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Innovative outcomes-based funding models: Impact Canada

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PD WEEK 2022

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Introduction to the Impact & Innovation Unit (IIU)



The IIU is working to close the gap between policy development and implementation and seeks to create greater public value in all of its work.

The IIU leads Impact Canada, a Cabinet-approved, whole of government framework for scaling-up and mainstreaming outcomes-based policy/program methods (e.g. challenges, pay for results and behavioral science), incentivizing new multi-sectoral partnership models, and developing impact measurement tools.

Challenges/Pay-for-Success: Since 2017, the IIU has experienced rapid growth with 28 active or completed outcomes-based funding projects worth over \$725 million - spanning economic, environmental and social policy domains.

Behavioural Science: It also designed and completed a significant portfolio of behavioural science projects and research, mainly focussed on informing the government's COVID response.

In general, this work is supported by:

- A multidisciplinary, specialized team in PCO (~20 FTEs) in key business lines supported by policy and engagement functions;
- First-of-its kind set of [Terms and Conditions](#) for outcomes-based funding;
- The Impact Canada Fellowship program to recruit external experts in behavioural science and challenges-based methodologies; and
- The [Impact Canada](#) platform to serve as a public engagement vehicle and an integrated, back-end program management tool.

Established in 2017, Impact Canada addresses identified gaps in effectively translating policy objectives into meaningful and measurable outcomes

Policy and Implementation Gaps

Ongoing and persistent frustration with how to implement political priorities and demonstrate progress on outcomes

Complex problems cannot be addressed by a singular department/mandate. Most GC institutions not designed to be fit for this purpose

Limited ability to tailor policy responses. Identified need to expand government's funding toolkit to pay on outcomes – previously not permitted under expenditure management approach



Impact Canada's Functions

Impact Canada creates a mechanism for collaboration between sectors, strengthening ties with industry to solve problems and address innovation market gaps.



Impact Canada creates a Cabinet and TB-approved mechanism to work centrally, not bound by departmental mandates, nor encumbered by traditional constituencies of stakeholders or funding recipients with set expectations



Impact Canada has made-in-Canada outcomes-based implementation methods, that establish a clear link between funding and measurable outcomes.

Impact Canada's funding methods focus on more effectively deploying Grants and Contributions – a traditionally under-optimized, yet highly influential lever

💰 Most federal program spending is subsidy-based, typically used to respond to stakeholder demands

🎯 Impact Canada uses outcomes-based funding, shifting focus from paying for expenditures/activities to rewarding achievement of outcomes

-
- | | |
|---|---|
| <ul style="list-style-type: none">• Very difficult to demonstrate progress on a policy objective• Ineffective in market-building or incenting breakthrough solutions, which require high risk, high reward systems | <ul style="list-style-type: none">• Clearer demonstration that funding has led to concrete outcomes• Greater policy and program coherence, as well as transferability across sectors and departments |
|---|---|

Challenges are:

- an open innovation approach, designed to crowd-in ideas and solutions from a broad range of actors and sources to expand the Government's problem-solving abilities.
- an effective method to tackle problems where solutions are not apparent, or current responses are not achieving the desired results.
- an outcome-based tool, providing financial and non-financial awards to innovators only if and when they can measurably improve on a given outcome.

Impact Canada's horizontal Terms and Conditions enable the use of different Innovative Funding Models

Innovative funding models permitted using Impact Canada Terms and Conditions include:

- Prizes and Challenges
- Pay-for-results
- Micro-funding
- Impact Canada partners use both Grants and Contributions to fund their programs and prizes
- Over the last 5 years, the majority of departmental interest and strategic direction has been in the use of Challenge Prizes to advance outcomes, and open up the problem solving process to more Canadians.
- There are currently almost 30 challenges completed, underway or in planning, and 1 pay-for-results project


The Impact Canada Initiative terms and conditions are built in a flexible manner to support departments in their experimentation with prizes, challenges, micro-funding, and other outcomes-based and innovative programming approaches. Through the support of the Centre of Expertise in the Privy Council Office, new program streams as well as individual departmental projects from pre-existing Treasury Board approved programs will be co-designed with departments and will apply rigorous evaluation methods to measure their impact.

Challenges

Accelerating implementation of top line government priorities

Since 2017, supported by a multidisciplinary team, the Fellowship Program, whole of government T&Cs for outcomes-based funding, and the Impact Canada platform, Impact Canada has grown to 30 challenges valued at over \$735M.

