Return on Investment (ROI) Case Study: Innovative Application of the Phillips Model to a Health Research Funding Program

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SHRF
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HEALTH RESEARCH
FOUNDATION

About SHRF

Saskatchewan Health Research Foundation (SHRF) is the provincial funding agency that funds, supports and promotes the impact of health research that matters to Saskatchewan. SHRF collaborates with stakeholders to contribute to the growth of a high-performing health system, culture of innovation and the improved health of citizens by strengthening research capacity and competitiveness, increasing the investment in health research in Saskatchewan and aligning research with the needs of our stakeholders.

ROI INSTITUTE®

2017-18 ROI Institute Award Winner for Most Innovative Approach to ROI.

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Introduction

Given today's economic climate, increasing demands for public dollars, obligations for accountability and transparency and the need to demonstrate the benefits of investments in health research, funders face unprecedented challenges in carrying out their mission and mandate. Measuring the impact of health research has several challenges including distinguishing between attribution and contribution, the time lag between research project and observing impact, and the fact that one research project adds to a body of knowledge and is not likely the only source of information for decision and policy makers. Although complex, examining new and innovative ways to measure the impact and return on provincial research investments is important and needed.

Saskatchewan Health Research Foundation (SHRF) is the provincial agency responsible for funding, facilitating and promoting innovative, collaborative health research in Saskatchewan, Canada. SHRF works as a catalyst, driver and leader to: build and broaden the province's research capacity; expedite the production and sharing of knowledge; increase stakeholder engagement; generate new and diverse partnerships; and measure the impact of health research.

The science of health research impact assessment is relatively new and needs to continually examine improved ways of measuring the impact of funded research. SHRF and the National Alliance of Provincial Health Research Organizations (NAPHRO) use the Canadian Academy of Health Sciences (CAHS): A Preferred Framework and Indicators to Measure Returns on Investment in Health Research (2009). The CAHS Framework is considered an important tool for evaluators as it offers a standard approach to the measurement of research impact in five categories (i.e. Capacity Building; Advancing Knowledge; Informing Decision Making; Health Impacts; and Broad Economic and Social Impacts). However, it is also important to show promising ways to supplement work on how health research impact is measured.

This study used the Phillips ROI Methodology developed by Dr. Jack Phillips in the 1970's, refined in the 1980's and globally implemented in the 1990's, as it compliments work SHRF has done with the CAHS Framework. This is the first time the ROI Methodology, as presented in Phillips and Phillips (2015), has been used to measure and demonstrate the ROI of health research investments.

Program and Objectives

In 2014, SHRF began offering a funding program designed to encourage collaborative groups of health researchers to launch new ideas, develop new research questions and explore unique solutions to health issues relevant to Saskatchewan.

In addition, SHRF research investments were required to be used to leverage additional funds which would be further invested into research in Saskatchewan. The pilot program received 74 applications with 22 successful teams being awarded funding through the inaugural Collaborative Innovation Development Research Funding Program (CID program). Applications came from all eligible institutions and spanned all areas of health research.

Objectives for the CID program were set at all five levels according to this ROI methodology. Figure 1 is an adoption of the Phillips ROI Model which shows alignment of the CID program at all four levels during data collection. In Level-1, the CID program's purpose and objectives are perceived to be important, relevant and to have potential for impact. In Level-2, SHRF researchers can build capacity and describe new knowledge gained from research projects. Resulting in Level-3 where researchers can increase knowledge translation activity and identify early outputs, outcomes, and potential impact of funded research. Level-4 objectives provided below, are key in funding health research that has the greatest potential to produce health benefits and social and economic impacts.

1. Collaboration between academics and, academics and non-academics;
2. Innovation by way of novel research questions, approaches or methodologies performed in new ways or in new settings; and implementation or use of research; and
3. Development by way of leveraged dollars through program partners, in-kind contributions and subsequent grants

