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An examination of bibliometrics in calls for major Canadian research awards

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Abstract

This study aimed to determine if bibliometrics are being sought as part of research award competitions, through an examination of calls for fifteen major Canadian research awards. This study further aimed to determine if there were indications that including bibliometrics in the award application process could be helpful towards a nominee's success. In so doing, this paper contributes a Canadian perspective to a growing body of related research which has sought to address the lack of clarity in funding application assessment criteria and the role bibliometrics can play in addressing this issue.

The study revealed no explicit requests for bibliometric indicators in the calls for nominations for the major research awards examined. Nevertheless, requests for nominees' CVs and/or publication histories, which can serve as one basis for the bibliometric evaluation of performance, were regularly observed, as were mentions of interest in internationality, which can in turn be illustrated with the use of bibliometrics. Additionally, a prevalence of multidisciplinary review panels was observed, pointing to potential utility of normalized bibliometric indicators in the award nomination process. These findings suggest that there are aspects of award calls that correspond to existing bibliometric indicators, and so their use may be warranted even though, so far, they have not been asked for by name.

Keywords

bibliometrics; research assessment; award calls; Canada

Introduction

The academic librarian's role in bibliometrics is one that appears to be increasing in both nature and scope. A symposium in late 2016 held at the National Institutes of Health in Bethesda, Maryland showcased the vast array and sheer number of information professionals charged with some form of bibliometric analysis across Canada and the United States. Whether in the form of reports or visualizations, librarians are moving forward and taking steps to play a more prominent role in this aspect of research assessment.

Evidence of this can also be seen in LIS literature. For example, in his OCLC report "Research Assessment and the Role of the Library", MacColl (2010) calls on libraries to acknowledge disciplinary differences in research products, use library usage statistics as an additional form of research output assessment data, and liaise with faculty on the topic of bibliometrics. Bladek (2014) seconds this notion and points to a suite of reasons why librarians are well-suited to assume this role, perhaps most importantly because of their history of and frequent "work with scholarly databases and indexes that track citations and other metrics" (p. 332).

Aside from learning the ins and outs of common bibliometric indicators (MacColl, 2010) and exploring new software and bibliometric analysis products on the market (Bladek, 2014), librarians also stand to benefit from exploring bibliometrics in greater depth. If asked to assist in award nomination preparation at their institutions, Canadian academic and special librarians may be well served if they have an understanding of how metrics fit into the Canadian award context and what factors they need to consider. Accordingly, this paper explores fifteen major Canadian award calls in an effort to determine whether bibliometrics are being asked for as part of the application process. This research also aims to determine whether there are indications that including bibliometric values in the award application process could be used to strengthen those applications.

Context

Broadus (1987) defines bibliometrics as the quantification of "physical units of publications, bibliographic citations, and surrogates for them" (p. 377). Citation counts and the h-index are examples of metrics that often get mentioned in discussions of research impact. Citation counts address the number of times a researcher's work appears in the reference list of other scholarly works. The h-index takes both the number of documents a scholar has created and the number of citations a researcher's work has received into account, and was defined by Hirsch (2005) as:

“A scientist has index h if h of his or her N_p papers have at least h citations each and the other $(N_p - h)$ papers have $\leq h$ citations each” (p. 16569).

Haustein and Larivière (2015) contrast these “basic or simple bibliometric indicators” (p. 128) with normalized values, values that account for different rates of citation between disciplines or document type, or the amount of time that has passed since publication. This is done by taking the expected citation count (calculated using the set of all papers in a specific subject area, of a specific document type, and published at the same time) and comparing it to the citation count achieved by that document (Haustein & Larivière, 2015).

Regardless of whether bibliometric values have been normalized or not, their use in research assessment, especially at the level of the individual due to “the large fluctuations of the numbers at such a microscale” (Gingras, 2016, p. 9), is a point of contention. Although the use of bibliometrics was viewed as one way to reduce the academic community’s reliance on the subjective nature of peer review (Gingras, 2016), Gingras (2016) points to the necessity of human judgement when looking at bibliometric values, based on the fact that numbers can in no way tell the entire story of a particular researcher’s work. The authors of this paper are not endorsing bibliometrics as a sound way to assess a researcher’s work; rather, they are exploring their current and potential use in the area of major Canadian award competitions.

