

New Brunswick
Health Research
Foundation



Fondation de la
recherche en santé
du Nouveau-Brunswick

Economic Impact of Health Research

and the
New Brunswick Health
Research Foundation

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February 2020



Economic Impact of the NBHRF

In the previous (Phase 1) report, the 10-year (2008 - 2018) economic impact of NBHRF on the provincial economy was explored. In this report, a more recent five-year time frame (2014 - 2018) is used as the basis for characterizing the NBHRF's current impact on the health research enterprise and the Provincial economy.

Impact Model

Figure 1 depicts the logic model¹ previously developed to describe the short and longer term pathways through which the NBHRF contributes the Provincial economy. In this model government investment in the NBHRF produces short term direct and indirect economic outputs in the form of employment (salaries and benefits), purchases of goods and services and associated government tax revenue. It also produces longer term (i.e., 20+ years) benefits in the form of:

- Labor force impacts, including a better educated, healthier and more productive workforce.
- Cost savings associated with improved treatments and better management of the health care system.
- Private sector commercial activity, and
- General social benefits due to a reduced burden of illness.

The longer-term benefits of health research have a far greater economic impact than the short-term contributions of the health research enterprise. However, the quantification of longer-term benefits is complex and difficult to frame for the purpose of economic analysis. Therefore, as in Phase 1, the impact model is used primarily to characterize the shorter-term impacts of NBHRF on the health research enterprise and the Provincial economy.

¹ For a more detailed description of the NBHRF economic impact model, please see the Phase 1 report.

