Author’s response to reviews

Title: An Output Evaluation of a Health Research Foundation's Enhanced Grant Review Process for New Investigators

Authors:

Gregory Hammond (dr.greghammond@icloud.com; info@mmsf.ca)
Mê-Linh Lê (Me-Linh.Le@umanitoba.ca)
Tannis Novotny (Tannis.Novotny@mb.bluecross.ca)
Stephanie Caligiuri (umcaligs@myumanitoba.ca)
Grant Pierce (gpierce@sbrc.ca)
John Wade (wade@mymts.net)

Version: 1 Date: 25 May 2017

Author’s response to reviews:

May 24, 2017

Dear Rosanna Gonzalez-Mcquire

Editor, Health Research Policy and Systems

Thank you for the opportunity to revise our manuscript for resubmission. The following comments are our detailed responses to reviewers.

REVIEWER #1

I commend the authors in their work on evaluating the ROI of their new investigators program, more work in this area is needed in contributing to the evidence base of what is working, not working and under what conditions.
Given that the focus of the paper is on the return on investment of one of Manitoba's medical services foundation programs, I would recommend that they include a reference to the Canadian Academy Health Sciences Foundation report (2009) that recommends a preferred framework and indicators for assessing the ROI or impact of health research investments. This is used widely by federal and provincial funders in Canada.

Response:

Reference [3] has been added to the manuscript, citing the Panel on Return on Investment in Health Research, 2009, “Making an Impact: A Preferred Framework and Indicators to Measure Returns on Investment in Health Research”, Canadian Academy of Health Sciences, Ottawa, ON, Canada. We have used activity and quality indicators and return on investment methods that are in this report. See insertion of these terms and this reference on page 7, Line 127-128,132-137

In terms of choosing the indicators of h-index, tri-council follow on funding etc., I would be more explicit in terms of why they were chosen and what they are indicating (e.g. research quality, productivity etc.). Given the controversy around the use of the h-index, I would recommend more rationale on why that was chosen over and above other bibliometric indicators recommended in the CAHS report 2009.

Response:

The output indicators that we have chosen align with the Section 4.3 of the Report of the Panel on the Return on Investments in Health Research, under the heading of “Advancing Knowledge”. We have included two of the four subcategories listed in this section, namely Quality Indicators and Activity Indicators. The Report comments that “Quality can be measured using peer review of publications (an expensive and time consuming process) or through citation analysis, which incorporates peer judgement by analyzing how often a publication is cited.” There is no specific mention of which citation analysis method is the preferred method. For Activity Indicators, the comment is: “Publication Counts: Counting publications is the simplest way to measure output, and can be done easily and cheaply”. Page 7, Lines 132-137

In regards to the indicator of why tri-council funding was chosen, these agencies are the senior national funding agencies in Canada in their disciplines and all their grant funding data are standardized over the time period studied. Also, the achievement by a researcher of obtaining
national funding from these agencies is a noteworthy accomplishment. Consequently, an observation that new researchers have been successful in obtaining competitive Tri-Council funds is itself an indicator of success by applicants. Also, from the Panel’s Report, “Provincial funding agencies can also require information on how their investment has improved investment in the province. Investment can be: a research investment from federal funders (such as CIHR) which is a capacity building indicator;” (page 108 of the report). For further information on Tri-Councils see pages 11 and 12, lines 229-243 in the revised manuscript.

In regards to the ROI of funding comparisons using Tri-Council funding, please see comments in the next section.

The terms “Quality Indicators” and “Activity Indicators” have been added to the manuscript (page 7) to show their alignment with the Panel’s framework about “Advancing Knowledge”. Similarly, the term “Capacity Building Indicator” has been aligned with ROI discussions and has been added on page 7, lines 132-137.

It would also be good to understand the profile information of the successful versus unsuccessful applicants (e.g. age, gender etc.) in order to establish that results were achieved due to the enhanced processes rather than differences between successful and unsuccessful applications.

Response:

We do not include gender as a criterion in evaluating the quality of the application and presentation. However, because it has been requested by the reviewer, we have included gender in the publication, as each applicant was interviewed in person.

There were 35 females in the MMSF-Funded group of 49 female applicants (71.43% of female applicants were MMSF-Funded) vs. 53 males in the MMSF-Funded group of 69 male applicants (76.81% of male applicants were MMSF-Funded). This shows similar selection rates irrespective of the gender of the applicant. This information has been added on page 14, lines 277-280.

Age cannot be provided, as this information is not collected as part of our application process. This information has been added on page 8, line 166.