Various research assessment exercises, including the United Kingdom’s Research Excellence Framework (REF), have used bibliometrics to supplement the peer review process that eventually results in the parsing out of grant funding (Thelwall, Kousha, Dinsmore & Dolby, 2016). The influence of bibliometrics on how research funds are distributed places librarians in a niche position in the research cycle where they can offer their bibliometric expertise (Ball & Tunger, 2006). There is evidence that libraries are providing services in this area, whether through instruction, the creation of specialized bibliometric reports, or other activities (Corrall, Kennan, & Afzal, 2013), and indeed the authors of this paper have consulted on bibliometrics in preparation for award applications. It is this work that spurred the investigation and analysis reported here.

In related research, the concept of excellence has been examined previously in the European context by Rons and Amez (2009), with their work serving as additional inspiration for the analysis presented here. Their textual analysis of European funding program calls revealed some “tangible criteria for excellence” (p. 234), but for the most part, identified a lack of clearly defined concepts. In an effort to address this, they synthesized the results of their textual analysis into their own definition of excellence and developed a new bibliometric indicator, impact vitality, which attempts to operationalize that definition.

Tijssen (2003) indicates that political and cultural differences, along with stakeholder expectations, mean that there is no real agreement as to what excellence means across fields and even countries. At the same time, he points to an increasing interest in the concept of excellence for policy and decisions. As a result, Tijssen makes a plea for

“generally acceptable measures of ‘research excellence’” (p. 93) and proposes the use of indicator scoreboards to provide a multifaceted answer to this problem. Tijssen recognizes that it may be wholly impossible to agree on a single definition of excellence and instead settles on trying to understand “this slippery notion in terms of a set of interrelated dimensions” (p. 94). He provides a case example and argues for the use of scoreboards as a way to combine quantitative bibliometric indicators with expert opinion.

Poorly defined evaluation criteria are not limited solely to the concept of excellence. This issue has also manifested itself in a variety of other assessment concepts. For example, Mardis, Hoffman, and McMartin (2012) explored the issues surrounding the lack of a definition for the American National Science Foundation’s ‘Broader Impacts’ criterion. By coding the abstracts of 267 National Science Digital Library funded projects, they were able to show evidence of a lack of understanding on the part of applicants, as to how to demonstrate the manner in which their project would meet the ‘Broader Impacts’ criterion. Although not bibliometrics-focused, Mardis et al.’s investigation points to another example of lack of clarity and operationalization of funding criteria.

In light of the role that bibliometrics have begun to play in assessment exercises and funding in other countries, combined with evidence pointing to a lack of clarity in the manner in which applicants can showcase how they meet funding competition and excellence criteria in the United States and Europe, this investigation adds to this growing body of research by considering the Canadian context. Rather than explore the concept of excellence and its definition in Canadian award calls however, the authors decided to approach the topic from a different, albeit related perspective. The research that follows attempts to answer the following questions: are bibliometrics being asked for as part of major Canadian excellence award calls, and if not, are there indications that including bibliometric values in award applications could be used to strengthen them?

Methodology

Originally the authors had planned an analysis of grant calls, in line with the research done by Rons and Amez, as well as Mardis et al., for the Canadian context. Time constraints, combined with an overwhelming number of grant opportunities, made it impossible to define an appropriate set of grants for the planned analysis from those offered by three of Canada’s major research funding agencies: the Canadian Institutes of Health Research (CIHR), the Natural Sciences and Engineering Research Council of Canada (NSERC), and the Social Sciences and Humanities Research Council (SSHRC).

