AUTM 2020 Canadian Licensing Activity Survey

A Survey of Technology Licensing and Related Activity for Canadian Academic and Nonprofit Research Institutions

autm

Transforming Ideas into Opportunities

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The Navigator is an online directory of 750+ research facilities in Canadian universities, colleges, hospitals and federal departments and agencies that are collaborating with industry, academia and government partners.

A Message from AUTM's Chair

The Right Innovation Model for Today and Tomorrow

The COVID-19 pandemic has impacted our lives and our work in ways we could not have imagined just a short while ago. It has changed the way we operate, but not the way we move forward.

Science and technology transfer have played a key role in responding to the pandemic. With the outbreak of the health crisis, the work of technology transfer offices quickly moved to the battle's front line. Leading science and research-based organizations led the creation of licensing guidelines that would ensure rapid and broad access for all humankind to the life-saving technologies — from ventilators to vaccines — that poured out of labs, hospitals and businesses.

This rapid response was due in part to a robust framework for protecting intellectual property which enables organizations to advance federally and provincially funded innovations for the public good through effective patenting and partnership activities. Academic research and development (R&D) is a major driver of Canadian innovation and economic growth. Universities conduct more than 40% of Canada's R&D, produce over $55 billion annually in economic activity, and support 680,000 direct and indirect jobs.[1]

At the very time we need it most, this model demonstrates once again that it works. Patents and licences remain a vital piece of the innovation economy that represents a successful partnership among scientists, investors, businesses, policymakers, and the public we all aim to serve with effective vaccines and treatments. The AUTM survey data illustrates how this enduring system drives our innovation economy, creating better jobs and saving lives here and around the world.

Laura Savatski

Laura Savatski, MBA, CLP, RTTP
AUTM Chair

[1] The Conference Board of Canada, *The Economic Case for Investing in Education,* June 2019; Statistics Canada, *Gross Domestic Expenditures on Research and Development in Canada*, Accessed August 2, 2021.

Executive Summary

Tech Transfer Responds to Epic Challenges

University research and technology transfer played a key role in responding to COVID-19—delivering protective equipment to front-line workers and life-saving treatments to patients. That seismic event accelerated existing trends — tech transfer staff are handling even more deals, broadening their reach and driving the innovation economy through entrepreneurial ecosystems.

The health crisis also shaped business activities of tech transfer offices, including the gathering of survey data. The data for fiscal year 2019 was being gathered just as the world began pivoting to a dramatically different environment. One year later, as we continue to adjust to the "new normal," the number of responses for the 2020 fiscal year report rebounded somewhat to 30 research institutions, three more than in 2019 but still slightly below typical response rates prior to the pandemic.

STAFFS HANDLING MORE

While the number of licences and options has increased 12.1% since 2015, the number of licensing full-time staff equivalents has grown less than 1% over that same period. In 2020, licensing staff accounted for 48.1% of the office workforce. A decade ago, licensing staff represented more than 57% of office workers.

As the number of deals handled by staff has expanded, so has their reach. In 2020, 66.1% of agreements were non-exclusive compared with 57.9% a decade earlier. Tech transfer offices are getting more creative, branching into areas like data, software and open source licences, as well as new markets.

DRIVING INNOVATION ECONOMY THROUGH SMALL BUSINESS

Universities are driving the innovation economy through small, entrepreneurial businesses. In 2020, nearly two-thirds of licences and options were conducted through startups and small businesses. Academic discoveries led to the creation of 104 startups, directly impacting local economies with more than 86% of the new businesses remaining in their institution's home province.

We included just a few of the hundreds of stories available in the Better World Project that illustrate the impact that technology transfer offices have made on lives like yours. Those same tech transfer offices make this report possible by thoughtfully responding to the annual survey. Their data can also be found in the AUTM STATT Database.

Olivia Novac
Chair, AUTM Canadian Licensing Survey

Tech in Your Life

Maximizing Power

British Columbia Institute of Technology

PHOTO CREDIT: SHUTTERSTOCK

A new device developed at the British Columbia Institute of Technology in Burnaby allows energy users to draw the maximum amount of power from a solar array at any given time. Called the Maximum Power Point Tracking (MPPT) technology, it was developed by BCIT engineers and students.

Photovoltaic cells have a single operating point where the current and cell voltage result in a maximum power output. This point fluctuates according to several factors, including time of day, season, temperature and weather conditions. MPPT technology uses a patented logic algorithm that continuously searches for the point of maximum power buildup in the solar array and allows the converter circuit to extract it from the cell. Benefits are most apparent when the weather is hazy, overcast or rainy, or when the battery has a low charge. The controller also acts as a charger for various battery types.

Analytic Systems of Surrey, British Columbia, licenced the technology from BCIT and designed and produced the final design. Called SolarMax, the solar charge controller is primarily being marketed for industrial applications.

At 100 amps it provides the highest power output of any solar charge controller on the market and is one of the most compact.

Analytic Systems is developing a line of products for the solar and wind-generation industries and expects to increase revenues by 100% over the next five years. The US government is also interested in potential military applications of the technology. Based on this initial technology, Analytic Systems has been given a prestigious IRAP grant from the National Research Council of Canada to continue to develop products in this solar category.

2020 TECH TRANSFER BY THE NUMBERS

46 New Products Created

104 Startups Formed

$6.98 BILLION (CAD) Research Expenditures

1,688 Invention Disclosures

299 US Patents Issued

726 Startups Still Operational

883 New US Patent Applications Filed

785 Licences and Options Executed

Research Expenditures

Fresher Ways to Fund Research

Funding the work of researchers and scientists at colleges, universities and other research institutions is the first step in developing technologies that eventually improve our world. Funding comes from federal or provincial governments, industrial sponsors and other sources.

