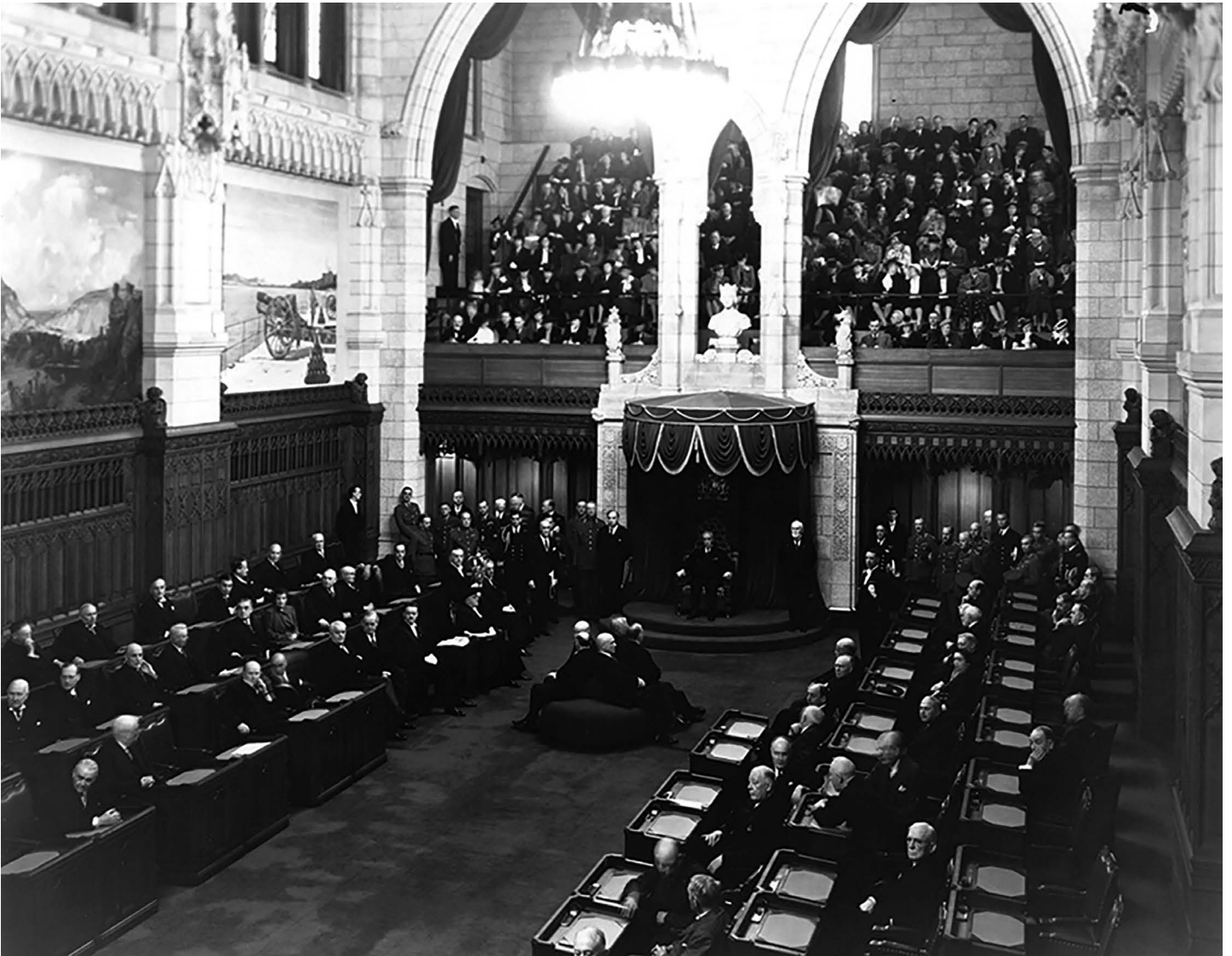


spe café

Your voice matters.
What do you want them
to hear?



