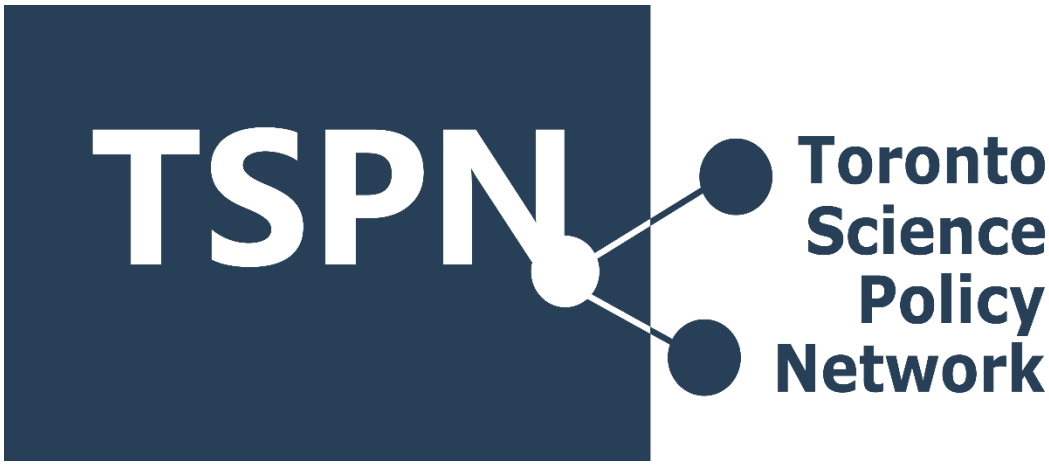
Science Will Lead Canada's Post-COVID-19 Recovery

2021 Budget Recommendations

Prepared by:



The Toronto Science Policy Network (TSPN) is a student-run science policy group at the University of Toronto, which provides a platform for students (graduate & undergraduate), as well as post-doctoral researchers, to learn more about and engage in science policy. TSPN also works to promote and support graduate students in Canada and the use of evidence-informed decision making.

This formal submission is made to Canada's Department of Finance as part of the "Let's talk Budget 2021" pre-budget consultation process.

We wish to acknowledge the history of the lands on which we are each living and working on. We are located on the traditional territory of many nations, including the Mississaugas of the Credit, the Anishnaabeg, the Chippewa, the Haudenosaunee and the Wendat peoples. This territory is covered by the Upper Canada Treaties, and is within the lands protected by the "Dish With One Spoon" wampum agreement. It is now home to many diverse First Nations, Inuit and Métis peoples.

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Statement of Issue

The COVID-19 pandemic has exacerbated existing cracks in our social system. The past year has reminded us of the importance of science and evidence to society, and the need to further invest in building a science culture across Canada. In particular, consistent and increased financial support of graduate students and early career researchers will help Canada recover from the pandemic, and move towards healing some of the issues that have been exposed.

Graduate students and early career researchers are pioneers, and are at the forefront of their fields as researchers and innovators. They are trained to ask questions and explore the boundaries of what is and isn't possible. It therefore comes as no surprise that early career researchers are also leading Canadian innovation and starting new businesses. Notable examples include BlueDot, Sedna Technologies, Structura Biotechnology, Animora, BenchSci, and VitalTracer. Some of these companies (e.g. BlueDot and Structura Biotechnology) have been vital in helping combat the pandemic not just in Canada, but internationally.

The benefits of supporting students and early career researchers is not limited to only academia and higher education, but will in fact have ripple effects across the Canadian economy. Increasing the amount of grants available to students will encourage more Canadians to pursue STEM related careers and improve their financial outlook, as grants reduce the financial barriers and burdens associated with advanced education in Canada. Students undertaking post-secondary education and advanced degrees, such as Master's and Doctoral degrees, are required to not just pay tuition but to forgo earnings, which they could have expected to receive had they directly entered into the job market (1). This invisible glass wall can prevent many from pursuing or even completing their degrees, particularly in times of high economic uncertainty.