To overcome the above constraints and challenges of identifying a set of awards for analysis, the authors opted to use a precompiled list of awards from the Government of Canada’s website. The authors carried out a detailed examination of the set of calls for nominations for major Canadian research awards, listed in the Government of Canada’s [“Inventory of Major Canadian Awards.”](#) As part of the ‘Global Excellence Initiative’

(formerly the Enhancing Global Recognition for Canadian Research Excellence program), this inventory lists the following major Canadian research awards:

Table 1

Major Canadian Research Awards

(Note: numbers correspond to awards actually analyzed)

<u>Award</u>	<u>Notes</u>
Canada Gairdner Wightman Award (1)	
CIHR - Canada's Health Researcher of the Year	<p>This has been turned into four CIHR Gold Leaf Prizes, as follows:</p> <p>CIHR Gold Leaf Prize for Impact (2)</p> <p>CIHR Gold Leaf Prize for Discovery (3)</p> <p>CIHR Gold Leaf Prize for Outstanding Achievements by an Early Career Investigator (4)</p> <p>CIHR Gold Leaf Prize for Transformation (5)</p> <p>Although information pertaining to each of these awards was not listed under "Current Opportunities" on ResearchNet (a Government of Canada grant search and submission tool), this information was available under their "Archived Opportunities" and was thus included in this analysis.</p>
Prix Galien - Canada Health Research	<p>There are two awards listed on the Prix Galien website - one is awarded to a company (Innovative Product Award), whereas the other is awarded to an individual researcher or research team (Research Award). As our investigation did not relate to companies, only the research award was examined in this analysis:</p> <p>The Prix Galien Canada – Research Award (6)</p>

Table 1 (continued)

<u>Award</u>	<u>Notes</u>
Canadian Cancer Research Alliance Awards	Although we were able to obtain a description of these four awards via email communication with the Canadian Cancer Research Alliance, the next set of these biennial prizes was not to be awarded until 2019 and no additional information pertaining to the nomination or evaluation process was available on the Canadian Cancer Research Alliance website. For that reason, these awards were excluded from the analysis described in this article.
Gerhard Herzberg Canada Gold Medal for Science and Engineering (7)	
Killam Prizes (8)	
Manning Innovation Awards (9)	Composed of four awards (Principal Award, Award of Distinction, and 2 Innovation Awards), however these four awards appeared to differ only in the monetary value awarded, with no distinction being made on the award website that these four awards differed in description, eligibility requirements or assessment criteria. As such the four awards were considered as one single award for the purpose of this investigation.
Molson Prizes (10)	
The Social Science and Humanities (SSHRC) Impact Awards	Comprised of the following: SSHRC Gold Medal for Achievement in Research (11) Talent Award (12) Insight Award (13) Connection Award (14) Partnership Award (15)

Although the resulting analysis was of fifteen research awards rather than grants, these awards still fall under the domain of research excellence and the authors thus feel this investigation is both relevant and in line with the work that has come before.

A list of the fifteen awards examined, including the awarding body, the discipline they fall within, as well as a link to more information about each award is provided in Appendix 1. The authors chose to focus their analysis on only Canadian award calls as this seemed a practical set for a preliminary investigation and also one that would be of interest and perhaps useful for other Canadian academic librarians involved in this aspect of research assessment. For the purpose of this study, an award's call for nominations included its description, its eligibility requirements, its evaluation criteria, a description of the jury, nomination forms, and guides for submission that were included or directly linked to from the call's web page—that is, in some cases this information was provided in a single unified document, while in others it was not, but in the case of multiple documents these were considered together as one call. For the sake of this analysis, optional forms (Form 100 and the Canadian Common CV in the case of the Gerhard Herzberg Canada Gold Medal for Science and Engineering) or documentation inaccessible to the researchers (such as the SSHRC CV) were not examined as part of an award's call for nominations, nor were things like conflict of interest statements, regulations documents, and Terms and Conditions or consent-type forms, as these were not deemed to have bearing on the evaluation of the nomination(s) under consideration.

The analysis undertaken involved the examination of each award call to determine the following characteristics:

- Whether bibliometric indicators were requested (this included any specific requests for document counts, citation counts, or citation-based indicators)
- What the membership of the review committee was (namely, same-subject peer review, non-subject-specific peer review, an administrative review body, or other) For this portion of the analysis, jury members were only considered “peers” if the award call used that terminology, or described the panel as being composed of researchers or indicated that the panelists were associated with research
- If and to what extent each award call asked for a nominee's publication history (namely, a subset listing of a specific number of the nominee's works, a full list, a list self-chosen for importance, none requested, a CV requested, or optional)
- Mention of interest in internationality (either the nominee undertaking international collaboration or producing work having international reach)
- Mention of work of a multidisciplinary nature (either the nominee undertaking multidisciplinary collaboration or producing work having multidisciplinary reach)