Given that the purpose of the evaluation was to investigate whether the grant selection processes contributed to achieving results, I would recommend that the authors make reference to measurement issues of attribution versus contribution as well as predictive validity. Are there similar evaluations in the literature (e.g. CIHR evaluations) that they could reference. In addition, to finding literature that uses similar or different ROI calculation. I would also
acknowledge use of the term "economic return on investment" as typical methods include cost benefit analysis, cost utilization analysis, cost effective analysis and carried out by a health economist.

Response:

Regarding attribution (cause and effect relationships) vs. contribution, we recognize that funding by MMSF is one of many factors that could contribute to positive outputs. A sentence which acknowledges this has been added in the discussion; Page 17 and 18, lines 346-349.

We have deleted the methodology and results on the topic of predictive validity, as noted in our responses to reviewer #2. Also, question number 2 in the original manuscript was removed.

Regarding ROI, the Report of the Panel comments that “While there are a number of excellent frameworks and a few international reviews of “ROI” in other countries, there is no accepted international standard framework of indicators, and there is no agreement on a standard approach to determining the value of health research.” (Section 1.4, page 49 of the report). We have added the word “Economic” in discussions about ROI (see pages 4, 5, 7, 15, 18, 19 and 22)

As indicated on page 89 in Section 4.3.b Capacity Building, of the report by the Canadian Academy of Health Sciences,” “Identifying the additional funds that are attracted by research activity is a useful way to identify activity funding capacity building, and compliments the standard year-on-year total funding that organizations provide.” Our economic ROI analysis was a direct comparison of these external funds generated, compared with the funding provided by MMSF operating grants. We did not involve a health economist, as a more complex analysis than direct comparison of these funds was not required to address question #2, page 7 in the revised manuscript.

On a minor note, I would recommend including the standard deviation for the average funding amounts on page 13.

Response:

We have added standard deviation to the average funding amounts, shown in Table 2 on Page 16.

We thank the reviewers for the time they have taken to prepare fair and constructive comments and our manuscript has been improved due to their efforts on our behalf.
REVIEWER #2

Overall, I think this paper makes a terrific contribution. It is very close to my own work, and we clearly need more literature on this topic. It provides evidence of the value of the MMSF competition for funding.

My overall suggestion is to shift the focus from predictive validity of the selection to those awarded vs. not awarded MMSF funds.

Response:

We have revised the manuscript and the predictive validity study results, figures 7 and 8, and related discussions have been deleted. Question number two in the original manuscript has also been deleted.

Introduction:

I am not sure I understand the purpose. It purports to look at the predictive validity of receiving selection into the program. If that is the case, we need substantially more information about the selection and criteria, aspects of interrater reliability, construct validity evidence of scores. For example, if budget determines the cut-off (p. 9, ln 36), then the criteria seems to be changing from year to year. Please clarify. However, I wonder if it might be more effective to just focus the paper as an evaluation of the program to provide funding. Your "control" is then those who were not selected. In brief, I am not sure what you gain by invoking a validity argument.

Response:

Re: selection and criteria, we cannot provide information on interrater reliability, as we do not determine score assessments by each member of the Selection Committees.

The MMSF subcommittee members for each candidate agree by consensus about the ratings to be awarded for each candidate at the conclusion of each assessment. Although each subcommittee chair and two other members of each subcommittee are usually different for each candidate’s review, some consistency is provided by the inclusion of the Executive Director and the Assistant Executive Director in all of the subcommittee assessments. This information has been inserted on page 10, Lines 191 to 196.
Our main intent is to demonstrate the effectiveness of the Operating Grants program. For that, as suggested by Reviewer #2, we have used the outputs of the MMSF-Funded, vs. Not MMSF-Funded as controls, as the major criteria of evaluation in the paper. We have deleted the predictive validity results, figures and discussions.

The reader needs more information about Tri-Council, what the three agencies are, what they fund, how much they fund, etc.

Response:

The Tri-Council agencies are the CIHR, NSERC and SSHRC. As the Government of Canada's health research investment agency, the Canadian Institutes of Health Research (CIHR) supports excellence across all four pillars of health research: biomedical; clinical; health systems services; and population health. CIHR invests approximately $1 billion each year to support health research. (http://www.cihr-irsc.gc.ca/e/37788.html) The Natural Sciences and Engineering Research Council of Canada (NSERC) is the largest funder of science and engineering research in Canada. With funding from the Government of Canada, NSERC supports the world-class research of over 41,000 talented students and professors at universities and colleges across the country with an annual budget of $1.1 billion. (http://www.nserc-crsng.gc.ca/NSERC-CRSNG/Dashboard-TableauDeBord_eng.asp) The Social Sciences and Humanities Research Council of Canada (SSHRC) is the federal research funding agency that promotes and supports postsecondary-based research and research training in the humanities and social sciences. SSHRC’s budget is determined each year by Parliament. SSHRC’s grants and scholarships budget for 2015 16 was $353.3 million. (http://www.sshrc-crsh.gc.ca/about-au_sujet/faits-faits/budget-eng.aspx) This information has been inserted on page 11 and 12, lines 229 to 243.