REPORT

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Executive Summary

Science and Policy Exchange (SPE) conducted a “*SPECafe: Your voice matters. What do you want them to hear?*” event on April 4, 2019. The goal was to identify key concerns affecting doctoral students and graduates, postdoctoral fellows (PDF), and early career researchers (ECRs). This report summarizes these issues, offers recommendations to Members of Parliament (MP) and provides guidelines for research trainees to advocate for their interests before the government.

Funding

- Concerns
 - Federal funding opportunities and values have only marginally improved in the past decade.
 - Without a scholarship, the minimum stipend of students falls below a Canadian minimum wage salary.
 - Federal funding opportunities for international students are lacking.
- Recommendations
 - Continuing the efforts to meet the standards for graduate scholarship funding recommended by the [Fundamental Science Review](#) (FSR) to allow for an increase in the number of available awards *and* the value of the awards to compensate for inflation.
 - Increasing funding opportunities and benefits for international students.
 - Additional recommendations can be found in the FSR report and in our SPE open [letter](#) to Prime Minister Trudeau.

PhD student & Postdoctoral Fellow (PDF) Labour Laws

- Concerns
 - The classification of PDFs is too broad, having a status that falls between student and worker. As a consequence, benefits can be lacking in many cases.
 - PhD student benefits and labor security are reliant on student associations, as opposed to federally recognized labor unions.
 - Support for mental wellbeing is insufficient.
- Recommendations
 - Regardless of status and source of funding, ensure that all PDFs are met with employee insurance benefits.
 - Providing support for PDFs and PhDs to explore different avenues in academia, private or public sectors by incentivizing Principal Investigators (PIs) to support this effort.
 - Providing easy access to mental health support structures for students and PDFs by ensuring that all universities have a system in place to deal with emergencies (either [outsource therapy](#) and counselling or have mental health professionals available on site) and overall care.

- Providing better pay for trainees, which can be achieved both by raising the value of federal stipends in general or further increasing the number of government awards. In 2019, the Canadian federal government's investment of \$114M to its tri-council agencies has provided some relief, however more needs to be done to at least help a subset of the trainee population.

Professional Development

- Concerns
 - Research trainees perceive a lack of professional development opportunities.
 - There are inadequate incentives for PIs to promote professional development opportunities for their trainees.
- Recommendations
 - Increasing institution support and funding for transformative programs that incentivize the implementation and integration of experiential professional development training in PhD curriculums.
 - Implementing individual development plans (IDPs) early in PhD training and increasing networking opportunities of diverse career paths.
 - Increasing the number and availability of national, provincial, or institution specific immersive initiatives for PhD students and PDFs similar to Mitacs, Government of Canada Natural Resources Canada Post-Doctoral Fellowships, and the John Molson School of Business Life Sciences Entrepreneurial Program.
 - Opening the dialogue between PIs, post-secondary institutions, government, non-governmental organizations, employers, and other stakeholders regarding the employability of PhD graduates, the status of PhDs on the job market and the adaptation of the academic training programs to the evolving job market.

INTRODUCTION

The “*SPECafe: Your voice matters. What do you want them to hear?*” was held on April 4, 2019 to open discussions with the Montreal public, PhD trainees, and Post-Doctoral Fellows (PDFs) on how to engage our provincial MLAs and federal MPs about the current landscape of Canadian science education and policy. The objectives of this *SPECafe* was two-fold: 1) learn about the Canadian government structure and the responsibilities of our elected representatives to their constituents and 2) identify key issues in science policy and brainstorm how to effectively communicate these issues with our local/provincial/federal representatives.

There were approximately 20 attendees, primarily representing current MSc/PhD trainees, PhD graduates, and PDFs from health sciences, natural sciences, and engineering.

The *SPECafe* platform opened a round table discussion based on the following questions:

1. What barriers do you face in your scientific discipline ?
 - a. Are these barriers systematic? At which level ie. institutional, provincial or federal?
2. How can your identified barriers be addressed by the federal government?
3. What are the most effective methods to advocate for your scientific discipline in the upcoming election in the context of the identified barriers?

The following report provides background information and summarizes the key concerns reported by the *SPECafe* participants, along with their recommendations on how to address them.