The authors developed the list of characteristics and carried out the examination of the award calls themselves. The list of characteristics was based on each author's previous knowledge of related research (such as that by Rons and Amez, and Mardis et al., mentioned earlier), general familiarity with calls for nominations, and a deductive consideration of the types of information that would address the research question. Aside from looking at whether bibliometric indicators were requested, the membership

of the review committee was of interest to the researchers in order to determine whether the jury was composed of scholars in the same discipline as that of nominees, as a diverse jury could warrant the inclusion of normalized bibliometric indicators, as discussed in the results section that follows. CV requests were noted as the authors assumed a CV would include a researcher's publication history in some format. Additionally, mentions of interest in internationality and multidisciplinary were investigated as these were aspects of research that can be addressed with bibliometrics, also discussed in the results section that follows.

The final list of characteristics for analysis was turned into a collection instrument, included in Appendix 2. The analysis took place with each of the two researchers independently examining each of the identified calls for the characteristics described earlier. Although this analysis could have been carried out by a single researcher alone, the second researcher performed the same investigation to improve accuracy. After independently analyzing the award calls for the specific characteristics, the two examiners compared results. Some incidences of disagreement arose, including missed details of interest within award calls, which led to a re-examination of those award calls to verify the correct information. Disagreement between the two researchers also led to the inclusion of an additional category in the collection instrument ('optional' as a publication history request choice), which led to the re-evaluation of the award calls for this criterion, in accordance with the updated instrument.

Results & Discussion

The results for each of the five major areas investigated are described and discussed below.

Out of the 15 major Canadian awards investigated, none explicitly made a request for bibliometric indicators of any sort. This finding comes as little surprise, given that bibliometric assessment at the level of the individual, as described earlier, has its issues (Gingras, 2016). There are some cases of national research assessment exercises, the UK's REF as one example, where bibliometrics have been used to supplement the peer review process (Thelwall et al., 2016), but for the most part, peer review remains the assessment technique "against which other funding mechanisms are compared" (Feller, 2013, p. 117). Peer review is not without its faults, and indeed some have called these into question (see Feller, 2013). However, peer review tends to take precedence, especially when important research dollars are at stake (Feller, 2013). Three of the 15 awards (CIHR Gold Leaf Prize for Impact, CIHR Gold Leaf Prize for Discovery, and CIHR Gold Leaf Prize for Outstanding Achievements by an Early Career Investigator), did however offer "a list of ... publications and publication impact" (ResearchNet, 2018a, 2018b, 2018c) as one example of potential attachments to include with the award's nomination form. As publication impact can be shown in various ways, not limited to bibliometrics, the researchers did not consider this an explicit request for bibliometrics. This wording is still deserving of mention however, as it would not be beyond reason for a nominator to make an association (rightly or wrongly) between the phrase *publication impact* and bibliometrics, if only because it calls to mind bibliometric values that include

the word impact in their name (e.g. Journal Citation Reports' long-standing Journal Impact Factor).

Three of the 10 calls examined used a peer review panel consisting of experts from a variety of different disciplines, with an additional nine using a multidisciplinary body of individuals, albeit not specifically described as peers or researchers. With these two categories combined, 12 of the 15 award panels were found to be making use of non-discipline-specific reviewers, as detailed in Figure 1.