Are research and academic productivity two different concepts (p. 7, ln 31)? Most of the manuscript refers to "academic productivity". I suggest being very consistent.

Response:

Research and academic productivity were intended to be the same concept. The manuscript has been revised, as suggested, using the term “research productivity”. (See pages 5, 7, 29 and 30)
Method:

How large are MMSF grants?

Response:

MMSF research grants awarded are not greater than $35,000 and are for a one-year period only. This information has been inserted on page 10 lines 212-213.

The overall Operating Grant budget, the applicants’ budget requests and the number and quality of grants vary each year, so the amounts of each grant vary by year. This usually allows us to fund “excellent” and most “very good” quality grants annually, as has been defined on our Applications for Operating Grant Application Forms, which fall into scores of 11 points or more out of 20 for Project Point Scale scores. This information has been inserted on page 10, lines 202-209.

We need to better understand the groups. Who are they? How do they differ? What types of institutions are they at? Describe demographics, time in academia, degrees, etc.

Response:

All applicants are from postsecondary institutions, almost all from the University of Manitoba. During this study, the applicants were within three years of establishing themselves as independent researchers in Manitoba. Independent researchers are autonomous regarding their research activities and have a Manitoba academic or research appointment. This designation allows the individual to pursue the proposed research project, to engage in independent research activities for the entire duration of the funding, to supervise trainees, and to publish the research results. The MMSF defines that the start of the three years of grant eligibility begins when the applicant received his/her first academic appointment in any province or country. The researchers who were eligible for the MMSF Operating Grant competition were those who were recruited by their academic institution, from a range of faculties. We do not have the complete academic dossier on the background training of each of the candidates, as this resides within each faculty.

Eligible researchers may include residents and fellows (residents and fellows are not required to have an academic or research appointment). There were 10 residents and fellows who applied over the study period. This information has been inserted on pages 8 and 9, lines 154-169.
What about prior grants and papers?

Response:
No, we do not have a record of publications received prior to being MMSF-Funded. This has been explained as a limitation on page 20, lines 405-415 of the manuscript.

Results:
The section on ROI (also in the discussion) is about "MMSF investment in operating grant program research", which seems more appropriate than focusing on the selection process and validity argument.

Response:
Agreed. However, we have maintained inclusion of some information about the selection process and have shown the results of the evaluation scoring (Figure 5) and the Tri-Council funding vs. the MMSF scores (Figure 6). These figures enable the reader to examine differences in the evaluations and external funding outputs of the individuals, respectively.

Discussion:
I like how the discussion reads. However, it starts off by writing it sought to "evaluate the Program of competitive start-up operating grant funding." I think that better represents what this study and manuscript are about than the predictive validity.

Response:
We have agreed with the reviewer and eliminated the predictive validity component of the paper.
Some figures are not helpful or at least need more detail for the reader. Figures 1-4 might be more effective with each column labeled on the horizontal axis rather than color coding and a legend.

Response:
Figures 1 – 4 have been revised, with labelling on the horizontal axis.

Is Figure 5 supposed to be a histogram?

Response:
Figure 5 is not a histogram. It is a plot of the total number of grant applicants with each project score and if they were MMSF-Funded or Not MMSF-Funded.

Is Figure 7 any role in Tri-Council funding and Figure 8 only as a PI?

Response:
Yes, that is correct, but Figures 7 and 8 have been deleted, as the validity discussion has been deleted.

Use a consistent term throughout for the two groups. It vacillates between successful/unsuccessful, funded/not funded

Response:
The manuscript wording has been revised throughout for consistency by the use of Not MMSF-funded and MMSF-funded.
Minor Issues:

Grammatical issues throughout. For example, "PIs" is not possessive and should not take an apostrophe.

Response:

The grammatical errors (such as PIs) have been corrected. (See pages 16, 17 and 19)

On p. 10, ln 48, do the pound signs represent the n?

Response:

Yes, the # sign represented the n, and the manuscript has been revised accordingly. (See page 12, line 244)

We thank the reviewers for the time they have taken to prepare fair and constructive comments and our manuscript has been improved due to their efforts on our behalf.