GRADUATE SCHOLARSHIPS FUNDING

In its [2019 Budget](#), the federal government invested over \$114M over 5 years, with \$26.5M/year allocated to its tri-council agencies: Canadian Institutes of Health Research (CIHR), Natural Sciences and Engineering Research Council (NSERC) and Social Sciences and Humanities Research Council (SSHRC). This amounts to an additional 500 MSc and 163 doctoral scholarships awarded yearly. While the funding increase was applauded by the research community, it represents only two-thirds of the recommended investment proposed by Fundamental Science Review (FSR) 2017 [report](#)¹.

The 2017 FSR report highlighted that in the past ten years, there had been no increase in the number of core graduate awards. This is despite a 38% increase in the number of full-time doctoral students between 2006-07 and 2013-14. Moreover, the value of the Canadian Graduate Scholarship (CGS) awards remain unchanged since their inception in 2003, resulting in a 25% decline in value due to inflation.

In 2018, the *Science & Policy Exchange (SPE)* [National Survey on Graduate Student & Postdoc Funding](#) echoed both the FSR report and the voices of *SPECafe* participants, with 70% of respondents finding it difficult to find funding to study or work in Canada. Ninety percent of respondents (both PhD trainees and PDFs) identified benefits to obtaining financial support through awards and grants rather than from their supervisor. Students also asked for the number of awards to be increased, and that the value of awards should be adjusted to the cost of living per region. Furthermore, 80% of respondents believe that there are not enough awards for international students. After accounting for tuition fees, the average student stipend (without a scholarship) falls to just below [\\$20k/year](#), which is less than a full-time [minimum wage employment in Canada](#), for both MSc and PhD students. While this could be considered acceptable if research trainees were working less than full-time, the reality is that most work a large number of hours as they make up a significant portion of the laboratory workforce. Thus, finding additional income through alternative employment is difficult and often times discouraged. In addition, the majority of trainees report difficulties in [maintaining a healthy work-life balance](#). Therefore, it is not surprising that students turn to government assistance to provide increased funding opportunities for academic research.

With these concerns and observations, we propose the following recommendations to the MPs:

1. Meeting the FSR recommended standards for graduate scholarship funding to allow for an increase in the number of available awards *and* the value of the awards to compensate for inflation.

¹ Written by Advisory Panel on Federal Support for Fundamental Science outlining a comprehensive agenda to strengthen the foundations of Canadian research.

2. Increasing funding opportunities for international students.
3. Additional recommendations can be found in the FSR report and in our open [letter](#) to Prime Minister Trudeau.

PHD STUDENT & POSTDOCTORAL FELLOW LABOUR LAWS: EMPLOYMENT STATUS

Post-Doctoral Fellows (PDF)

According to [Federal](#) and [certain provincial \(eg. Quebec\) laws](#), all PDFs are considered as employees. However, within the broad classification of PDFs, we have at least two (2) different sub classes:

1. Internal PDF
2. External PDF

This classification arises from a PDF's [relationship with their payer](#), wherein internal PDFs are funded by their institute or PI and external PDFs are funded through the government (eg. the three federal granting agencies). As per federal and provincial regulations, all employees have access to various benefits that fall under the [employee insurance \(EI\) program](#) and the [Canada pension plan \(CPP\)](#). Some of the EI benefits include:

1. Temporary income to support unemployed workers when they look for employment.
2. Special benefits to workers who take time off work due to specific life events (illness, pregnancy, caring for a newborn or critically ill, caring for a family member).
3. Standard employment protections: protection for minimum wage; set hours of work; statutory holidays; annual vacation; and access to unpaid parental leave.

According to the 2017 report on [Postdoctoral fellow in Canada - Situations and Actions](#) published by the [Canadian Association of postdoctoral scholars \(CAPS\)](#), internal PDFs are able to access most of these benefits largely due to unionization. However, some institutions prefer defining their PDFs as employees of their supervisor rather than the university. With this, they can claim their rights to federal and provincial benefits but not from the benefits of the institution itself. There have also been cases where universities fail to define their PDFs as either students or employees, thus making it difficult for them to access any benefits. For internal PDFs, unless specified in contracts, it is unclear if they are allowed guaranteed benefits. External PDFs, on the other hand, have no employment benefits unless specified by their funding agency; this is true across the

whole country, except in Alberta. Moreover, external PDFs are not registered as an employee of their institutions thus making it difficult for them to access institutional benefits.