Legend

-  Completed
-  Fellowship-supported

					
Women in Cleantech Natural Resources Canada • 2018-2021	Power Forward Natural Resources Canada • 2018-2022	Crush it Natural Resources Canada • 2018-2021	Green aviation fuel Natural Resources Canada • 2019-2022	Cross-Canada Flight Natural Resources Canada • 2019-2022	Charging the Future Natural Resources Canada • 2019-2022
\$6.37M	\$11M 2 streams	\$10M	\$13M	\$1M	\$4.5M
					
Indigenous Off-Diesel Natural Resources Canada • 2019-2023	Oil Spill Natural Resources Canada • 2021-2024	Afri-Plastics Global Affairs Canada • 2021-2023	Hull Design Efficiency Atlantic Canada Opportunities Agency • 2018-2021	Food Waste Reduction Agriculture and Agri-Food Canada • 2020-2023	Deep Space Food Canadian Space Agency • 2021-2024
\$27.5M	\$10M	\$20M 3 streams	\$0.5M	\$20M 2 streams	\$1.08M
					
Deep Space Healthcare Canadian Space Agency • 2021-2024	Opioid Drug checking Health Canada • 2018-2021	Smart cities Infrastructure Canada • 2017-2025	Indigenous Homes Indigenous Services • 2019-2023	Housing Supply CMHC • 2020-2024	Alternative to Youth Suspensions Public Safety Canada • 2021-2024
\$2.85M	\$1.75M	\$254M 2 streams	\$40M	\$300M 6 streams	\$4.5M
<div>Diabetes Prevention Health Canada • Coming Soon • \$10M 2 streams</div>					

In addition to project level results, we are seeing progress at systems level change.

- 1

Operational transparency and democratization of decision-making (design, assessment and adjudication) e.g. Deep Space Food
- 2

Addressing innovation market gaps to stimulate private sector engagement with public funding and commercialisation of solutions that meet gaps and needs e.g. bio-jet fuel production
- 3

Creative partnership strategies including co-design to incentive innovation to increase relevance, engagement and transparency e.g. Indigenous Homes Innovation Initiative
- 4

Attraction of non-traditional government partners and applicants to public funding programs e.g. Drug checking technology
- 5

Data-driven communications and engagement strategies

Impact Canada takes a four-pronged approach to enabling innovation with federal partners

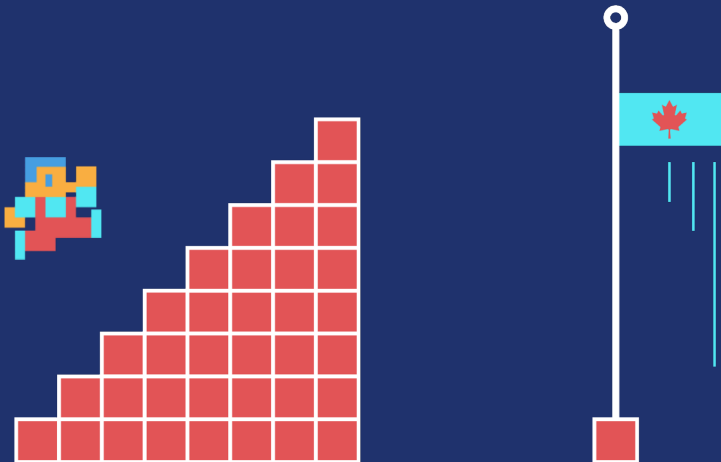


Approved in TB Sub

- Terms and Conditions
- Centre of Expertise: Providing technical support for the research, design, delivery and assessment of challenges and other pay-for-results projects

Developed to meet needs/build capacity

- Impact Canada digital platform
- Impact Canada Fellowship Program: External recruits with technical expertise, hired and mentored by PCO and placed in partner departments to advance projects



Impact Canada's horizontal Terms and Conditions enable outcomes-focused innovation using Transfer Payments

The terms and conditions apply the following exceptions to the Treasury Board Directive on Transfer Payments:

- The requirement in section 6.2.1 for ensuring that the amount of a proposed grant or contribution is at the minimum level required to further the attainment of the objectives of the transfer payment program and the results expected from the recipient, and that the amount is appropriate taking into account other sources of funding available to the recipient.
- The requirement in section 6.2.2 for a stacking limit where funding is not dependent on eligible expenditures.
- The requirement in section 6.4.5 for obtaining timely accounting from recipients.
- The requirement in section 6.4.7 for ensuring that the total amount of contribution funding paid to a recipient under a funding agreement does not exceed the eligible expenditures actually incurred by the recipient in completing the project, or such portion of these expenditures that was to be funded under the agreement.

Grants and contributions vote and budget: For program streams (new programs which run multiple challenges) the grants and contributions vote and budget are listed in the Program Stream Annexes. For Individual Departmental Projects, the Minister(s) of department(s) that successfully apply under the ICI and use the terms and conditions will be designated as the lead Minister(s) for individual departmental projects, having the authorities to make grants and contributions provided by the applicable authorities of that department. Departments must obtain Treasury Board approval to increase the size of the existing grant and contribution program that would be used as a source of funds for an individual departmental project.

