to continue to develop and grow their research agendas, it is essential that we remain strong advocates for increased research support for fundamental and applied research. It is also critical that we work with other smaller institutions and community partners to ensure the significance of research that happens at small and mid-size universities is recognized as an integral part of Canada's research landscape and the lives of Canadians.

### **List of Abbreviations**

ACOA AIF	Atlantic Canada Opportunities Agency – Atlantic Innovation Fund
CAUBO	Canadian Association of University Business Officers
CBUFA	Cape Breton University Faculty Association
CFI	Canada Foundation for Innovation
CIHR	Canadian Institutes of Health Research
CRC	Canada Research Chair
NRC-IRAP	National Research Council – Industrial Research Assistance Program
NSERC	Natural Sciences and Engineering Research Council
NSGEU	Nova Scotia Government Employees Union
NSRIT	Nova Scotia Research and Innovation Trust
ORGS	Office of Research & Graduate Studies
RP	Research Policy
SSHRC	Social Sciences and Humanities Research Council
VC	Verschuren Centre