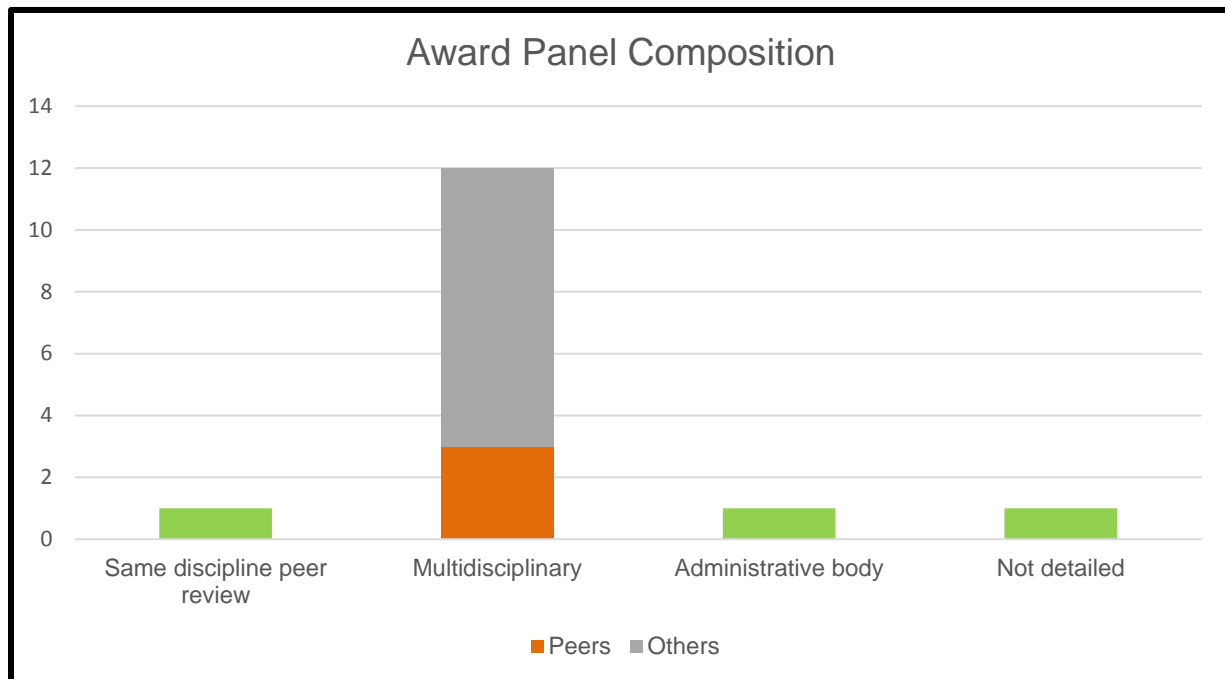


Figure 1. Composition of the award panel for the 15 calls examined.

This suggests that it may be important for individuals putting forth nominations to take the composition of the review panel particular to the award at hand into account and consider using normalized bibliometric values in reporting results for use in award nominations. As detailed in the introduction, one major drawback to non-normalized bibliometric indicators, such as the h-index and citation counts, is their inability to account for differences in publication practices between disciplines (Haustein & Larivière, 2015). Panelists in these cases may not have a strong grasp on the expected rate of citation for documents published outside of their field of expertise. As such, if nominees choose to use bibliometrics in their applications, they may consider the inclusion of normalized values that account for interdisciplinary citation rate differences. This would enable the panelists to not only make more appropriate comparisons

between nominees coming from different disciplines, but also more easily evaluate nominees in disciplines outside of the panelist's own.

Publication history requests were quite varied amongst the award calls examined:

- Two out of the 15 calls requested a subset based on a constant (i.e. "Top 5 Publications by the Nominee" [Canada Gairdner Foundation, n.d., p. 3]), in addition to a curriculum vitae
- One of the 15 calls requested a CV but, to the surprise of the authors, specified that it was not to include a list of publications
- Five of the award calls also requested a CV and specified that it was not to include a list of publications, but these same award calls indicated that the inclusion of a publication list in other supporting documentation was optional
- Three of the calls indicated that a publication list was optional by requiring attachments and stating that a list of publications was an optional inclusion in those attachments
- Four of the 15 calls requested a copy of the nominee's curriculum vitae, in addition to indicating that the inclusion of a publication list was optional (either in the CV itself [in the case of the Gerhard Herzberg Canada Gold Medal for Science and Engineering, Killam Prizes, and Molson Prizes] or in attachments [in the case of the Gold Leaf Prize for Outstanding Achievements by an Early Career Investigator])