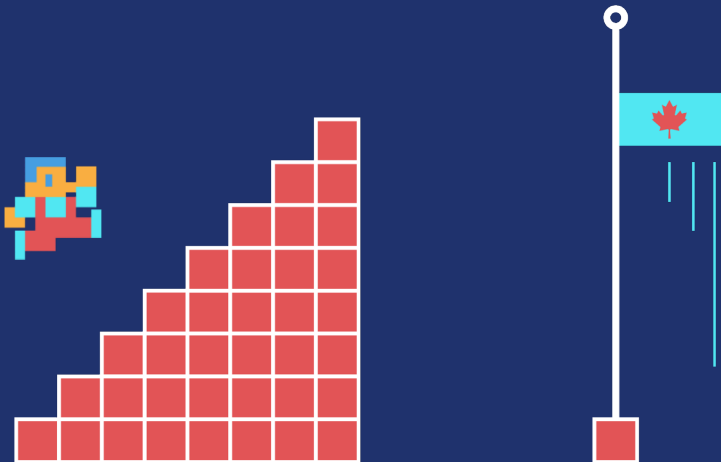
The Impact Canada platform is a one-stop shop for our partners, clients and innovators, enabling communication, implementation and data collection

Public-facing

- Strength of **Impact Canada brand**
- Present GoC as a different kind of **partner**
- Attract **new talent and innovators** to solve Canada's most complex problems
- Increase **public engagement and transparency**

Government-facing

- Address **unmet needs and capacity gaps** of partner departments
- Provide in-house service delivery, including a **comprehensive suite of tools**, that is **customized and responsive to clients needs**
- Support **back-end implementation**, including application intake, review, and evaluation
- Facilitate **data management** for challenge implementation and impact measurement



“We have been successful in driving strong public and stakeholder engagement by building a brand that is inclusive and relevant to the public.”

Impact Canada Challenge Hub



Coming soon

 Public Health Agency of Canada

Type 2 Diabetes Prevention Challenge



In selection

 Natural Resources Canada

Oil Spill Response Challenge

<https://impact.canada.ca/en/challenges/oil-spill-response>

Solutions generated under Impact Canada Challenges are helping to solve complex and persistent problems

Addressing fentanyl overdose through accessible, accurate and affordable drug checking technology

- The **Drug Checking Technology Challenge** was designed to help rapidly address fentanyl poisoning in the drug supply.
- A game-changing device won the challenge, which can accurately and quickly test drugs for multiple substances, including hard-to-detect fentanyl.
- Current technologies collect just one data point to analyze narcotics; the Scatr Series One, collects and classifies hundreds to thousands of spectra in as little as 60 seconds, without destroying the sample.
- The device is more affordable, portable and easy to use, than what is currently available - Integral to getting the devices where they are most needed.

Clean tech solutions for real-world problems targeted at mitigating the effects of climate change

The **Women in Cleantech** challenge was designed to both create space in the market, and incubate women-owned cleantech businesses that developed needed solutions. Clean tech solutions developed include:

- Solar powered boats used for research and monitoring
- Lithium extraction
- **Nanofilms**
- Eco cleaning products
- Solar chemical reactors
- Plastic bag substitute generated from food waste

Finalists have also raised and generated significant funding for their technologies, through loans, awards and capital raise.

Fostering boat design innovation to promote economic growth and protect the environment. The winning solution for the **Hull Design Efficiency Challenge** reduces friction, eliminates hull attachments and uses high-efficiency propellers, which could lead 40- 45% reduction in fuel consumption and therefore, harmful GHG emissions.

Impact Canada's methodology has been designed and refined for the Canadian context

Made-in-Canada innovation: While challenges are practiced elsewhere, Impact Canada's centre of expertise and federal partners help ground approaches in Canadian context – not just innovation or technology for its own sake

1. Democratizing decision-making/increasing trust

While all Impact Canada juries are externally adjudicated, the **Drug Checking Technology Challenge** also opened up both the design and decision-making process to people with lived and living experience, who could truly inform the end use of the solution, increasing participation and transparency in the process.

All but one applicant had never previously received GOC funding.



"The [challenge is] not full of red tape... I think the Minister took a really good approach".

Steve Cody, chair of the jury (via a CBC interview)

2. Creative partnership and governance approaches:

The **Indigenous Homes Innovation Initiative**, led and adjudicated by an Indigenous Steering Committee, with all innovators supported by Indigenous architects and other business supports, spurred new ways to include Indigenous Canadians in decision-making, to raise capital, and to design, build and maintain homes that meet the specific needs of Indigenous communities.



"[It] is a new way of doing business... They're reaching out. It's exciting because we've never been invited before".

Dr. Luugigyoo Patrick Stewart (featured in Canadian Architect magazine)

Impact Canada’s methodology has been designed and refined for the Canadian context (con’t)

3. Well-being for all

The **Smart Cities Challenge** did not replicate US-style approach focused on tech company-driven innovation, but instead focused on communities of diverse size, inclusive capacity building on digital and connected technologies, grounded in privacy and well-being of citizens.

“...Communities across Canada held hundreds of consultations with their citizens and reported on the value of the exercise. Partnerships and collaborations were encouraged and all applicants had internal stakeholders prepared to contribute...”



Sylvie Albert,
Professor at the University of
Winnipeg

4. Addressing inequities

The **Women in Cleantech Challenge** focused not just on clean tech firm acceleration, but in addressing inequities in venture capital space for women entrepreneurs.