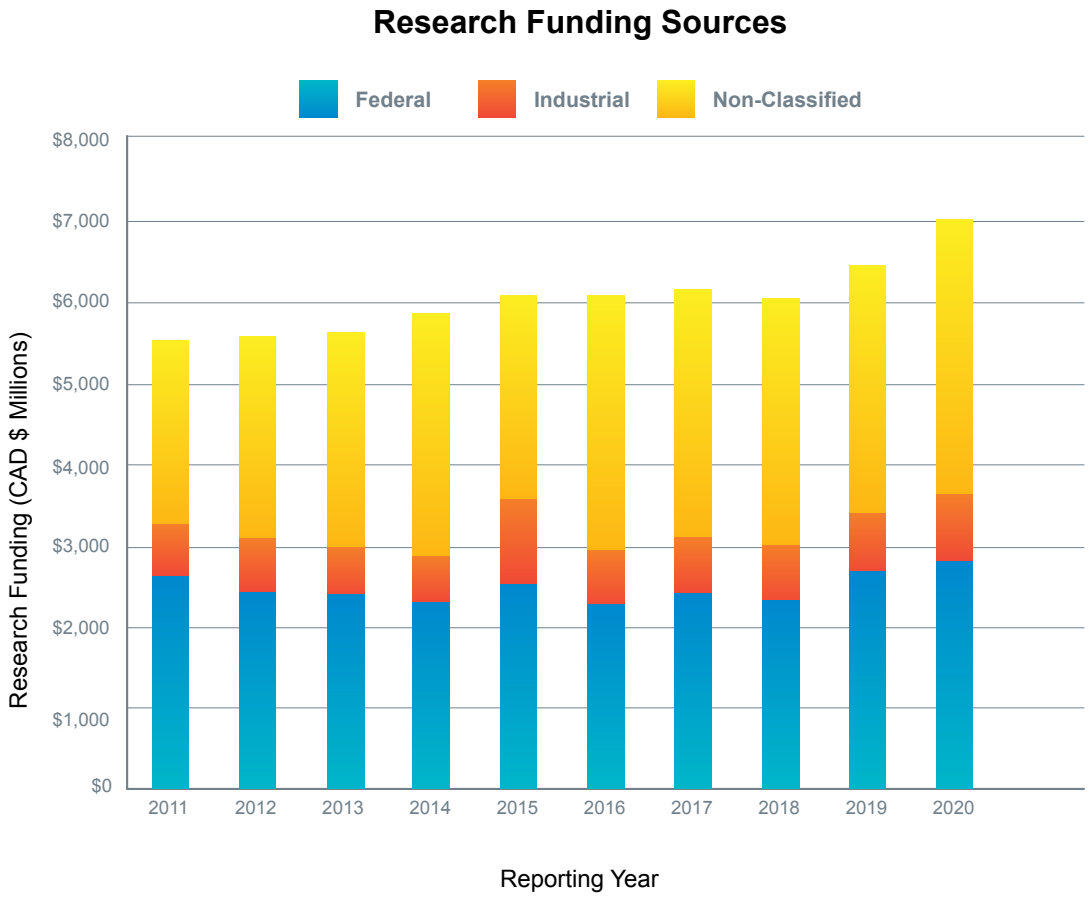
Total research funding in 2020 showed a healthy increase of 8.2% compared with 2019. Data from 2020 continues the trend of finding more funding, but not in the usual places. The largest share of funding came from the "Non-Classified" research dollars category, accounting for 47.8% of all funding. This category can include sources such as grants from nonprofit organizations or state and city grants. The share of funding from industry grew 11.2% over the prior year. These trends indicate that institutions are successfully pursuing more non-traditional funding sources and partnerships.

KEY FINDINGS

- Total research expenditures increased by 8.2% from roughly $6.45 billion to $6.98 billion (CAD) since 2019.
- Over the past five years, total research funding has risen 14.6%:
  - » Federal up 11.9%
  - » Industrial up 20.7%
  - » Non-classified up 15.5%
- Non-classified sources (such as nonprofit organizations and provincial governments) consistently provided the largest share of funding, accounting for nearly half of all funding in 2020.

Research Expenditures (CAD $ Millions)

	2015	2016	2017	2018	2019	2020
Federal	$2,534	$2,306	$2,423	$2,331	$2,695	$2,836
Industrial	$667	$652	$700	$691	$724	$805
Non-Classified	$2,887	$3,109	$3,018	$3,028	$3,027	$3,334
Total	$6,087	$6,066	$6,142	$6,050	$6,446	$6,975
% Federal	41.6%	38.0%	39.5%	38.5%	41.8%	40.7%
% Industrial	11.0%	10.7%	11.4%	11.4%	11.2%	11.5%
% Non-Classified	47.4%	51.3%	49.1%	50.0%	47.0%	47.8%



Invention Disclosures

Disclosure Rate Dips

The disclosure is the launching pad for evaluating new inventions, analyzing market potential and developing strategies for protecting the intellectual property.

In 2020, the total number of disclosures decreased by 3.2% and the average number per respondent decreased by 13.8% relative to 2019. These decreases may reflect the various challenges researchers faced throughout the early days of the pandemic. However, it is important to recognize that 2019 also saw the lowest survey participation rate since 2015, making it difficult to draw firm conclusions.

KEY FINDINGS

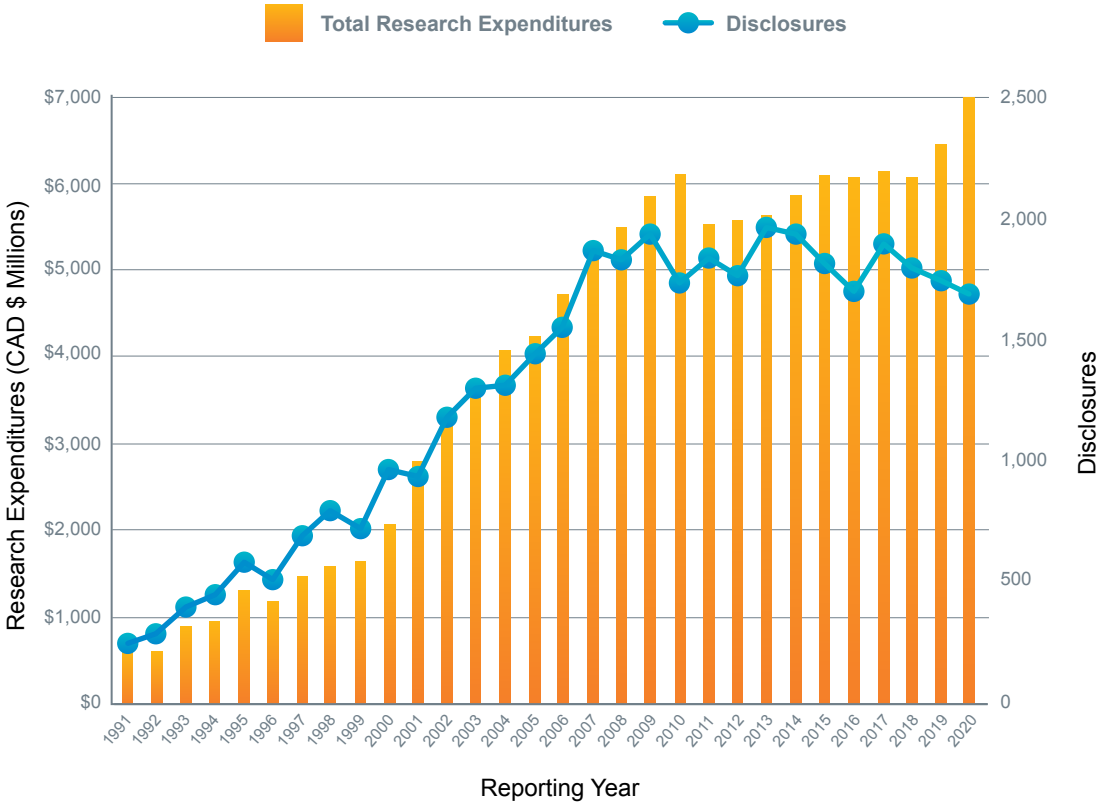
- Overall there were 1,688 disclosures, a decrease of 3.2% from 2019.
- The benchmark number dipped to 2.42 disclosures per $10 million in total research expenditures.
- If 2019 data is ignored, the average number of disclosures managed per office staff was constant since 2017 with an average of 56 disclosures per respondent.