In the past, CAPS has continuously advocated for [employment insurance as a priority](#) for all PDFs. In the proposed [budget for 2019](#) the Federal government allocated \$37.4M over 5 years and \$8.6M per year to federal granting agencies to expand parental leave coverage from 6 months to 12 months for students and PDFs. Additionally, many *SPECafe* attendees raised the concern that the experience gained during postdoctoral training is not identified as relevant 'work experience'. This is especially difficult for trainees who want to transition out of academia to the private or public sector.

With these concerns and observations, we propose the following recommendations to MPs:

1. Ensure that all PDFs are met with EI benefits regardless of status and source of funding.
2. Reconsider the status of PDFs upon entering the job market.
3. Provide support for PDFs to explore different avenues in academia, private or public sectors by incentivizing Principle Investigators (PIs) to support this effort (See [How to Incentivize Principle Investigators to Invest in Student's Professional development](#) Section).

Doctoral Students

In Canada, a "student" is defined as an individual who is enrolled in a qualifying educational program which provides them formal recognition by way of a title, certificate or award. Under this definition, students are entitled to a scholarship tax exemption on their stipends, as well as access to [institutional health plans and other benefits including public transport costs](#). However, a recurrent concern voiced by doctoral students, and again by *SPECafe* attendees, is the lack of [job security upon graduation, low wages, and reduced benefits](#). This aligns with SPE National Survey on Graduate Student and Postdoc Funding, where 66% of the respondents financially supported themselves through part-time teaching or research assistant positions in addition to their research. Students who engage in teaching-related duties are on rare occasions considered employees, and therefore, eligible to form a union as a university employee with teaching duties. More often than not, students are not classified as employees, therefore, cannot unionize and must rely on postgraduate associations to help advocate for their interests. In Canada, [the Canadian Federation of Students \(CFS\)](#)² has been working to ensure that the student's voice on labour laws is fairly represented. Since its inception CFS has [campaigned for many causes](#), including:

² [CFS has local members](#) (student unions and associations) from all provinces, except for Quebec.

1. Health care support for the trans student community
2. Fairness for International Students
3. Reducing tuition fees
4. Sexual and gender based violence

Universities with postgraduate student associations often provide many services and benefits outlined in Labor Laws. However, these services and benefits are conditional to the efforts of the student body, and negotiations with the institution. Possible solutions to alleviate these uncertainties and avoiding situations where their rights may be violated is to provide graduate students a sense of ownership regarding their rights and grant them the status of an employee. [Student associations in the U.S.A](#) and other countries [around the world](#) are reviewing the status of the graduate student. In a landmark move in 2017, the [Swedish government granted employment status](#) to almost all national and international PhD students (those with scholarships were exempted). This decision was made, in part, by the advocacy efforts of [SULF's Association for Doctoral Candidates](#). With this new ruling, graduate students can now receive benefits ranging from sick leave, parental leave, pension rights and the right to unionize. While it is unclear to us whether Canada should adopt this model, this provides a clear example of the potential benefits of considering graduate students as employees.

Currently, even with university services and advocacy from student associations, an emerging and troubling issue raised by *SPECafe* participants was the declining mental health of graduate students. Recent studies have shown that there is an [increase in the incidence of mental illness in graduate students](#) around the world. Students have voiced their concerns about the various stressors such as the pressure to produce, competition, “publish or perish” culture, and the lack of jobs in the labour market as potential factors contributing to poor mental health. [In 2012, presidents and senior administrators](#) from over 36 Canadian institutions met to discuss the roles and responsibilities of universities in assessing and dealing with all aspects of student mental health. Since then various institutions have modified their [mental health programs](#) for the students, however, the [stigma around the condition and the code of silence that surrounds this crisis is still prevalent](#).