“I remember in 2018 the first time I walked through MaRS in Toronto. It gleamed with coolness: the hustle and bustle of innovative companies that were on the edge of greatness or had already made the leap. To me (someone who was building solar-powered robot boats in the corner of her garage in Victoria), it seemed like an impossible chasm to cross. Yet, two years later we have joined those ranks. We have 10 staff, a bustling facility [...], and are working with customers on a number of pilots.”



Julie Angus, Challenge Participant

5. Inclusion/Accessibility

Impact Canada levels the playing field in order to attract new talent and partners. **Deep Space Food Challenge: 74% of applicants had not applied for GOC funding before**



Measuring the Impact of Challenges

Impact Canada challenges are grounded in evidence, and use data to understand and improve in real time



Impact Canada challenges are based on a foundation of advanced research and problem identification.

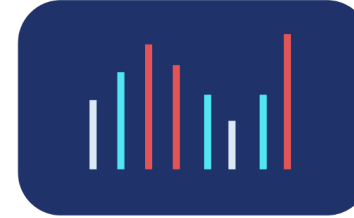


Each challenge has unique and specific technical criteria that is used to test and validate solutions, ensuring rigour in methods and confidence in results.

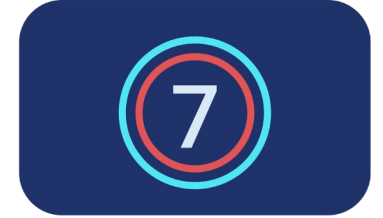


Multiple partnerships to use GC science expertise and infrastructure to assess solutions, for example:

- National Research Council
- Industrial Research Assistance Program
- Marine Testing Facility
- Drug Analysis Service Lab
- Statistics Canada,
- The Naurvik project, a hydroponic food production system in Gjoa Haven, Nunavut.



Demographic data collected through each challenge application, allowing for increased understanding of whether and to what extent challenges are reaching new solvers.



A 7 year partnership with Statistics Canada enabling the use of applicant business numbers and administrative data to track and compare how challenge applicants perform over time compared to similar organizations who don't participate in challenges.