Invention Disclosures

Disclosures

	2015	2016	2017	2018	2019	2020
Invention Disclosures Received	1,813	1,697	1,882	1,788	1,743	1,688
Number of Responses to Survey	36	35	33	32	27	30
Average Disclosures per Respondent	50	48	57	56	65	56
Office Staff (Full-Time Equivalents)	299	328	314	275	267	318
Average Disclosures per Staff	6.06	5.18	5.99	6.50	6.52	5.31
Total Research Expenditures (CAD $10 Millions)	$609	$607	$614	$605	$645	$697
Disclosures per $10M Research Expenditures	2.98	2.80	3.06	2.96	2.70	2.42

Disclosures vs. Total Research Expenditures



Tech in Your Life

Revolutionizing HIV Monitoring

University of Toronto

An HIV-positive woman living in a remote African village walks 37 kilometres, carrying her young child in tow, to the nearest health clinic for a simple blood test to determine if her disease has progressed to AIDS. She will have to make the same arduous journey weeks later for her results.

She is just one of the millions of people living with HIV in sub-Saharan Africa that James Dou, a doctoral student at the University of Toronto (U of T), hopes to reach with his new invention: a portable lab on a chip that makes blood testing more accessible, efficient and affordable.

As HIV progresses to AIDS, the infection weakens the body's immune defenses by destroying CD4 (T-cell) lymphocytes, a group of white blood cells. A critical component of HIV care is monitoring CD4 levels and administering antiretroviral treatment when they decrease.

CD4 cell counts are measured by a flow cytometer, a machine the size of a photocopier that costs up to $100,000 and requires sophisticated infrastructure and trained technicians to operate. "Many countries in the developing world simply do not have the facilities or infrastructure to offer HIV monitoring," Dou says.

Dou's portable, handheld cytometer, similar to the glucose monitor developed for diabetic patients, costs $5,000 to $10,000 and provides results in a few minutes for less than $10 per test.

With funding from the Natural Sciences and Engineering Research Council of Canada and Ontario's Ministry of Research and Innovation, Dou created a multi-test particle detection and analysis platform that involves a plastic cartridge, an optical reader and software. Dou consulted with U of T's Innovations and Partnerships Office (IPO), which suggested a startup company and facilitated the development of a business plan, a commercialization plan and patent filings.

PHOTO CREDIT: ADOBE STOCK

Patents

Expanding Patent Activity in New Markets

A key step in the transfer of technology is the protection of new inventions. Patent protection provides both economic opportunities for sponsoring research institutions and an incentive for entrepreneurs and companies to invest in new technologies.

Although new patent applications generally declined in 2020 compared with previous years, new applications per respondent in 2020 were equal to those in 2015. New patent applications per respondent peaked in 2019; however, this corresponds to the lowest survey participation rate over the five-year period and may simply reflect poor overall representation.

New US filings (counting new US provisional and utility filings) accounted for 64.2% of new patent applications. This share of the market was down significantly from five years ago, when 74% of new applications were US.

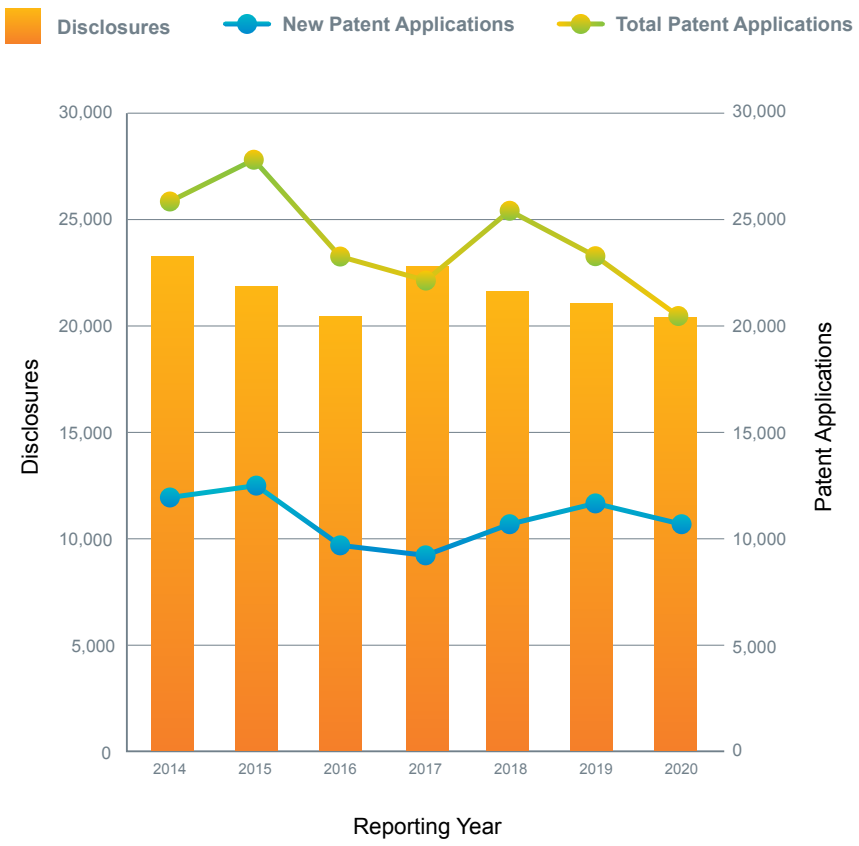
Canadian institutions are increasingly filing new non-US patent applications compared with five years ago, with non-US patent applications representing 28.1% in 2020 vs. 24% in 2015.