NBHRF Benefits Model

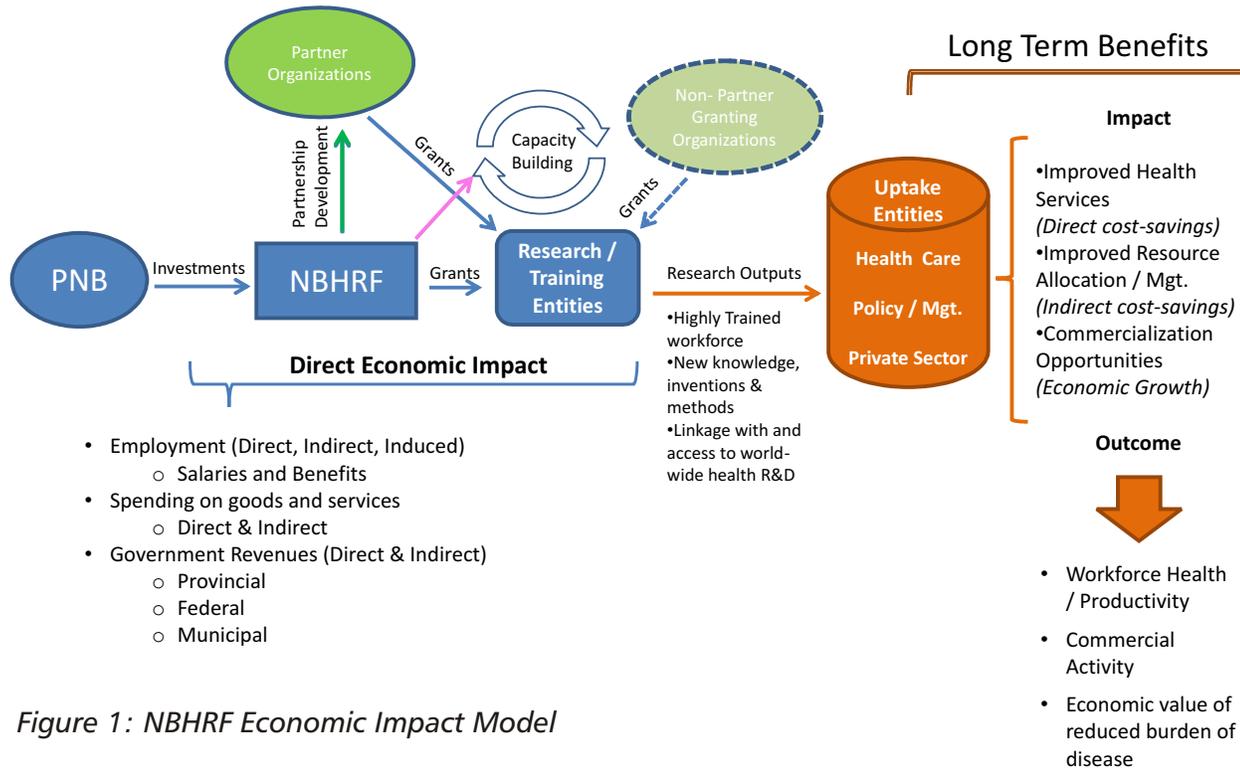


Figure 1: NBHRF Economic Impact Model

NBHRF Health Research Investments

As discussed in the Phase 1 report, GNB investments in the NBHRF are used to a) directly provide research grants and awards, b) to provide 'partnership' funding to attract investments from non-GNB funding sources, and c) to fund the 'administrative' operations of the NBHRF including partnership development and capacity building activities. Figure 2, shows the level of investments in these categories between 2014 and 2018, and the resulting annual totals.



NBHRF and Partner Investment Year over Year

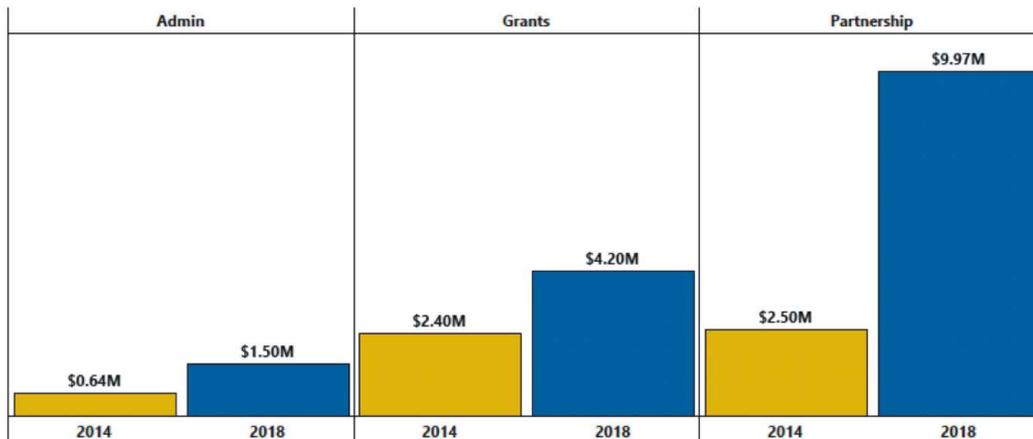


Figure 2: NBHRF and Partner Investment Levels, 2014 – 2018

Between 2014 and 2018, direct expenditure by the NBHRF (Admin plus Grants) increased by almost 90% (from about \$3 million to \$5.7 million). At the same time, funding from Non-GNB partners (Partnership) increased by almost 300% (from roughly \$2.5 million to \$10 million). By 2018, total NBHRF associated (direct expenditure plus partnership funding) health research investments had reached \$15.6 million.

NBHRF Contribution to Health Research Funding

Previously it was estimated that GNB funding, through the NBHRF, represented about 23% of the roughly \$20 million health research enterprise. However, that estimate did not account for the NBHRF's role in securing health research investments through partnerships with other funding entities. As shown in Figure 2, when partnership funding is taken into consideration, the true scale of the NBHRF's impact on the health research enterprise becomes much larger. On average, between 2014 and 2018, NBHRF associated health research expenditures totaled approximately \$9.5 million annually or roughly half of the entire health research enterprise.

Total NBHRF Investment



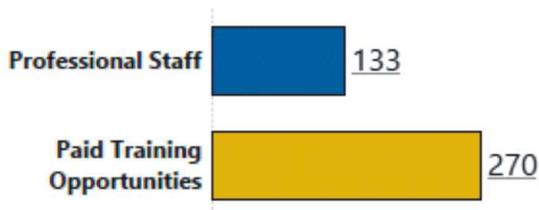


NBHRF Associated Job Creation

Based on metrics defined in the Phase 1 report it can be estimated that, on average, between 2014 and 2018, the NBHRF contributed to:

- The injection of \$6.9 million in salary and benefits annually,
 - \$3 million of which went to paid research training opportunities.
 - \$3.9 million of which went to professional employment in health research.
- The creation of 270 paid training opportunities annually.
- The support of at least 133 professional research positions annually².