Impact Evaluation and the Logic Model

01

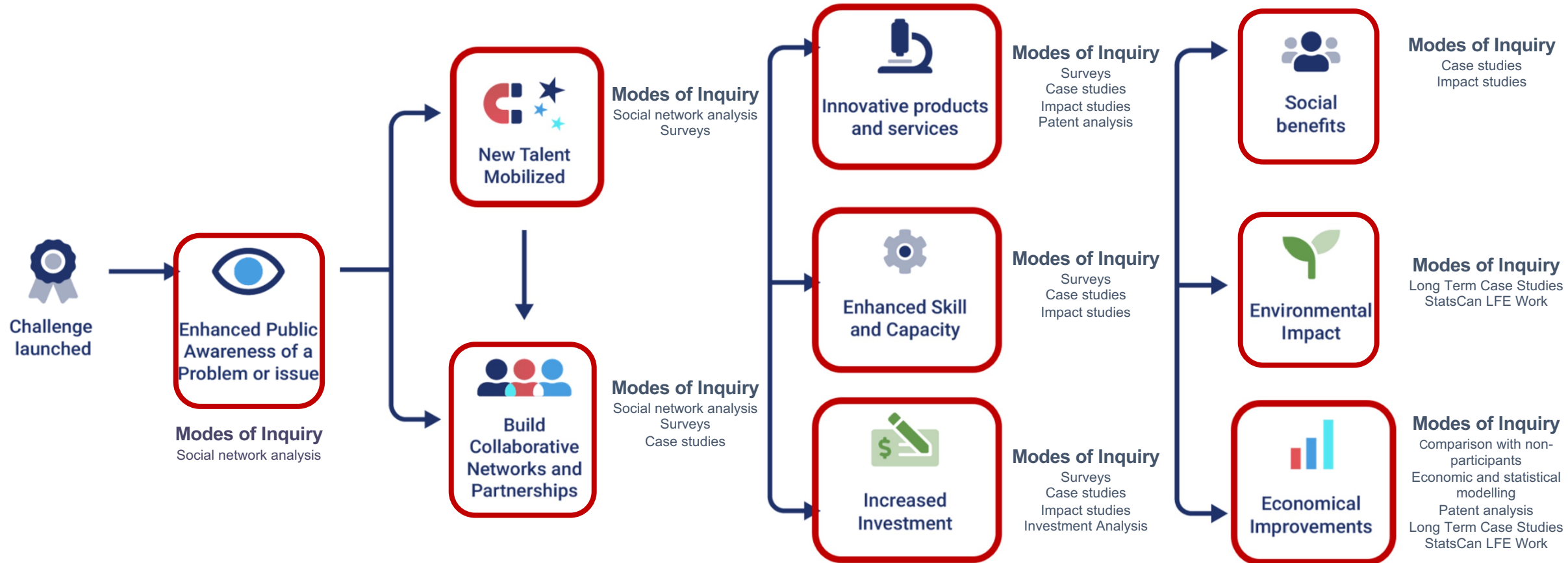
Process
Outcomes

02

Sustainable
Business Models

03

Greater
Public Value



Effective and Efficient Government



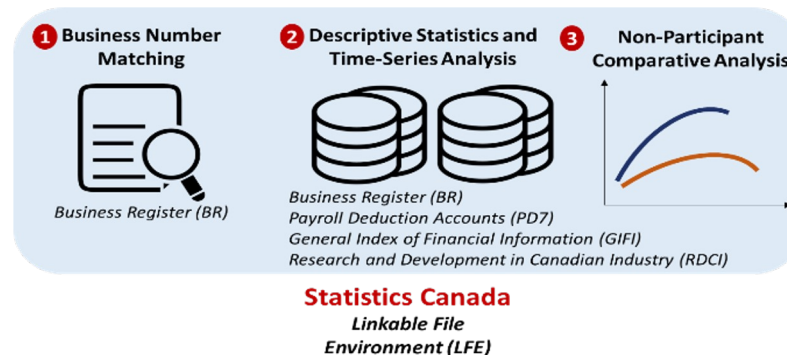
Quasi-Experimental Evaluation with Control Group

Overview

- Without the ability to implement an RCT, the IIU has focused on developing quasi-experimental approaches that can help the unit to measure impact of challenges

Current and Future Work

- Partnership with Statistics Canada to leverage the Linkable File Environment to use administrative data about businesses to measure business and economic outcomes
- Develop a control group to compare challenge participants to similar businesses on business and economic outcomes



Research Questions

- Are challenge participants likely to develop sustainable businesses and how do challenge participants perform compared to similar businesses in the Canadian economy on the following indicators:
 - Business characteristics (e.g. founder demographics, size, years of operation)
 - Economic/Labour indicators: Revenue growth; Employment growth; Wages and salaries growth; Labour productivity growth; Survival rates
 - Innovation indicators: R&D spending



Case Studies

Overview

- Case studies have been employed by many innovation oriented organizations to study challenges including Nesta, Challenge.gov, and Vinnova

Current and Future Work

- The current approach to case studies compares observations about challenges in process against the logic model
- Case studies typically outline the rationale for a challenge, the design of a challenge, initiative objectives, and anticipated results
- Case studies can help examine how Impact Canada challenges affect the *innovation process*
- They can include semi-structured interviews with challenge participants, department staff, and implementing partners

Research Questions

- What aspects of challenges benefited innovators? What aspects of challenges did innovators find constraining?
- Does the challenge structure and design support the generation of innovative solutions and knowledge?
- How have conversations, discussions, and feedback impacted the evolution of participant's ideas?



Surveys

Overview

- Surveys collect information from different types of respondents: challenge applicants and participants, jury members, and departments implementing challenges

Current and Future Work

- Challenge applicants fill a survey at application stage and at the end of the challenge
- Surveys administered in March 2022 to all challenge applicants, partner departments and jurors, as part of comprehensive assessment.

Research Questions

- Who applies to challenges? What are the demographic characteristics
- What incentivize innovators to apply to challenges?
- What types of support do innovators need when developing their solutions?
- What happens to those solutions after the challenge ends?
- What operational support is needed from government to ensure challenges achieve their outcomes?



Social Network Analysis

Overview

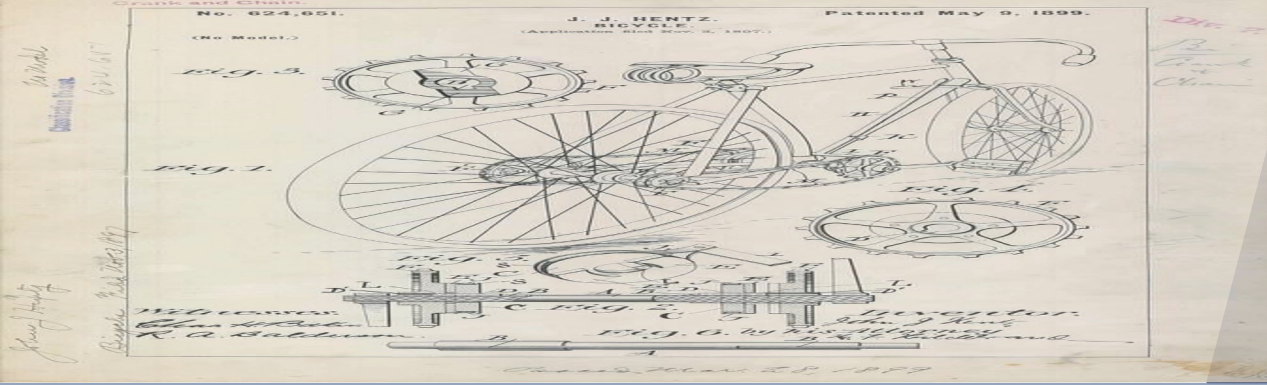
- Social network analysis is a collection of methods and tools that could be used to study the relationships, interactions and communications between actors
- Basic social media analysis could allow the IIU to determine phenomena such as the number of times a post was shared or trends overtime in engagement

Current and Future Work

- Graduate student research project (Simon Fraser University, may-June 2022) - Social network analysis to IIU to measure process outcomes from the logic model around raising awareness as well as the cultivation of networks and partnerships

Research Questions

- Who are challenges reaching and what are the connections between them?
- Which groups and actors are engaging with Impact Canada Challenges?
- What types of networks and connections have formed between challenge participants?
- Are there increase in social media mentions about a particular topic (e.g. food waste)?