Table 2*Publication List Requests*

<u>Award</u>	<u>Subset listing based on a constant</u>	<u>CV requested</u>	<u>Publication list optional</u>	<u>CV requested but call specifies no publication list with CV</u>
Canada Gairdner Wightman Award	Yes	Yes		
Gold Leaf Prize for Impact			Yes	
Gold Leaf Prize for Discovery			Yes	
Gold Leaf Prize for Outstanding Achievements by an Early Career Investigator		Yes	Yes	
Gold Leaf Prize for Transformation – Patient Engagement			Yes	
Prix Galien	Yes	Yes		
Gerhard Herzberg		Yes	Yes	
Killam Prizes		Yes	Yes	
Manning Prizes				Yes
Molson Prizes		Yes	Yes	
SSHRC Gold Medal			Yes	Yes
SSHRC Talent Award			Yes	Yes
SSHRC Insight Award			Yes	Yes
SSHRC Connection Award			Yes	Yes
SSHRC Partnership Award			Yes	Yes
Total	2	6	12	6

Combined, these results mean that six award calls asked for a CV with no specifications that a publication list was not to be included as part of the CV but also no specifications that it must be included as part of the CV. Of those six award calls, two specifically requested a subset of the researcher's publication history. Twelve out of the 15 awards made it optional to include a list of publications in some portion of the award nomination package (whether it be in the requested CV or in supporting documentation). Although

there is no way to know how publication lists (either alone or as part of a researcher's CV) are being used by an award's jury, it is not out of the realm of possibility that these documents could be assessed for not just their quality in terms of sound science, but also how they have performed citation-wise. With that in mind, nominators might consider including citation counts in award nomination packages, while keeping in mind the problematic nature of citation-based metrics, and accounting for this with the inclusion of normalized measures where possible.

The concept of internationality, whether referring to “the international stature of the candidate” (Canada Council for the Arts, n.d., p. 3) or “the major contributions that Canada's top researchers make to international science and technology” (Natural Sciences and Engineering Research Council of Canada, 2016) amongst other mentions, came up in 9 of the 15 calls examined, as detailed in Figure 2. It is important to note however that 5 of these 9 award calls are administered by SSHRC and shared some common award call criteria, including the mention of internationality. Additionally, however, the Gold Medal award did mention internationality in its criteria specifically. Different awards are likely to highlight different aspects of a researcher's career and work, so it is interesting that more than half of the awards examined made note of some aspect of internationality. This could point to the potential for the consideration of metrics associated with internationality in an award decision, and so might justify their inclusion in a nomination package. As an example, the number of international co-authors could be used to showcase the global reach of an author's area of research.