Annual Jobs Created/Supported through funding



NBHRF Associated Investments in Goods and Services

Based on the expenditure patterns observed for health research in general, it can be estimated that between 2014 and 2018, NBHRF associated funding accounted for roughly \$2.6 million in goods and services expenditures annually, including:



² The job impact estimates are conservative, since the metrics derived from the Phase 1 report primarily reflect the impact of research grants and awards and do not fully account for the roughly 5 FTEs of professional employment associated with the operation of the NBHRF.



NBHRF Associated Government Revenue

Using the metrics developed in previous sections, it can be estimated that, on average, between 2014 and 2016 NBHRF associated investment in health care research generated approximately:

- \$.44 million in direct income tax revenue annually³
- \$.17 million in indirect income tax revenue annually
- \$.52 million in direct HST revenue annually
- \$.07 million in indirect HST income annually

NBHRF Return on Investment

Simple Return on Investment

The purpose of GNB investment in the NBHRF is to stimulate and support the health research enterprise. Therefore, the appropriate metric to assess government's return on investment is the proportion of health research expenditures that can be attributed to the activities of the NBHRF. As previously noted, it is estimated that between 2014 and 2018, NBHRF associated health research funding totaled approximately \$9.5 million annually. During this period, GNB investment in the NBHRF totaled approximately \$3.26 million annually. The return on this investment can be calculated as follows:

$$((\text{Total Health Research Funding}) - (\text{GNB Investment}) / (\text{GNB Investment})) * 100$$

Based on this formula, average ROI for recent years is: $((9.5 - 3.26) / 3.26) * 100 = 191\%$ ⁴

In other words, **for each dollar invested by GNB an average of \$2.91 dollars was provided to NB researchers.**

Net Return on Investment

Given that health research expenditures generate relatively immediate tax income for government, a 'net' ROI can be calculated by subtracting tax income from the total GNB investment. Depending on whether indirect tax revenue is considered, the average Net ROI for the recent years is estimated as follows:

³ This estimate uses the mid-point of the range discussed in section 1.6.1

⁴ The significant difference between this estimate and the 10-year ROI calculated in the phase 1 report is due to the more recent time period employed above and the substantial increase in partnership funding achieved in recent years.

a) Direct tax revenue only:

$$\frac{((\text{Total Health Research Funding}) - (\text{Net GNB Investment}))}{(\text{Net GNB Investment})} * 100$$
$$\frac{((9.5 - (3.26 - .96))}{(3.26 - .96)))} * 100 = 307\%$$

In other words, when direct tax revenue is considered, **for each net dollar invested by GNB an average of \$4 dollars was provided** to NB researchers.

b) Direct plus Indirect tax revenue:

$$\frac{((\text{Total Health Research Funding}) - (\text{Net GNB Investment}))}{(\text{Net GNB Investment})} * 100$$
$$\frac{((9.5 - (3.26 - 1.2))}{(3.26 - 1.2)))} * 100 = 361\%$$

In other words, when both direct and indirect tax revenue is considered, **for each net dollar invested by GNB an average of \$4.6 dollars was provided** to NB researchers.

Extended Return on Investment

A key consideration with respect to understanding government's return on investments in the NBHRF is the question of how much of the current \$20 million annual expenditures in health research can be attributed to the work of the NBHRF. The preceding ROI calculations consider both NBHRF funding and the expenditures by partner organizations to be part of the economic output associated with the activities of the NBHRF.

It can also be argued that some proportion of the roughly \$10.5 million in 'non-partnered'⁵ health research funding expended annually could be associated with the work of the NBHRF. The NBHRF's capacity building activities are designed to build and strengthen the capacity of NB researchers and research organizations to compete for research funding on the national and international stages. If NBHRF capacity building initiatives contribute to independent success at these levels, it is reasonable to associate some of the portion of the funding independently obtained by NB researchers with the economic impact of the Foundation.