Patent Analysis Investment Analysis

Patent Analysis

- This method will examine the impact of challenges on innovation through monitoring the evolution of patents in the problem area
- This approach moves beyond looking at the *number* of patents that a challenge generated and can use natural language processing to assess the innovativeness of new patents in the targeted sector
- Data could likely be obtained from the Canadian Intellectual Property Office

Investment Analysis

- This method will examine the impact of challenges on raising private sector investments and new capital in the targeted sector
- The analysis can look at the time-series of funding rounds, looking at both frequency and volume, as well as type of capital/investment raised
- Data can be extracted from available databases, including open databases such as Crunchbase



Impact Studies and Modelling

Overview

- This approach would help measure the longer-term impacts of challenges on the innovation ecosystem within the problem area and on the deployment of solutions
- Methods will have to be tailored to each challenge and include economic and statistical modelling to help predict long-term economic, social, and environmental outcomes
- It is important to map out the expected pathways to impact for each challenge (theory of change)

Example: Drug Checking Technology Challenge

- Deployment and use of solution by target groups
- Modeling number of deaths averted: impact study can measure mortality rates in areas where solution is used compared to control areas

Research Questions

- Did the challenge help increase the number of innovators and solutions to the problem?
- Where solutions issued from the challenge deployed in the market?
- Are solutions effective? Are they solving the problem?
- What is the long-term impact of the solutions developed through the challenge?

(Select) Findings of a comprehensive assessment of Impact Canada



Comprehensive Assessment of Impact Canada: 2022



As part of its 5-year renewal, Impact Canada recently underwent a comprehensive assessment of relevance, effectiveness and efficiency. Some highlights follow:

Feedback from departments overwhelmingly emphasize the importance of Impact Canada's support **beyond the Terms and Conditions**, with high demand and satisfaction for Impact Canada's center of expertise, fellowship program, resources and Impact Canada portal.

Departments also place high value for **Impact Canada's advisory services** that are viewed as strategic and policy-relevant:

- 71% of colleagues in departments who worked on Challenges agreed that they **would launch additional Challenges with Impact Canada** in the future.
- Impact Canada received a notable **100% satisfaction rating by departments in year 5**.

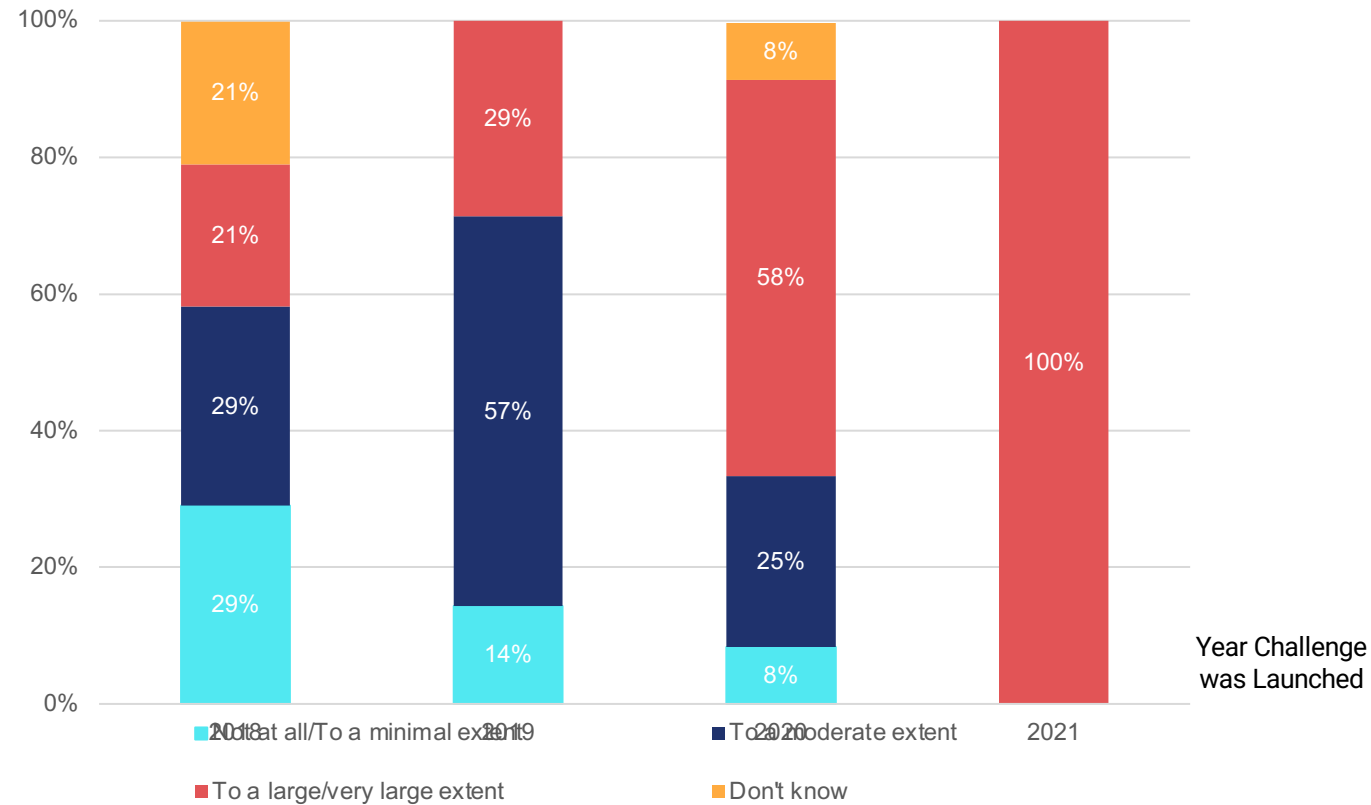
There is a **high level of satisfaction from jury members** with their experience. Most confirmed that they would participate again as a jury member in another Challenge and that they would recommend the experience to a friend or colleague. Department were also largely satisfied with the role of the jury.