We added a few new data points to this year's survey. Canadian institutions filed 241 Patent Cooperation Treaty (PCT) applications and 211 Canadian patent applications. There were 83 Canadian patents granted. These non-US filings may not be new patent applications, as some were conversions from prior US filings, but it would be interesting to follow this additional metric over the next few years, as broader patent protections seem to be increasingly important for potential licensees.

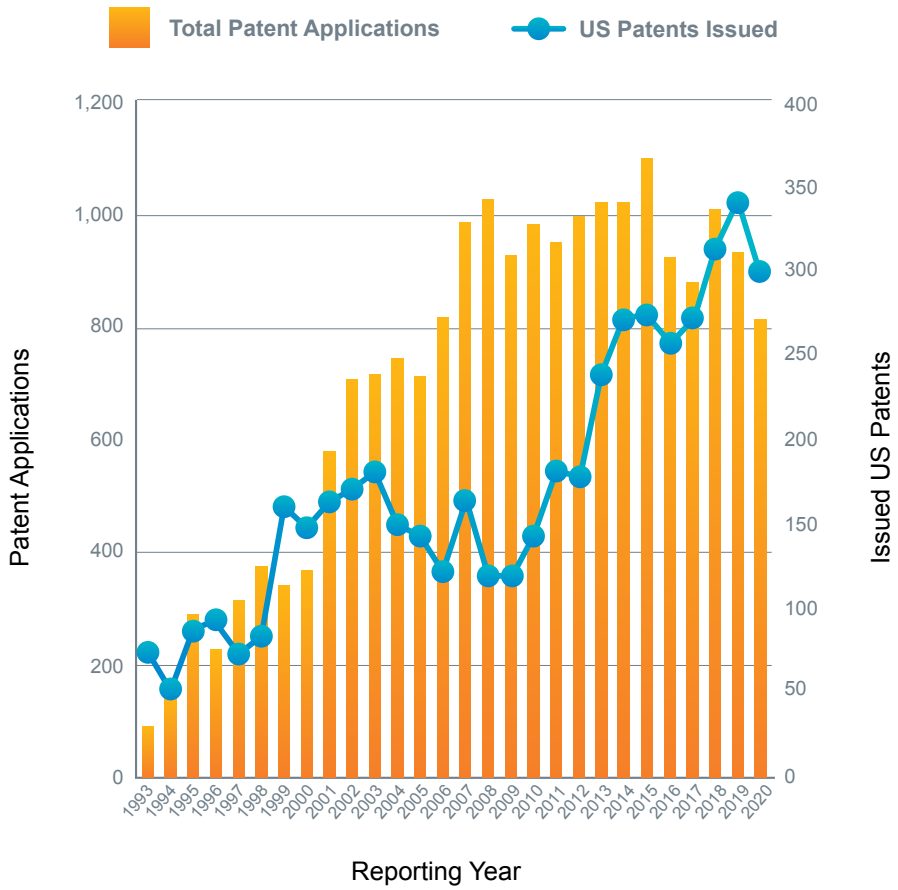
KEY FINDINGS

- The new patent applications per respondent appeared to decrease relative to 2019, but were rather consistent when compared with 2015. This implies that TTOs are adapting their patent filing strategy when fewer research dollars are available (1.27 new patent applications per $10 million in research expenditures in 2020 vs 1.69 new patent applications in 2015), representing a 24.9% decrease.
- US Patent and Trademark Office data indicates a lead time of about three years from provisional patent to issued patent. Applying this timeline to the AUTM data indicates that TTOs have been fairly consistent over the past five years in how provisional patents are prosecuted to issued patents. Looking at the number of issued patents in 2020 compared with the provisional patent applications filed three years prior, we estimate that approximately 34% of provisional patent applications result in issued patents. This implies a high level of patentability of inventions coming out of research institutions.
- The US continued to be the primary market on which Canadian research institutions focused in 2020, with the US accounting for 64.2% of new filings (567 new US patents vs. 883 total new applications).

Patent Applications vs. Disclosures



Issued Patents vs. Total Applications



Patents

Patents

	2015	2016	2017	2018	2019	2020
New Patent Applications	1,026	790	759	878	961	883
Total US Patent Applications	1,101	921	878	1,009	932	813
New US Provisional Patent Applications	657	491	467	520	519	468
New US Utility Patent Applications	102	109	76	59	90	99
New Non-US Patent Applications	246	143	200	198	260	248
US Patents Issued	271	257	273	314	339	299
Number of Responses to Survey	36	35	33	32	27	30
New Patent Applications per Respondent	29	23	23	27	36	29
Office Staff (Full-Time Equivalents)	299	328	314	275	267	318
New Patent Applications per Staff	3.43	2.41	2.42	3.19	3.59	2.78
Total Research Expenditures (CAD $10 Millions)	$609	$607	$614	$605	$645	$697
New Patent Applications per $10M Research Expenditures	1.69	1.30	1.24	1.45	1.49	1.27

COVID-19

Innovation Ecosystem Delivers Life-Saving Products

When future historians study how the COVID-19 pandemic was overcome, the role of university research and technology transfer will be key. From ventilators to vaccines, life-saving products began pouring out of labs, hospitals and other facilities within days of the declaration of a global health crisis.

Spurring this staggering activity were new licensing guidelines from AUTM that prioritized speed and access in getting innovation into the marketplace. The guidelines, issued in April 2020, recommended offering time-limited, non-exclusive, royalty-free licences in exchange for a rapid and broad distribution of products and services addressing the pandemic. More than 95 universities and related stakeholders have signed on, with many sharing their ongoing research.