SPECafe participants also highlighted that there is a greater need to prioritize the professional development of graduate students as [Canadian Universities are not in a position to hire all the PhDs](#) that Canada generates.

With these concerns and observations, we propose the following recommendations to MPs:

1. Provide ease of access mental health support for students by ensuring that all universities have a system in place to deal with this crisis (Either [outsource therapy](#) and counselling or have mental health professionals on site to help)
2. Increase the minimum wage of graduate students or increase the number of awards granted to national and international students.

Overall, all participants of the *SPECafe* found that clear labour laws are severely lacking for graduate students and PDFs in the areas of employee benefits, funding, and employee rights and responsibilities.

PROFESSIONAL DEVELOPMENT

PhD students largely pursue their areas of study to advance their careers in academia; however, in 2015, only [20% of PhD graduates in Canada obtain tenure-track positions at a post-secondary institution](#). This poses the question: where do the remaining doctoral graduates find employment? Currently, PhD graduates have the lowest unemployment rate in Canada (i.e., [4.1% in 2015](#)), suggesting that PhD holders are competitive job candidates in various job markets. For example, [Conference Board of Canada](#) reports that while 6.8% of PhD graduates from health-related programs are employed as full-time university professors, while 63% are employed in the non-academic sector. Across the border, the [U.S. National Science Foundation's Biennial Survey of Doctoral Recipients](#) reported an equal distribution of science and engineering PhDs in both the private sector (42%) and educational institutions (43%). Alternatively, doctoral graduates from the humanities, education and the social sciences are more likely to be employed in academia. In 2012, the [Canadian Association of Graduate Studies](#) (CAGS) and the [Social Sciences and Humanities Research Council](#) (SSHRC) [reported](#) that 20-30% of graduates will find employment at colleges and universities in their chosen fields³. Transitions into industry are more prevalent in STEM-related disciplines, however, industry related opportunities in the social sciences and humanities (SSH) were found to be more limited.

In order to assess the student perspective of STEM education in Canada, SPE spearheaded a working group of STEM students and experts representing perspectives from academic, government, and private sectors to discuss current challenges and opportunities in Canadian STEM Education. The [2016 SPE "Student perspective of STEM education in Canada - White paper"](#) outlined the concerns faced by STEM students post-graduation including:

1. Unawareness of career options, skills, and experience required to develop or communicate qualification for various job markets
2. Underdeveloped professional skills and training expected by employers, e.g. communication, autonomy, and the ability to take risks
3. Unreliable information to plan an academic path (to evaluate schools, programs, courses, and professors), thus making it difficult to make informed decisions.

Key recommendations from this report included:

³ [The future of the humanities PhD. Policy Options](#)

1. Promote interactivity and interdisciplinarity, to expose STEM students to diverse perspectives for problem-solving
2. Increase direct training in the critical skills that employers expect from STEM students
3. Foster an early awareness of careers and encourage students to form a career plan
4. Develop students' practical skills and professional networks through co-ops / internship programs
5. Promote diverse (not only academic) skillsets in graduate and undergraduate scholarship criteria
6. Track labour market outcomes of students in a centralized and transparent way, to inform policies and students who could then better evaluate the alignment of their academic and career paths
7. Increase teaching support for faculty, to allow more focus on research and mentorship

SPECafe attendees unanimously expressed that doctoral training should involve professional development and opportunities to cultivate transferable and practical skills that can be applied in the job market. In support, the 2018-2019 [SPE National Survey for Graduate Students and Postdoc funding](#) identified that 82% of students placed a high value for outreach/engagement activities and that such efforts should be considered while reviewing funding applications. Additionally, 62% of respondents feel that scholarships and fellowships should be used to prepare trainees for diverse careers. Currently, professional skills development is not considered a priority throughout doctoral training, nor is it actively encouraged. Moreover, pursuing alternative sources of professional training proves to be difficult as most students juggle their research priorities, program requirements, and PI expectations. Participants have also noted that too often, students recognize late in their academic career that a tenure-track position may not be a realistic option, and face challenges in transitioning to the non-academic sector. This includes barriers such as the lack of awareness and exposure to the current job market and the underdeveloped professional networks outside of academia.