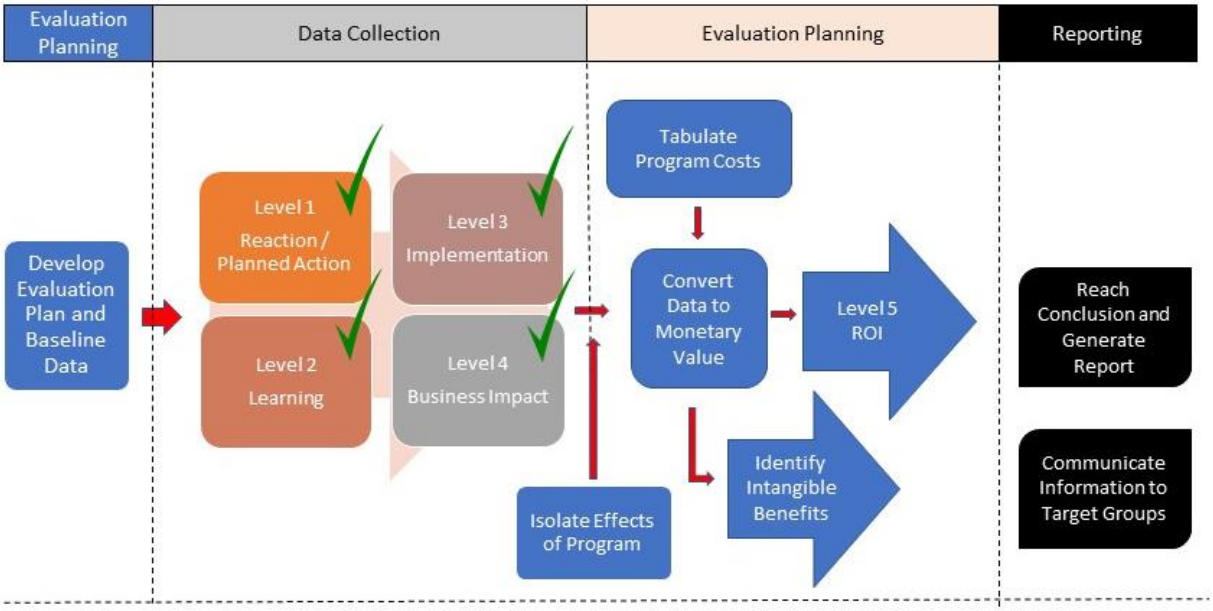

Figure 1. ROI Model adopted from Phillips model as well as 'Learning from Errors' by Davey, P., Tully, V., Grant, A., Nathwani, D.

To obtain data for all levels of the Phillips Methodology, SHRF administered surveys to researchers at the application stage, funded stage, annual report stage (one-year post award), and final report stage. Funding applications to the CID program were also analyzed to provide data on monetary values and levels of collaboration, innovation and development.

Most respondents agreed that the CID program would help them be more successful in obtaining subsequent funding (Average = 4.12 on a scale from 1-Strongly disagree to 5-Strongly agree). Without a positive response to the program itself at Level-1, the ability to succeed at Level-2 and beyond would be weakened. At Level-2, building capacity and acquiring new knowledge is important if researchers are to effectively communicate and translate knowledge in the form of early outputs or outcomes at Level-3 (i.e. publications and presentations). There were significant early outputs for the 22 projects funded through the CID program including publications in peer-reviewed journals, published abstracts, other publications, media reports, presentations at conferences, presentations to community or industry partners and patents applied for.

It is important to note the significance of the relationship that exists between Level-3 and Level-4. Early outputs in the form of knowledge translation activities like presentations and publications are essential steps in:

- Seeking and attaining subsequent funding for more research (Level-4 Development);
- Informing stakeholders and decision makers of results (Level-4-Collaboration); and
- Increasing the likelihood of using or implementing new innovations (Level-4 Innovations).

These three objectives are key in funding health research that has the greatest potential to produce health benefits and social and economic impacts. Development is only one of the three Level-4 Business Impacts, which was used to determine the ROI of the CID program. Due to the long-term nature of research, the Innovation measure would not adhere to guiding principle number nine, "Use only the first year of benefits in the ROI analysis of short-term programs". Although individual projects may report cost savings or commercialization opportunities, conversion to dollars were not completed. Several of the intangible benefits were drawn from the level four Innovation area. Collaboration was also not utilized for ROI analysis.

To understand how much real dollars researchers would attribute to the SHRF CID program, we went through a process of isolating the effects of the funding, hence limiting the uncertainties that revolve around this complex topic of attribution. We first asked researchers to identify any secondary and subsequent grants (i.e. leveraged grant dollars) from other sources to be used for or resulting from their CID project. Furthermore, we asked the researchers themselves to provide us with their attribution amounts which they felt would not have been possible without the CID program funding they received. The question asked was: "What percentage of dollars reported would you attribute to your research funded through the SHRF CID program?". Additionally, we asked researchers for their confidence levels on each attributed amount with the following question: "On a scale of 1 to 5, with 1 being not at all and 5 being very, how confident are you in this estimate?" This process and methodology allow us the opportunity to specifically measure attributable impacts of research to the SHRF CID program based on data obtained from researchers themselves and not simply relying on our assumptions.