"COVID put technology transfer in the spotlight like never before," says AUTM CEO Stephen Susalka. "And it forced us to do things differently."

The guidelines altered the tech transfer paradigm. "We gave them professional cover from the traditional worrying about risk factors" and striving for perfection before marketing a product, says Marc Sedam, Vice President, Technology Opportunities and Ventures, NYU Langone Health. Instead, "the message was 'Don't worry about the market, get the solutions out there.'"

This new willingness to collaborate and accept some risk unleashed creativity and accelerated the transfer process.

The University of Kentucky's technology commercialization office saw a 25% increase in disclosures from July through December 2020. The office created a COVID tech web page and implemented an expedited discovery evaluation. If a disclosure was COVID-related, "it went to the top of the pile," says Ian McClure, Associate Vice President for Research, Innovation and Economic Impact.

That posed a different challenge. "We still had lots of technologies not related to the pandemic coming in," says McClure. "And it wasn't as if we had more or new resources. We focused mainly on the COVID-related ones, raising the question 'How much time is too much time to spend on the pandemic?'"

PHOTO CREDIT: CITY UNIVERSITY OF NEW YORK

"Canada has been underserved in obtaining early-stage capital. ... The pandemic sort of levelled the playing field. ... When nobody can travel, and everyone's on Zoom, it doesn't matter if you're in Canada."

— Scott Inwood, Director of Commercialization, University of Waterloo, Ontario

Darren Fast, Director of Technology Transfer at the University of Manitoba, says the COVID-spawned focus has heightened awareness of the value of university research, with more interest in new startups and collaborations.

Other unexpected positives include increased acceptance of risk, awareness of the importance of being adaptable, productivity gains from fewer face-to-face meetings and more online communication, and recognition that TT success is possible in a remote environment.

"A healthy, well-funded, predictable, innovative ecosystem helped us address this pandemic," says Susalka. "We have to make sure we're prepared for the next one. This is not going to be the last pandemic."

Licences and Options

Driving Innovation through Small Businesses

The next step in the commercialization process for protected intellectual property is licensing. The number of exclusive licences executed is a leading indicator of licensing revenue and the commercial development of new products and services five to ten years later.

Since 2015, the total licences executed increased 16.2% (588 in 2015 vs. 683 in 2020), whereas total gross licence income increased 102.6%. These differences may result from a relatively small number of lucrative deals, but may also reflect the lag time associated with generating products and licensing revenues.

The licensing full-time equivalents per respondent increased 21.4% since 2015, but the number of licences and options handled by these individuals also increased significantly, 36.8%.

The relative proportion of licences to startups (22%), small companies (42%) and large companies (36%) in 2020 has not changed significantly compared with 2015 (23%, 40% and 36%, respectively).

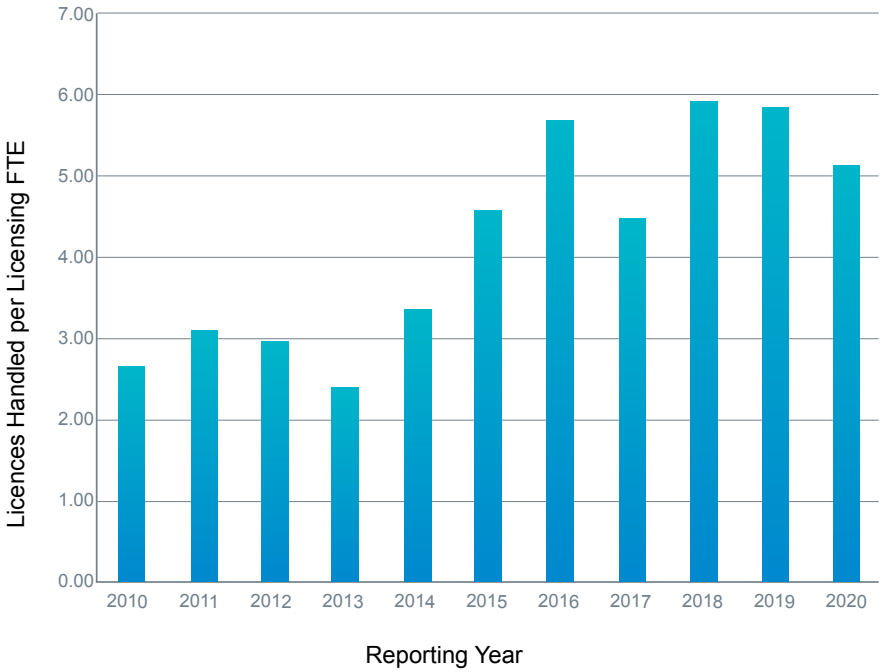
KEY FINDINGS

- The number of licensing full-time equivalents (FTEs) per respondent grew 21.4% since 2015 (5.1 vs. 4.2), while average licences and options per respondent grew 36.8% (26 vs. 19) over the same period, resulting in a 12% increase in average number of licences and options handled per FTE licensing staff.
- Licences to startups and small companies accounted for 63.4% of all agreements, which is similar to 2015, 63.2%.

Two-thirds of licences and options were non-exclusive in 2020. This is comparable to the proportion in 2015, 64%.

This year we asked about inter-institutional agreements (IIAs), one of the many types of agreements tech transfer offices handle. Not surprisingly, this new metric showed a strong initial reporting level: 138 IIAs. In 2020, nearly $6 million (CAD) was paid to other institutions, and when coupled with the number of IIAs being done, baseline data points towards strong inter-university collaboration.