Reducing the financial burdens of graduate students provides opportunities for trainees to take advantage of professional training opportunities and internships that will make them increasingly employable. High employment and retention of graduate students in Canada also have long term benefits, as they will be capable of contributing to the Canadian economy with greater tax returns and through their societal contributions to research and innovation in Canada (1). By investing in the development of training opportunities, and increasing the available employment support programs, the Government of Canada can help to increase the retention of graduate students within the country, particularly international students, after degree completion (2).

Despite the important role that graduate students and early career researchers play in the Canadian society and economy, they are often overlooked and under-supported. Previous surveys by the Toronto Science Policy Network (3) and the Science & Policy Exchange (4) have shown how precarious the financial situation is for graduate students and early career researchers. They are not only students and researchers, but are also parents, teachers, essential workers, and caregivers. Survey data shows that many graduate students are worried about their finances (3), and that many more are considering taking a leave of absence or are worried about their ability to complete their degrees (3).

We urge the federal government to support the Standing Committee on Finance's recent recommendation to provide a ***one-time*** increase in support to the Canadian federal research funding agencies (CIHR, NSERC and SSHRC) (5), and to:

1. Expand and increase the creation and subsidization of diverse work experiences to help trainees prepare for a volatile job market.
2. Increase the level of funding allocated to federal graduate scholarships and awards.
3. Extend student loan repayments deferrals through to the end of 2021.

We also urge the federal government to commit to increasing the amount of continued funding support to Canadian science, research, and innovation, and to strive to reach the benchmarks set out 4 years ago by the Fundamental Science Review panel (6) to ensure Canada leads in research and innovation globally, and that this sector will continue to help support Canadians and improve the Canadian economy.

Recommendation 1

As this pandemic has illustrated, scientific growth is best achieved through global effort and collaboration. The COVID-19 pandemic has greatly reduced the ability of young scientists to participate in training opportunities, which provide valuable networking, professional development, and career advancement opportunities. To address COVID-19's impact on the employment of Canadian youth and young adults, **we recommend that the federal government continues to utilize and invest in subsidized work experiences**. These jobs have been proven to increase employability (7), and can provide a valuable resource for young Canadians whose careers and professional development have been impacted by the COVID-19 pandemic.

While the number of individuals pursuing graduate studies across Canada is increasing, the number of faculty positions have declined or stayed stagnant over the years (8), and the interest in academic jobs is also declining (9). Work experience programs provide an opportunity for graduate students to work with Canadian businesses and non-profits to build their own skills. Compared to the US and other OECD countries, Canada invests far less into research and development through the public, private and non-profit sectors (8). We commend the work of the federal government in supporting programs through non-profits, such as Mitacs, which help build connections with Canadian businesses and encourage continued and increasing support of these programs. By March 2021, Mitacs will have supported 15,000 internships that connect students and small-medium size businesses, thanks to additional funding from the Federal Government during the pandemic (10). These internships pay a dual role in supporting and training students and providing wage subsidies for Canadian businesses.

Importantly, subsidized employment particularly increases the survivability of small businesses (11). Small businesses often operate in close margins, and thus wage subsidized work opportunities can lead to increased resilience to the impact of the pandemic, while providing valuable employment opportunities for the next generation of Canadian researchers and professionals.

Recommendation 2

The Government of Canada realizes that there is an urgent need to fill the increasing demand for STEM-related jobs, and is actively encouraging young Canadians to undertake PhDs in these fields, particularly those belonging to historically under-represented communities (12). The majority of research at academic institutions is conducted by graduate students (7). The integral role of graduate students is exemplified recently during COVID-19 through initiatives like OpenCovid (13), to research projects studying how COVID-19 has altered the lives of cancer patients (14). However, we see a wide gap between the language used by the government to encourage students to pursue advanced degrees and the actual support that students receive when pursuing graduate studies. **We recommend that the Government of Canada increase the level of funding allocated to federal graduate scholarships and awards.**

Graduate students receive funding through a combination of departmental stipends, support from supervisor's grants, scholarships, teaching assistantships and non-academic employment. The level of support students receive from these different sources varies across disciplines, schools, and programs. Much of this funding is precarious, or many of these funding packages are below the poverty line (15). The main source of direct federal government support is through scholarships from the three federal research funding agencies. Scholarships offer the benefit of increased salaries, stability and independence compared to funding from supervisor's grants (5). However, the value of the tri-agencies' Canadian Graduate Scholarships and Vanier Scholarships have not increased since 2003 (7) (Figure 1). A study from the University of Toronto Faculty of Medicine indicated that only 19.3% of graduate students can support themselves on their funding package alone (15). Furthermore, a large portion of this funding is often used to pay for tuition. PhD tuition in Canada has increased between 2008 to 2018 by 28% for humanities and 59% for the sciences (16). Coupled with inflation, the current value of federal graduate scholarships simply isn't keeping pace with the increased cost of living and education related expenses.