There is high satisfaction with the **Impact Canada portal**, with more than 83% of respondents saying they were "satisfied" or "very satisfied."

- Respondents also indicated that when faced with technical issues while using the portal, Impact Canada was very responsive and addressed those issues quickly.
- Jurors expressed high levels of satisfaction with the Impact Canada portal functionalities.

How much departments sought support from Impact Canada

To what extent did your department seek the above support from PCO's Impact Canada?

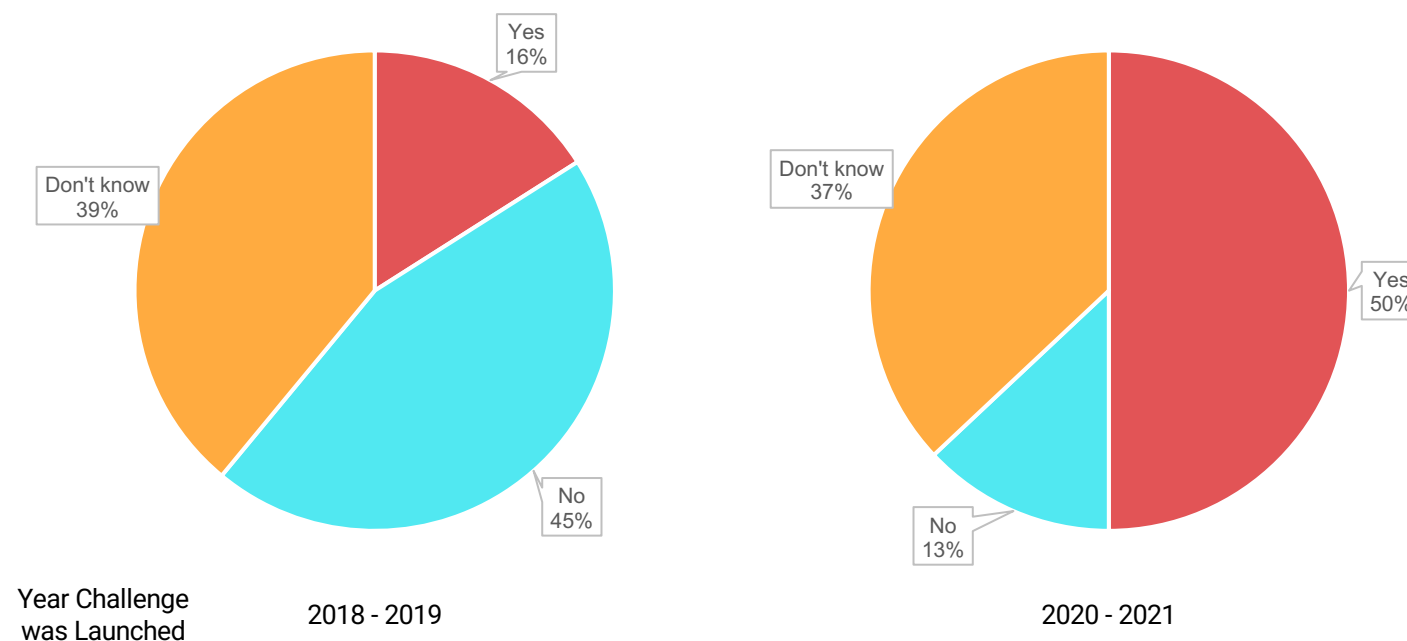


Over the years, there has been an increase in the extent departments have been seeking support from Impact Canada to design and implement Challenges.