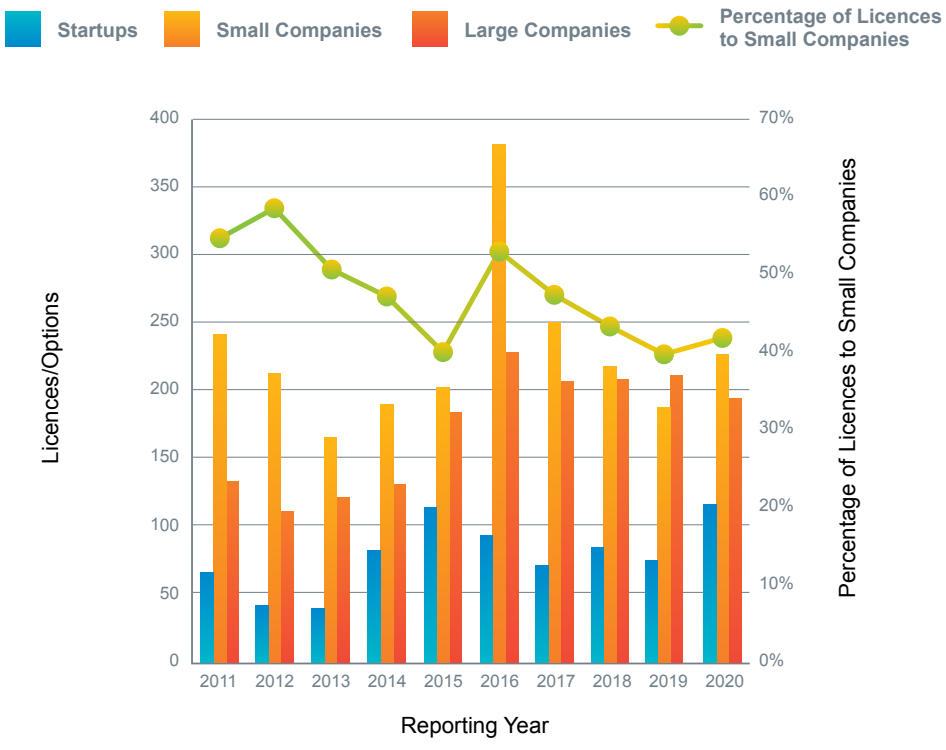
Deals Handled per Licensing Staff



Licences and Options

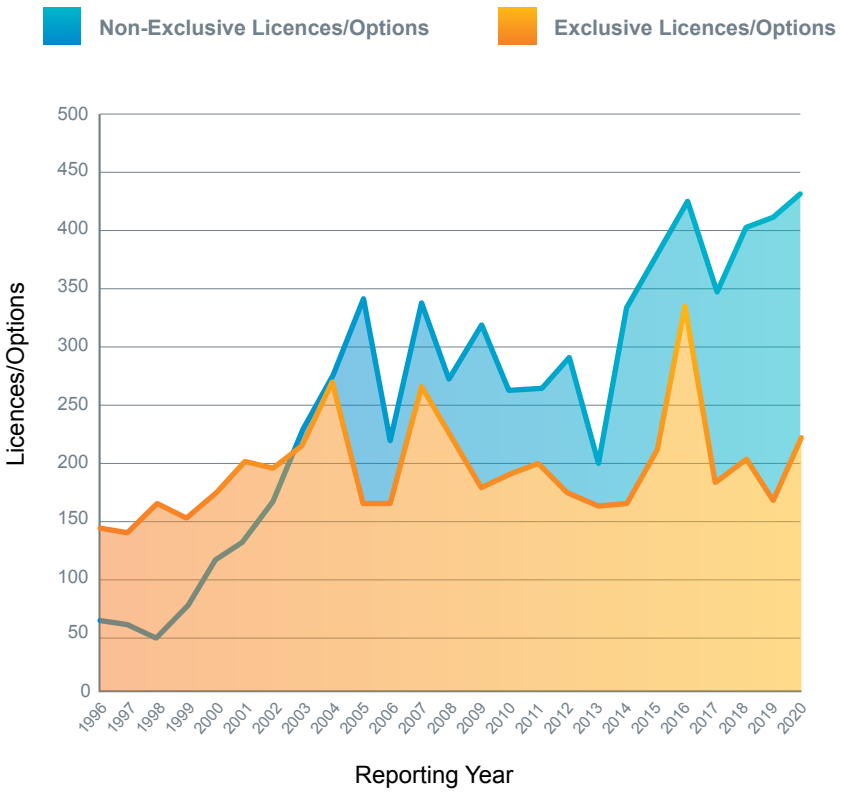
	2015	2016	2017	2018	2019	2020
Licences	588	760	528	607	591	683
Options	112	167	178	188	145	102
Total Licences and Options	700	927	706	795	736	785
Gross Licensing Income (CAD $ Millions)	$62.5	$70.5	$75.0	$75.9	$74.7	$126.6
Number of Responses to Survey	36	35	33	32	27	30
Average Licences and Options per Respondent	19	26	21	25	27	26
Average Licensing Staff per Respondent (Full-Time Equivalents)	4.2	4.7	4.8	4.2	4.9	5.1
Licensing Staff (Full-Time Equivalents)	152	163	158	134	131	153
Average Licences and Options per Licensing Staff	4.59	5.68	4.46	5.93	5.61	5.14
Total Research Expenditures (CAD $10 Millions)	$609	$607	$614	$605	$645	$697
Licences and Options per $10M Research Expenditures	1.15	1.53	1.15	1.31	1.14	1.13

