

CANADA'S INNOVATION LEADERS 2015: The Year in Review



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What do the data in *Canada's Innovation Leaders 2015* tell us about the state of Canada's research system? Our mission at Research Infosource is to monitor the pulse of research and innovation in the corporate, university, college and hospital sectors and to shine a spotlight on different aspects of the performance of the research system. (Our focus this year is on research partnerships.)

We do this in the first instance by measuring the level of research

activity in each sector. We use financial data obtained through surveys or public sources – primarily research income or research expenditures – to see if activity is increasing, declining or staying the same. To enrich the analysis we also take into account such additional factors as researcher counts, publication outputs, publication impacts, partnerships, projects completed, etc. And to level the playing field among different kinds of research organizations we often normalize our data (e.g. research publications per faculty, research income as a percent of total income). We also compare like-to-like in terms of the size or character of organizations (e.g. small, mid-size, large hospitals or Medical/Doctoral, Comprehensive, Undergraduate universities). Because our work extends across sectors, we have a unique perspective on the performance of the innovation system – certainly not a complete perspective, but a highly indicative one nonetheless. What, then, do this year's data tell us?

The "headline news" is straightforward. Corporate activity (*Top*

100 Corporate R&D Spenders) is in retreat. And for the first time in 14 years university activity (*Top 50 Research Universities*) has begun to turn down. Coincidentally, each declined by -1.6%. College research activity (*Top 50 Research Colleges*), which is still in its infancy, is beginning to level off, rising 4.1% compared with prior-year increases of 30%+. Hospital research (*Top 40 Research Hospitals*) bucked the trend and increased by 5%. So, overall, we see a mixed picture, although one that inspires muted confidence in the future. Even so, within the somewhat lacklustre overall results, many individual companies, universities, colleges and hospitals are expanding their research activities and in many instances, their outputs and impacts. In more positive terms, where it can be measured (e.g. by publication impact factors), the quality of research – certainly in the university and hospitals sectors – is very high in world terms. Partnerships are on the rise in all sectors, which helps to enrich the actual research, along with student

training, research applications and commercialization.

We have seen relatively little discussion of policy for research and innovation during the election despite the fact that research and innovation activity is heavily influenced by government policies and programs. Government direct

procurement decisions also play a role in the success of individual products/services and startup and early stage companies. And, government laboratories are often key players across the research spectrum. Predictably, the new government will need to address Canada's research and innovation situation and chart a path forward. Equally predictable is that it will have no shortage of advice from stakeholders as to what needs to be done (or un-done).

During the period between the late 1980s and roughly 2000 Canada was among the international leaders in developing new paradigms for research and innovation. We invented

the best-and-brightest researchers), Genome Canada (to coordinate genomics research), Compute Canada (to boost high performance computing), and CANARIE (to provide high speed digital networks), along with their various provincial counterparts, notably the Ontario Centres of Excellence and Quebec's Les centres collégiaux de transfert de technologie (CCTT).

But since that heyday we've largely been fine-tuning those pioneering models rather than identifying and embracing the next generation of policy innovations we will need to compete in the future. Once a country has put an institutional infrastructure in place it is very hard to move on. Surely, though, the real question that needs to be asked is "If we didn't have our current approach to supporting innovation, but had the same amount of money to spend, what would we do today"?

In closing, we thank the many companies, universities, colleges and hospitals who cooperated with us by providing data for our analysis and who have supported *Canada's Innovation Leaders*. We also thank our research partner, L'Observatoire des sciences et des technologies, for providing university publication data. We hope that you will join us in recognizing and celebrating our leading corporate, university, college and hospital research organizations and the people there who are doing the critical work.

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funding is the primary source of research funds in the university, college and hospital sectors. In the corporate sector direct government funding of research is modest by international standards, but indirect funding through billions of dollars of tax credits and through corporate-academic partnership programs is the primary policy influence on corporate research activity. Government

such highly-regarded models as the Canadian Institutes for Advanced Research (to link top Canadian researchers to international leaders), Centres of Excellence and Networks of Centres of Excellence (to network research capabilities across universities and with industry), the Canada Foundation for Innovation (to provide research infrastructure), Canada Research Chairs (to attract and retain