Canada has the highest rate of tertiary education within the Organization for Economic Cooperation and Development (OECD) and among the highest rates of university completion⁴. Moreover, in OECD countries, it has been shown that there is a correlation between productivity and the proportion of a country's population holding PhD degrees. Today, various stakeholders (academia, private/public sector, NGOs) are recognizing that doctoral graduates and PDFs are highly trained, skilled, talented, and critical to the Canadian economy. More action is now being taken by stakeholders to better prepare doctoral graduates for the workforce and remedy this so-called "skills gap". For example, the [Council of Canadian Academies \(CCA\)](#) has taken the initiative to appoint

⁴ Science & Policy Exchange Student perspective of STEM education in Canada - White paper

an [expert panel](#) to address issues related to the main challenges that PhD students in Canada face in transitioning to the labour market. Additionally, the recent [Research Canada](#) meeting, [The Future of Health Research in Canada: The Student Perspective](#) with the Parliamentary Health Research Caucus was a positive step in starting the dialogue between researchers, students, and policymakers regarding labour market disparities observed for PhDs and PDFs.

How to incentivize Principle Investigators (PIs) to invest in a student's professional development:

It was clear that *SPECafe* attendees value their education and research. However, many felt that the current training environment is narrowly focused on an [apprenticeship model](#) that is limited to academia and is not conducive to developing competencies in professional and communication skills. Many trainees view this apprenticeship model to be outdated as it does not meet the needs of the growing proportion of trainees looking for alternative opportunities outside academia. (For more detail and recommendations to improve this model see Op-Ed by [Dr. Lisa Young](#) via Policy Options).

Under the current funding assessment model, a PI's success in grant competitions is dependent on the productivity of his/her research team. As a result, the "publish or perish" culture has become rampant in academia, placing pressure on trainees to produce while sacrificing opportunities for professional development. Additionally, a report by The Conference Board of Canada found that many professors are [disconnected from how difficult students find the labour market](#). Four-fifths of students consider competition in the job market as a major source of stress, while only one-third of faculty and counsellors think competition is challenging. Moreover, only 50% of professors surveyed were aware of their limitations and acknowledged that they were not well equipped to offer career advice.

At this time, there is no effective strategy that incentivizes trainees and PIs to integrate professional development programming to their academic training and career planning. Therefore, a strategy proposed by *SPECafe* attendees was to build professional development opportunities within the funding assessment model that hold trainees and PIs accountable. Metrics would include the number or quality of professional development initiatives pursued or completed by trainees. Another avenue that has been more widely implemented across PhD programs is the Individual Development Plan (IDP). The IDP is a planning document that identifies an individual's goals and objectives and can be used as a tool to encourage the iterative process of reflection, defining goals, setting specific objectives, and taking action. Ultimately, the IDP is meant to encourage students to engage in impact goal attainment. For example, at McGill University, the [myPaths Individual Development Plan](#) was implemented in [2016-2017 as McGill University's commitment](#) to expand career-enhancing professional skills of graduate students.

The [Conference Board of Canada](#) reports that post-secondary institutions are now implementing initiatives that focuses on graduate professional skills development. This has the potential to ease career transitions for PhDs. The [report](#) suggests that such initiatives can be classified into three broad categories:

1. Supplementary initiatives: Voluntary workshops, seminars and online resources that are offered in addition to PhD programs.
2. Immersive initiatives: Voluntary programs that allow students to undertake immersive, experiential learning opportunities, such as internships, to develop and apply skills in a non-academic environment.
3. Transformative initiatives: Initiatives or proposals to restructure PhD programs to include integrated professional development training.