Licensing More to Small Companies

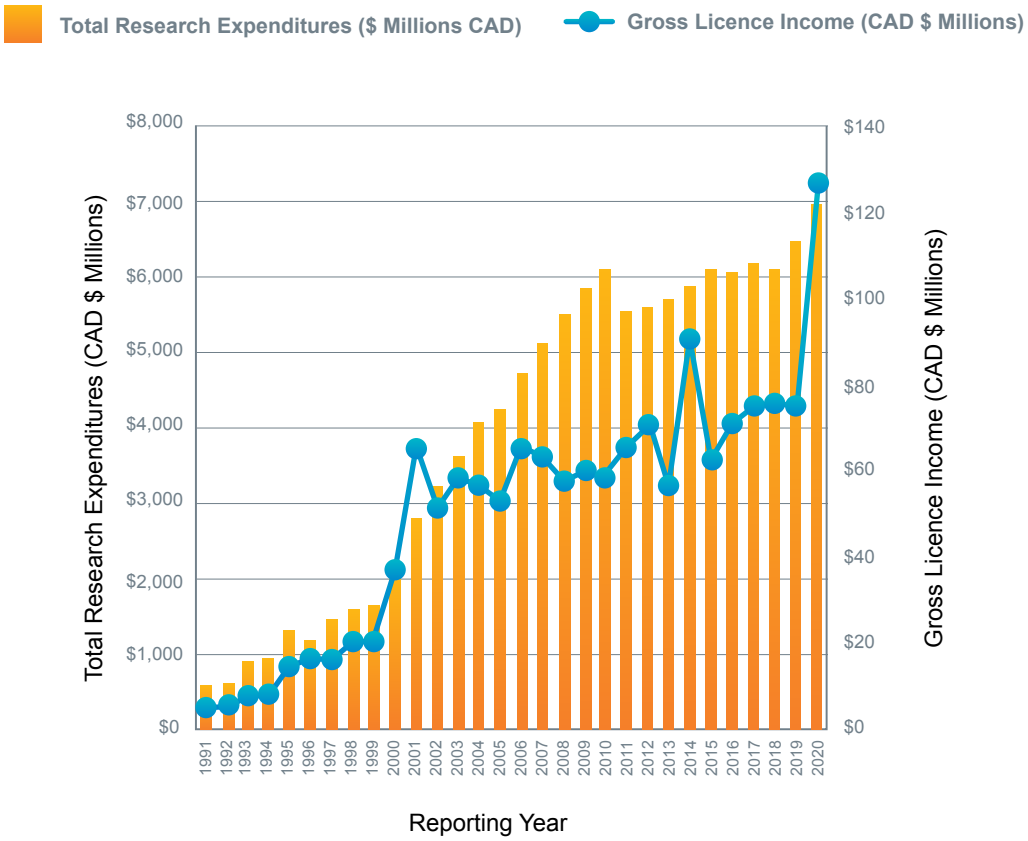


Licenses

Non-Exclusive vs. Exclusive Licences/Options



Gross Licence Income vs. Total Research Expenditures



Small Offices

Small but Mighty

At his first AUTM meeting, Rodney Ridley encountered the "big boys" of technology transfer. "I must have looked like a deer in the headlights," he recalls. Now, after successful tech transfer launches at two Pennsylvania universities, he co-chairs AUTM's committee on successful practices in small TTOs. "I've learned how to build and run a highly successful and efficient small TTO at a small university," says Ridley, Alvernia University's Vice President and head of the O'Pake Institute for Economic Development and Entrepreneurship.

Yatin Karpe, Director of Technology Commercialization at Rowan University in New Jersey, says a creative and innovative approach is key, while keeping in mind the operation's limitations: "It's important to know your innovation ecosystem," including educational, technological, governmental and financial resources. Karpe has had great success with the National Science Foundation's Innovation Corps program, a startup accelerator. Rowan's I-Corps teams have won ten awards in the last three years.

"We are smaller, but we're fully comprehensive, and we're doing some amazing things."

— Ellen MacKay, Director of Innovation Development, Lakehead University

Smaller schools also are more likely to utilize students. Lakehead University in Ontario boosts its five-person TTO staff with business-subsidized internships and co-op arrangements with other departments. Alvernia recruited and trained more than 30 students as O'Pake Fellows last year.

"Smaller offices cope with smaller budgets," says Ellen MacKay, Director of Innovation Development at Lakehead University. Her budget is "shoe-string, compared with some, but I'm not having to spend my time doing invention disclosure triage with hundreds of applications. ... We can move things forward more quickly. Also, we really get to know our faculty. And since we understand their research, it's easier to pitch it to industry."

And that's no small matter.

Small Offices – Lakehead University

An annual competition "to promote what we're doing, to get eyes on us," is one way Ellen MacKay explains and enhances the role her TT office plays at Ontario's Lakehead University, where MacKay is Director of Innovation Development.

Faculty apply to be featured in a short video about their work. "Who doesn't want a professionally produced commercial about their product or research?" she asks rhetorically. Twenty applied this year, resulting in four videos for the university's Research and Innovation Week celebration, now in its 16th year.

Recognizing that the publicity can spur more innovation, MacKay has commissioned four additional videos for use this year.

It's just one tool her office utilizes to extend its reach. Three years ago, Lakehead established its first business incubator, Ingenuity, which MacKay oversees along with numerous other entrepreneurial efforts at the university's two main campuses. "There are a lot of regional clusters we have to engage in," she says.

To enhance its effectiveness, Lakehead is undergoing a lengthy assessment of the strengths, shortcomings and impact of its economic engagement, in hopes of completing the Innovation and Economic Prosperity (IEP) Universities program. If successful, Lakehead will become only the second IEP-designated institution in Canada.

PHOTO CREDIT: LAKEHEAD UNIVERSITY

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better world project

Tech in Your Life

Saving Leftovers

University of Western Ontario

A technology developed at the University of Western Ontario in London, Ontario, enables farmers to convert biomass "leftovers" into valuable commodities such as heating oil, pharmaceuticals and food additives.

Biochemical engineering professors Franco Berruti, PhD, Cedric Briens, PhD, and Ron Golden, PhD, developed the apparatus and process for the pyrolysis of agricultural biomass. Initial funding of $100,000 was provided through the Ontario Centres of Excellence. Agri-Therm, a University of Western Ontario spinoff company, was created to commercialize and market the technology.

The portable device converts agricultural biomass, such as leftover crop material, into bio-oil, carbon char and non-condensable gases through a process that rapidly heats the biomass to temperatures hotter than 500 degrees Celsius.

The chemical bonds of biomass compounds are broken, releasing the constituent components. The resulting hot, smoky gas is filtered and rapidly cooled to condense liquid bio-oil from the gas stream. Combustible gases such as methane, hydrogen and ethane are recovered and burned as a partial replacement for natural gas used to heat the pyrolysis process, or to dry out biomass feedstocks. The solid "char" can also be burned as fuel, applied as fertilizer or used to filter contaminated air streams.

While the process can convert any carbon-based material, or biomass, each feedstock produces a unique combination of solids, bio-oil and gases depending on its chemical makeup. Fuel, fertilizer, pesticide, pharmaceutical, food and specialty chemical uses are all possible when appropriate feedstocks are matched with the desired end-use product. The truck-mounted mobility of the device allows farmers to economically process the biomass residue in their fields.

PHOTO CREDIT: ADOBE STOCK

Equity, Diversity & Inclusion

Creating More Opportunities for Everyone

Jennifer Shockro and Megan Aanstoos want to put an end to "Lost Einsteins." That's the term researchers coined for people from underrepresented groups who would have had impactful inventions had they become inventors.

"If you're only talking to a small proportion of inventors at your school, of course you're missing out," says Shockro, who heads AUTM's Women Inventors Special Interest Group and is Assistant Director for Technology Transfer at the California Institute of Technology.

"EDI has been an issue for a long time. Now we're moving from awareness into action. Hiring more people from equity-deserving groups into research roles is just one step."