To ensure the numbers we report on are accurate and representative, SHRF is consistently advancing data collection and methodologies for evaluation and impact assessments, thus reducing the effect of the above-mentioned challenges of measuring the impact of health research.

There were five categories of Development indicators converted to monetary value: program partner dollars; in-kind contributions; secondary funding for research project; subsequent grants and estimated subsequent grants. The methods used to convert Development data to monetary values are presented below.

Findings

The ROI objectives were set for the annual report stage (125 per cent). After loading all costs of the CID program ($818,853), isolating the effects and converting data into monetary values ($2,144,652) detailed in the table below, an ROI calculation was completed.

Total Monetary Benefits		
Program Partner Dollars	=	$60,000
Collaboration (in-kind contributions)	=	$157,814
Secondary sources of leveraged research dollars	=	$367,715
Estimated-subsequent leveraged research dollars	=	$440,667
Attained-subsequent leveraged research dollars	=	$1,118,456
TOTAL	**=**	**$2,144,652**

Return on Investment (ROI %)
At the final report stage, an ROI of 162 per cent means that the costs of the CID program were recovered and an additional 162 per cent of the costs were returned.

$$\frac{\textit{Net Monetary Benefits x 100}}{\textit{Program Costs}} = \frac{\textit{(\$2,144,652-\$818,853) x 100}}{\textit{\$818,853}} = \textbf{\textit{162.0\%}}$$

Benefit-Cost Ratio (BCR)
At the final report stage, for every dollar invested in the CID program $2.62 in benefits was returned.

$$\frac{\textit{Monetary Benefits}}{\textit{Program Costs}} = \frac{\textit{\$2,144,652}}{\textit{\$818,853}} = \textbf{\textit{2.62 : 1}}$$

There were several non-monetary benefits coming out of the CID program. Data was accessed via final report. Intangible benefits were organized using the CAHS Framework, showing potential alignment with the Phillips ROI Methodology. From project specific results to improvements in the research environment and/or system, intangible benefits included: increased capacity of students, research labs and research infrastructure; contribution to advancing knowledge and potential scientific advancements; participation of non-academic collaborators and the potential to bring new knowledge into practice; and potential health and socio-economic benefits.

Conclusions

This ROI study is at the program level and would be considered relatively conservative. Understanding that returns on investment in research are often not realized for years after a project is complete, there is potential for the ROI of the CID program to increase over time. It is also likely that if analysis was performed at the project level with appropriate follow-up, a much higher return would be realized. Several of the intangible benefits at the project level would be potentially ready to convert to money, lending credibility to the idea of combining the use of evaluation frameworks/methodologies. Lastly, the CID program provides short-term seed funding for new innovative research.

Follow-up investment to capitalize on new knowledge via additional research, commercialization or implementation may further take advantage and increase the returns from the CID program. Considering that the overall nature of research is to advance knowledge and innovate, there are multiple layers of influences that exist which make it difficult to attribute impacts of research to one specific study. However, using the ROI Methodology and understanding the multiple layers of influences, uncertainties and assumptions, has allowed SHRF to successfully attribute research impacts to its CID program.

The Phillips Methodology for measuring ROI used in this study is an effective tool to evaluate the investment in health research and compliments other work SHRF has done in the area of research impact assessment using the CAHS Framework. Using the Phillips ROI Methodology has advanced health research impact assessment in two important ways. First, the Methodology takes administrative costs and grant dollars awarded into account. Second, it provides a more accurate and credible way to measure partnered, in-kind and leveraged dollars.

SHRF has aligned all its funding programs to collect data at application, annual and final report stages to reflect the methodology used in this case study. The Phillips ROI Methodology will add to the options funders have to measure ROI and demonstrate how investing public dollars in health research improves the functioning of health systems and ultimately broader health, social and economic impacts.

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SHRF's investments in research will contribute to the improved health of Saskatchewan citizens through a high performing health system with a robust culture of health research & innovation.

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