A sample of NB researchers were recently surveyed to explore the extent to which support from the NBHRF may have contributed to their success in securing funding independent of the NBHRF (i.e., non-partnered funding). Researchers were asked to rate the extent to which they believe that funding or other forms of support from the NBHRF had helped them to be successful in obtaining research funding from sources other than the NBHRF. The response options and results for those who responded were:

⁵ Non-partnered funding is funding that is obtained without direct NBHRF involvement.

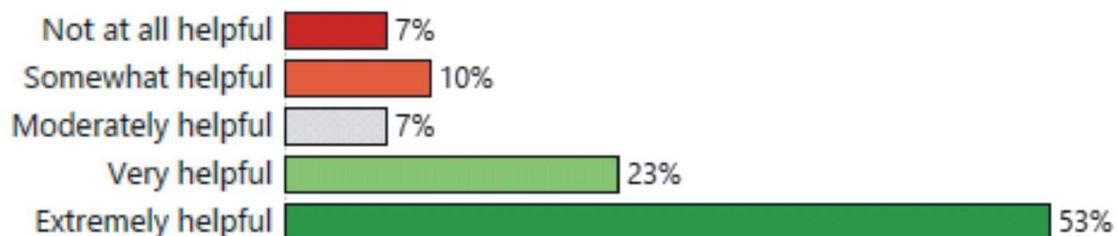
⁶ December 2019 – January 2020

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What extent have funds or support from NBHRF helped in a researcher's success (n = 30)



Although the survey sample is not large, the majority of respondents (76%) indicated that NBHRF support had been very or extremely helpful in assisting them to independently obtain funding from other sources. Comments provided by respondents included:

Not only was NBHRF support extremely helpful, it was essential. Bridge grants and travel awards have enabled me to secure national funding from the Leukemia and Lymphoma Society of Canada

My first NBHRF grant was worth \$20,000 and led to a \$150,000 grant. This then kick started my research career. Since then, I have secured over \$1M/year in research funding. Much of this success can be traced back to my first NBHRF grant.

Les différentes subventions aident à recruter des étudiants chercheurs post-doctorants de calibre international. Elles servent aussi à démarrer des projets qui permettent éventuellement d'aller chercher des fonds beaucoup plus importants d'organismes fédéraux. Par exemple, une subvention bridge de 25 000 \$ m'a permis de décrocher une subvention de 225 000 \$ de la société Alzheimer Canada. Une autre subvention bridge de 35 000 \$ m'a permis d'aller chercher une subvention projet des IRSC de 820 000 \$.

There is no objective means of precisely calculating the extent to which NBHRF support enables researches to be more successful in obtaining funding from non-partnered sources. However, the above findings suggest that it would not be unreasonable to infer that somewhere between 10% and 20% of the roughly 10.5 million in non-partnered funding currently invested in health research could be associated with the work of the NBHRF.

Recalculation of the NBHRF's net ROI, using a 10% and 20% estimate of the impact of the NBHRF on non-partnered funding success, yields the following results:

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@ 10%

$$\begin{aligned} & ((\text{Total Health Research Funding}) - (\text{Net GNB Investment}) / (\text{Net GNB Investment})) * 100 \\ & ((10.6 - (3.26 - .96) / (3.26 - .96))) * 100 = 360\% \end{aligned}$$

@ 20%

$$\begin{aligned} & ((\text{Total Health Research Funding}) - (\text{Net GNB Investment}) / (\text{Net GNB Investment})) * 100 \\ & ((11.6 - (3.26 - .96) / (3.26 - .96))) * 100 = 404\% \end{aligned}$$

In other words, depending on the extent to which the work of the NBHRF is believed to contribute to researchers success in obtaining non-partnered funding, GNB return on investment in the NBHRF could be as high as five dollars for every dollar invested.

Note that the preceding ROI calculations use only the direct tax revenue to arrive at the net GNB investment. If one were to incorporate the indirect tax revenue amounts, the ROI would be approximately 468% or \$5.68 in health research investment for every \$1 invested by GNB.