We recommend that the federal government increase financial support for graduate students by:

- increasing the number of available scholarships;
- increasing the value of the scholarships annually to match inflation;
- providing a top-up to the scholarships of students who live in cities with high costs of living.

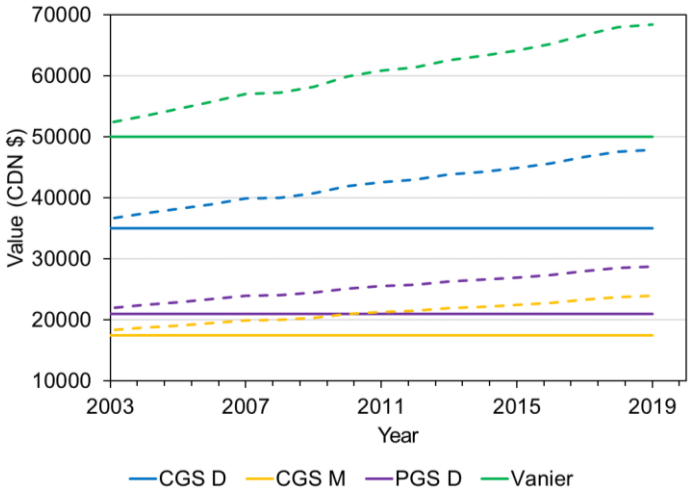

Figure 1. Value of four federal graduate scholarships since 2003. Solid line shows actual value, dashed lines shows the award value corrected with inflation, calculated as the value of award the for the previous year multiplied by (1 + inflation rate). (17)

Recommendation 3

Many post-secondary students and recent graduates, particularly those with student loans, are experiencing great financial stress as a result of the COVID-19 pandemic. When the Canada Student Loans grace period ended in September 2020, many were left wondering how they would be able to pay off their federal student loans (18). This struggle is worsened by the lack of available jobs for new graduates. For instance, seven out of ten surveyed students stated that their summer employment plans were negatively affected due to COVID-19 (19). Due to the difficulty in finding stable employment, **we recommend implementing an interest free loan period for all student loans through 2021 to May 2022**. This would allow students more time to find stable work, and build savings to pay off their student debt.

Being saddled by student loans also means that fewer Canadians will be able to contribute directly to the economy after graduation, and will have an overall reduced likelihood of upward mobility. Having to pay off loans means that students are less able to save for their future (20). In 2015, the average student debt at the time of graduation was $27,000 and $33,000 for master's and doctoral students respectively (21). With the pandemic, we can expect these numbers to increase. To further accommodate those with student loans, we also recommend that the federal government consider increasing the proportion of grants (as opposed to loans). This would alleviate the amount of debt that students have to pay off, particularly among students belonging to historically under-represented groups (19). By alleviating the strain of debt repayment among students and recent graduates, the Canadian federal government can make post-secondary education more affordable, and accessible.

Summary

Continued and increasing support to graduate students and early career research must be an integral part of Canada's COVID-19 economic recovery plan. We strongly support Recommendation 14 by the Standing Committee on Finance to "provide a one-time 25% increase in investment in [the three federal research funding agencies] for research restart and recovery from the setback of the COVID-19 pandemic to research laboratories in Canada" (5). However, the Government of Canada can go further, especially as we have yet to meet the funding recommendations outlined in the 2017 Canadian Fundamental Science Review. The current contribution towards research and development in Canada is severely lacking, in comparison to our OECD allies, including the US (8). We also encourage the federal government to **make long-term changes to financial support for graduate students** by:

1. Expanding and increasing the creation and subsidization of diverse work experiences to help trainees prepare for a volatile job market
2. Increasing the level of funding allocated to federal graduate scholarships and awards.
3. Extending student loan repayments deferrals through to the end of May 2022.

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