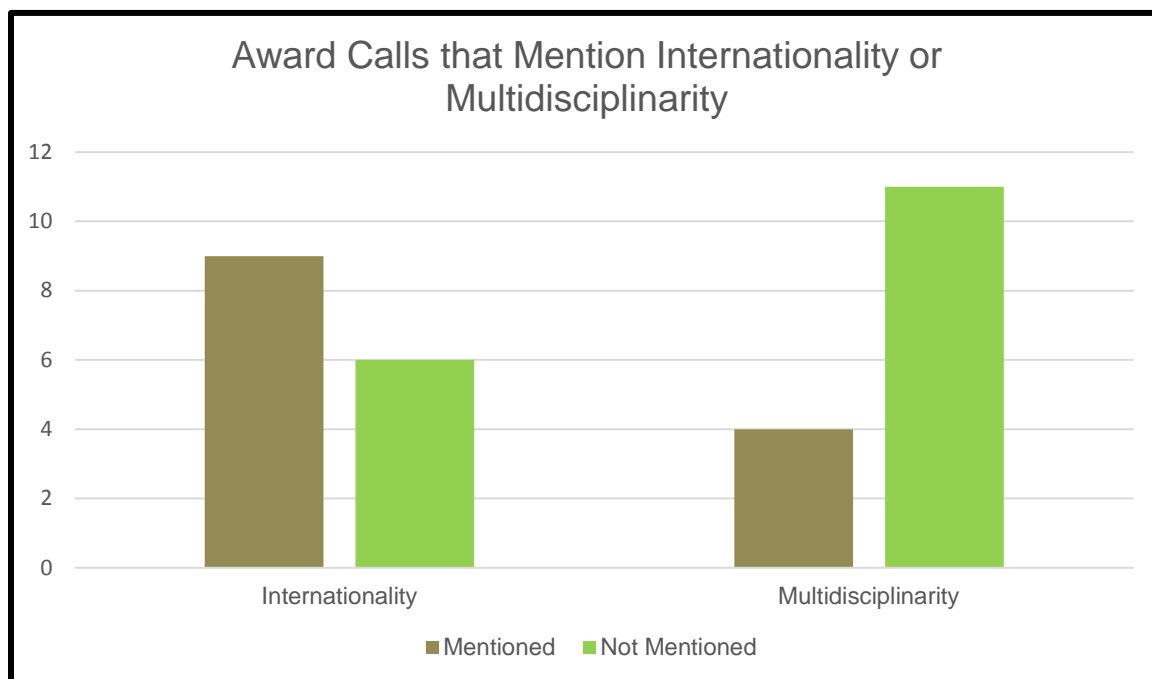


Figure 2. Number of award calls out of the 15 examined that make mention of internationality or multidisciplinary.

Similarly, the number of co-authors from disciplines different to that of the award nominee could be used to showcase multidisciplinary work. Surprisingly, only four of the fifteen award calls showed an indication of interest in work that had a multidisciplinary appeal (Figure 2). This was based on the authors' interpretation of award call wording, similar (albeit not exact) amongst all four calls, that related to showing evidence "within the nominee's fields of research and/or beyond the social sciences and humanities research community" (Social Sciences and Humanities Research Council, 2017) used in four of the five SSHRC award calls. Given the increasing importance placed on cross-disciplinary work (Rafols & Meyer, 2007), the authors expected more of the major Canadian awards to have a focus, or at least some portion of their call, reflect this potential attribute of scholarly research. As is the case in review panel composition, it appears to be good practice to take into account emphasis on internationality or multidisciplinary in the award under consideration. This could avoid unnecessary effort being spent in providing this kind of bibliometric analysis if not needed, or ensure its inclusion if the award call indicates that it could be useful.

Limitations and directions for future study

The primary limitation of this study was the size of the sample used, which, despite consisting of all of the qualifying documents from our chosen source, was quite small. Additionally, the awards represented skewed towards those interested in either health/medicine or the social sciences and humanities. Both of these issues stem from having used a precompiled inventory as a starting point to identify awards that had a comparable level of prestige and valuation. The authors also recognized that their involvement in the research process as both the primary investigators of the study and the examiners of the award call text held potential for the introduction of bias into the results, depending on the level of subjectivity involved. With this in mind, the authors attempted to mitigate this with the careful creation of a list of criteria that in the end offered little room for misinterpretation or bias. As demonstrated by the list of criteria (see Appendix 2), the variables under consideration were not subjective measures.

There are multiple directions for future study in this area. Extending this analysis to cover a larger set of calls for nominations for awards in health/medicine or the social sciences and humanities might shed more light on the extent to which bibliometric indicators are considered in awards criteria in these two areas. Looking at more awards for fields beyond health/medicine and the social sciences and humanities could provide the basis for a future comparative analysis of the differences and similarities in emphasis placed on bibliometrics between disciplines. Furthermore, a comparison of award calls from different countries might help inform as to how bibliometrics are being emphasized in different locations around the globe. Perhaps most practically, identifying whether or not a trend of increasing interest in bibliometrics develops over the coming

years would also be of value to those working in a variety of academic sectors, including libraries and institutional research offices.

Conclusion

This exploratory study sought to uncover any evidence that requests for bibliometric indicators have become a formal part of the awards application process. To this end, calls for nominations for 15 major Canadian research awards were analyzed to determine if they included requests for specific bibliometric indicators. We were also interested to see if, in the case that bibliometrics were not explicitly requested, any requirements for nomination submissions might potentially be satisfied with bibliometrics.

None of the calls for nominations examined in this study required the inclusion of bibliometrics. Nevertheless, aspects of the calls examined reveal ways in which bibliometrics could be relevant to the award nomination process. First, requests for nominees' CVs and/or publication histories, which can serve as one basis for the bibliometric evaluation of performance, were regularly observed, as were mentions of interest in internationality, which can in turn be illustrated with bibliometrics. Additionally, as multidisciplinary award panels are commonly used to decide these awards, which themselves are often open to nominations from various disciplines, normalized bibliometric indicators could help panel members in various ways. This could include the comparison of nominees from different disciplines, as well as understanding citation-based metrics from nominees in disciplines outside the panelist's own.