Departments that launched Challenges in 2021 were the most likely to report seeking support from Impact Canada (100% reporting to a large or very large extent).

Use of Impact Canada resources and materials

Has your department been using resources/materials developed by PCO's Impact Canada in the planning or development of your Challenge (e.g. Challenge guide, case studies, blogs)?

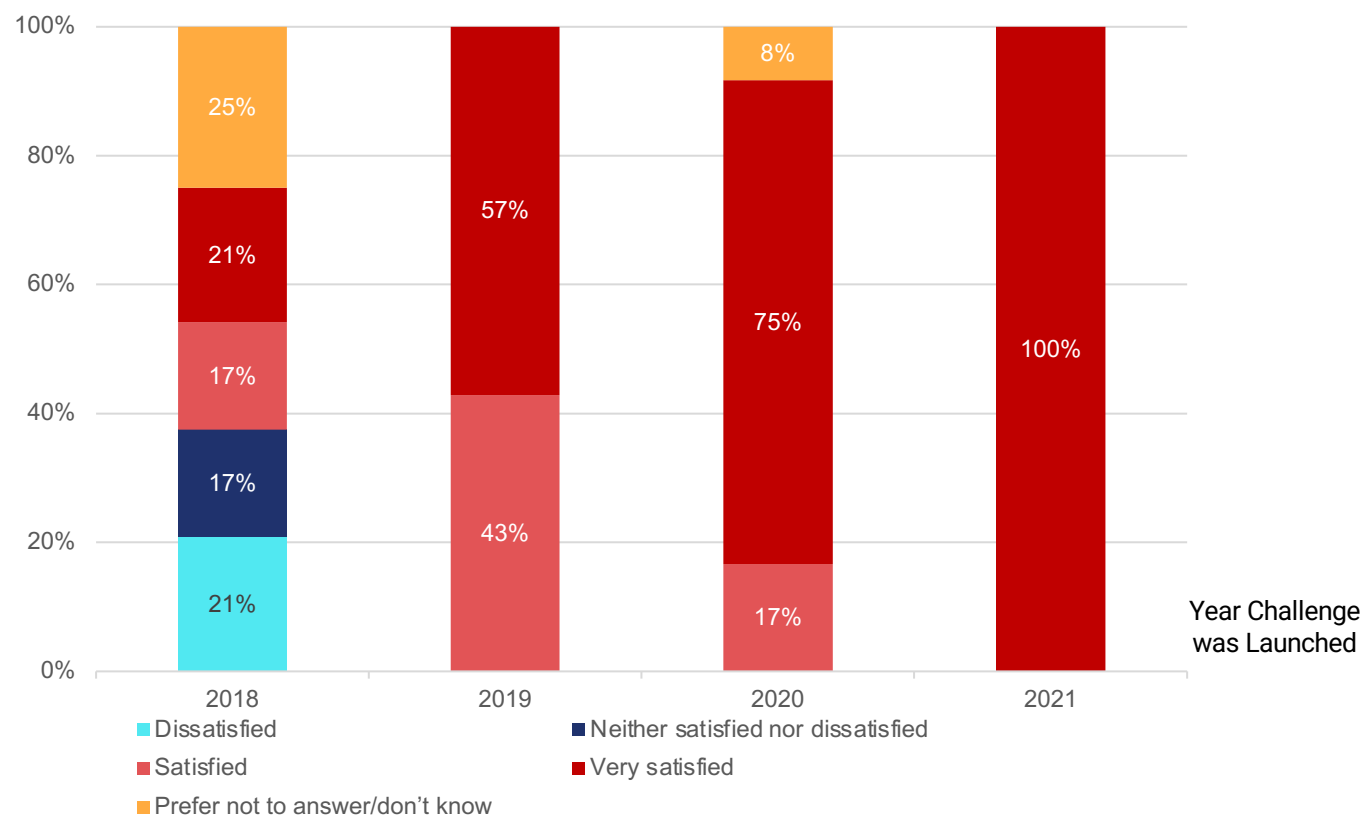


There is a notable increase in the proportion of respondents from departments using resources/materials developed by Impact Canada in the planning or development of their Challenge.

For departments that launched Challenges in 2018 or 2019, only 16% of respondents reporting having used resources/materials developed by Impact Canada. This proportion increased to 50% for respondents from departments that launched Challenges in 2020 or 2021.

Satisfaction with Impact Canada support

13. Overall, how satisfied were you with the support received from PCO's Impact Canada?



Levels of satisfaction with Impact Canada support have been increasing over the years and is higher for departments that launched Challenges in later years.

Overall, 66% of respondents from departments reported that they were satisfied or very satisfied with the support they received from Impact Canada

Departments that launched Challenges in more recent years and departments that have recruited Impact Canada fellows are very likely to be “very satisfied” with support received from Impact Canada



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