Based on these skill-based initiatives, we propose the following recommendations to MPs:

1. Increased institution support and funding for transformative initiatives. Incentivize institutions to implement and integrate supplementary and immersive initiatives in PhD curriculums including IDPs.
2. Early exposure to and networking opportunities of diverse career paths.
3. Increased number and integration of national, provincial, or institution specific immersive initiatives for PhD programming including Mitacs, Government of Canada Natural Resources Canada Post-Doctoral Fellowships, and the John Molson School of Business Life Sciences Entrepreneurial Program.
4. Open dialogue and communication between PIs, post-secondary institutions, government, NGOs, employers, and other stakeholders regarding employability of PhD graduates and adapt training/education programs to the evolving job market.

ADVOCACY METHODS

In 2019, The [Canadian Alliance of Student Associations \(CASA\)](#) published the [results](#) of a comprehensive online survey with 1,000 Canadian students aged 18 to 25. For the upcoming federal election, individuals born between 1980-2000 will represent 37% (8.5 million) of the electorate, of which 1.8 million are currently postsecondary students. Ninety-six percent of students report that it is important to vote, and 93% plan on voting in the 2019 federal election. In summary, students listed the top five priorities to include:

1. Creating good job opportunities for young Canadians
2. Making college and university more affordable
3. Dealing with climate change and the environment
4. Making housing more affordable
5. Improving Canada's health care system

Altogether, these results suggest that Canadian students are not apathetic and are active and engaged individuals who are aware of the current political climate in Canada. This was also reflected by *SPECafe* participants. To advocate for the above recommendations, participants of the *SPECafe* proposed the following methods:

1. **Bringing attention to issues through local media and events.** This can be done in the form of petitions, op-ed articles, social media outreach or local community events.
2. **Collaborating with advocacy groups.** University networks offer a rich ecosystem of thought leaders for which students can form coalitions to advocate for their causes. Furthermore, there exist non-profit science policy, communication and advocacy groups that can help students vocalize their requests such as the *CSPC*, *Broad Science*, *Science Borealis* and *INGSA*. Students can also participate in internships and programs that integrate scientists in policy making.
3. **Communicating directly with policy makers.** This can be done by writing a letter, calling, emailing, or scheduling an in-person meeting with policy makers. When organizing local events, inviting policy makers is also an impactful way to be heard.
4. **Engaging through Social Media.** Using platforms such as [Instagram](#), [Facebook](#) or Twitter have proven successful in the past to advocate for campaigns including [#Students4TheReport](#), [#Scienceadvocacy](#), or [#MarchForScience](#). More information on how to effectively communicate and advocate for issues using social media can be found here:
 - a. [Using Social Media to Advocate for Science](#)
 - b. [The Science of Science Advocacy](#)
 - c. [What early-career researchers can do to advocate for science](#)

When communicating with policy makers, we offer the following recommendations:

1. Clearly state the purpose of communication.
2. Clearly state the desired call to action.
3. Present your issue in a relatable manner. To this effect, personal stories and metaphors are effective methods to connect with policy makers.
4. Invite policy makers to local events. Policy makers can be swayed if they can feel the effects of the issue. This can be expressed in large communal gatherings rallying behind issues. Inviting them to workplaces (labs e.g.) can also display the effectiveness of investments in academic research.
5. Re-establish communications. Policy makers receive requests from many stakeholders and therefore it is important to keep insisting on issues.

Finally, to advocate for science in the upcoming 2019 Canadian federal election, you can participate in the [#VoteScience campaign](#) supported Science & Policy Exchange, Evidence for Democracy, the Toronto Science Policy Network, and other groups! Through the web portal, you can find out about events near you, send a message to

electoral candidates in your riding, and engage others on social media to let them know why science matters to you. Remember, your vote has an impact!

CONCLUSION

Overall, the primary concerns for current PhD students and PDFs were

1. Lack of funding support
2. Unclear and disparate labour laws
3. Minimal professional development opportunities
4. Lack of incentives and systems to implement required programs

Largely, the issues stemmed from systemic barriers within the federal and provincial governments, as well as the post-secondary institution. Moreover, such barriers were not specific to any research domain but rather, were recognized to be interconnected and similar across disciplines.

Many of the recommendations we list in this report require action from all governing bodies. While the list of concerns we have detailed here is not exhaustive, we believe that our recommendations could provide the necessary information for one to approach and voice their concerns with their local MPs regarding these and related issues.