As a preliminary exploration into this topic in the Canadian context, it is the authors' hope that the research undertaken here will lead to further analysis and investigation, and eventually a clearer picture of what academic librarians can do to help researchers and institutional departments in the award nomination process.

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Appendix 1. List of Awards Analyzed

Appendix Table 1

Major Canadian Research Awards

<u>Award</u>	<u>Awarding Body</u>	<u>Discipline</u>	<u>Website</u>
Canada Gairdner Wightman Award	The Gairdner Foundation	Medical Science	https://gairdner.org/awards/wightman-award/
CIHR Gold Leaf Prize for Impact	CIHR	Health	http://www.cihr-irsc.gc.ca/e/27894.html
CIHR Gold Leaf Prize for Discovery	CIHR	Health	http://www.cihr-irsc.gc.ca/e/27894.html
CIHR Gold Leaf Prize for Outstanding Achievements by an Early Career Investigator	CIHR	Health	http://www.cihr-irsc.gc.ca/e/27894.html
CIHR Gold Leaf Prize for Transformation	CIHR	Health	http://www.cihr-irsc.gc.ca/e/27894.html
The Prix Galien Canada – Research Award	Innovation Life Canada	Medicine	http://eng.prix-galien-canada.com/home_page.html
Gerhard Herzberg Canada Gold Medal for Science and Engineering	NSERC	Natural sciences or engineering	http://www.nserc-crsng.gc.ca/Prizes-Prix/Herzberg-Herzberg/Index-Index_eng.asp
Killam Prizes	Canada Council for the Arts	One winner in each of: humanities, social sciences, natural sciences, health sciences, engineering	http://killamprogram.canadacouncil.ca/prizes

Appendix Table 1 (continued)

<u>Award</u>	<u>Awarding Body</u>	<u>Discipline</u>	<u>Website</u>
Manning Innovation Awards	Ernest C. Manning Awards Foundation	None specified	http://www.manningawards.ca/en/welcome
Molson Prizes	Canada Council for the Arts	One in the arts, one in the social sciences and humanities	http://canadacouncil.ca/funding/prizes/molson-prizes
SSHRC Gold Medal for Achievement in Research	SSHRC	Social sciences and humanities	http://www.sshrc-crsh.gc.ca/funding-financement/programs-programmes/impact_awards-prix_impacts-eng.aspx
Talent Award	SSHRC	Social sciences and humanities	http://www.sshrc-crsh.gc.ca/funding-financement/programs-programmes/impact_awards-prix_impacts-eng.aspx
Insight Award	SSHRC	Social sciences and humanities	http://www.sshrc-crsh.gc.ca/funding-financement/programs-programmes/impact_awards-prix_impacts-eng.aspx
Connection Award	SSHRC	Social sciences and humanities	http://www.sshrc-crsh.gc.ca/funding-financement/programs-programmes/impact_awards-prix_impacts-eng.aspx
Partnership Award	SSHRC	Social sciences and humanities	http://www.sshrc-crsh.gc.ca/funding-financement/programs-programmes/impact_awards-prix_impacts-eng.aspx

Appendix 2. Final Collection Instrument

1. Were bibliometric indicators (document counts, citations counts, or citation-based indicators) requested?
 - a. Yes, requested
 - b. No, not requested
2. What is the membership of the review committee?
 - a. Same discipline peer review
 - b. Non-tailored peer review
 - c. Administrative body
 - d. Other (provide details in this case)
 - e. Not detailed
3. Did the award call ask for a nominee's publication history?
 - a. Subset listing based on a constant
 - b. Yes – full list
 - c. Subset self-chosen for importance
 - d. No
 - e. CV requested
 - f. Not required, but optional
4. Did the award call mention interest in internationality (either the nominee undertaking research that involved international collaboration or the nominee's work having international reach)?
 - a. Yes, mentioned
 - b. No, not mentioned
5. Did the award call mention interest in multidisciplinary (either the nominee undertaking research that involved multidisciplinary collaboration or the nominee's work having multidisciplinary reach)?
 - a. Yes, mentioned
 - b. No, not mentioned