— J.P. Heale, Managing Director, University-Industry Liaison Office, University of British Columbia

"We've made more strides in the last few years than in the previous 100, but we're not doing a good enough job," adds Aanstoos, chair of AUTM's EDI Committee and Licensing and New Ventures Manager with Kentucky Commercialization Ventures.

At the current pace, researchers estimate it will take more than a century to reach gender parity in innovation. And with Whites three times more likely than Blacks to become inventors, that's another uphill climb.

The biggest challenge is education. "If you don't see someone like yourself in technology transfer, you're less likely to participate," AUTM CEO Stephen Susalka says.

AUTM now has the most diverse board in its history. And this summer the association initiated a two-year pilot program called "Emerging Members." Aimed at improving technology transfer outcomes, the program pairs mentors with participants from Minority-Serving Institutions to provide education and connectivity.

"We're targeting groups historically left out of the conversation and providing a safe space to communicate and grow together," says Aanstoos. "It's important for those voices to play a role in the future of tech transfer and of AUTM."

Noting that his school is implementing an institutional inclusion action plan, J.P. Heale, Managing Director of the University-Industry Liaison Office at the University of British Columbia, also emphasized the role of individuals. "We all have implicit biases and need to be mindful of that" when hiring and working with innovators, he says.

Shockro says that having diverse role models and mentors in STEM — and technology transfer — is important. "It makes the dream seem that much more achievable," she says.

Heale highlights the importance of this: "To only develop products with one segment of the population doesn't serve the community as a whole. And we're trying to lift up society as a whole."

ILLUSTRATION CREDIT: ADOBE STOCK

HBCUs

Mentoring Emerging Research Institutions

It's a new era for the AUTM Board of Directors. Not only is it the most diverse in the Association's history, but it also has its first member from an HBCU.

Almesha Campbell is Assistant Vice President for Research and Economic Development at Jackson State University. After 12 years there, she knows firsthand the research and technology challenges facing Historically Black Colleges and Universities and other institutions serving underrepresented populations.

When AUTM announced a two-year pilot program for mentoring emerging research institutions, Jackson State was quick to sign up.

Fewer than ten of the more than 100 HBCUs have technology transfer offices, Campbell says, fuelling her commitment to diversity in this area. Campbell hopes to use the pilot program to learn more about licensing and university-industry partnerships.

"All program participants benefit from expanded access to a more inclusive, diverse tech transfer community."

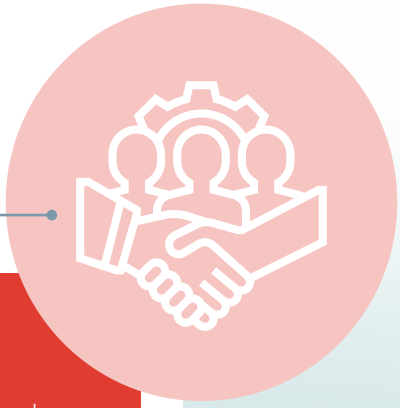
— Almesha Campbell, Assistant VP for Research and Economic Development, Jackson State University

Reis Alsberry, Director of Technology Transfer at Florida A&M University, another pilot school, says that because HBCUs lack the resources and networking opportunities of other universities, they've been less successful. "We're behind in playing the technology transfer game," he says, "and we're trying to close the gap."

PHOTO CREDIT: BROOKINGS INSTITUTION

Startups

Continued Growth



Startups continue to be a core focus of university technology transfer offices — helping to advance technologies while directly impacting local economies, with more than 86% of these new businesses remaining in their institution's home province.

The 2020 survey results suggest that the pandemic had a significant impact on startups, as both formation and survival of startups decreased dramatically from 2019.

The average number of startups formed per respondent had been steadily increasing until the onset of the pandemic, but in 2020 this metric reverted to 2017 levels, representing a roughly 20.4% decline compared with 2019.

The ratio of operational startups per respondent was 24.2 in 2020 compared to 37.4 in 2019, a sharp 35.3% decline.

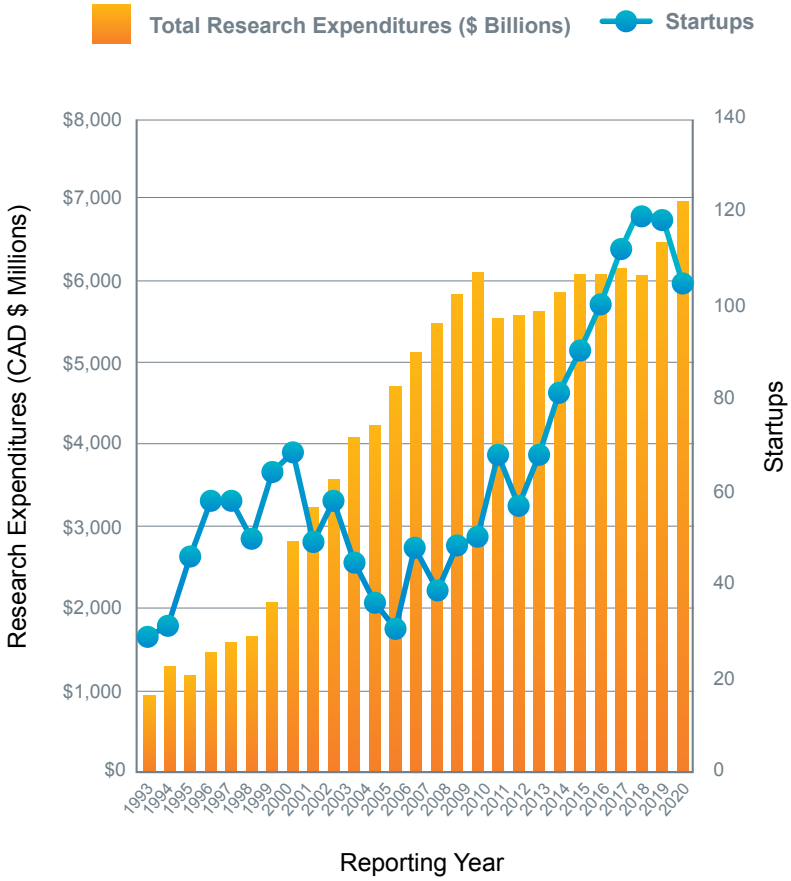
KEY FINDINGS

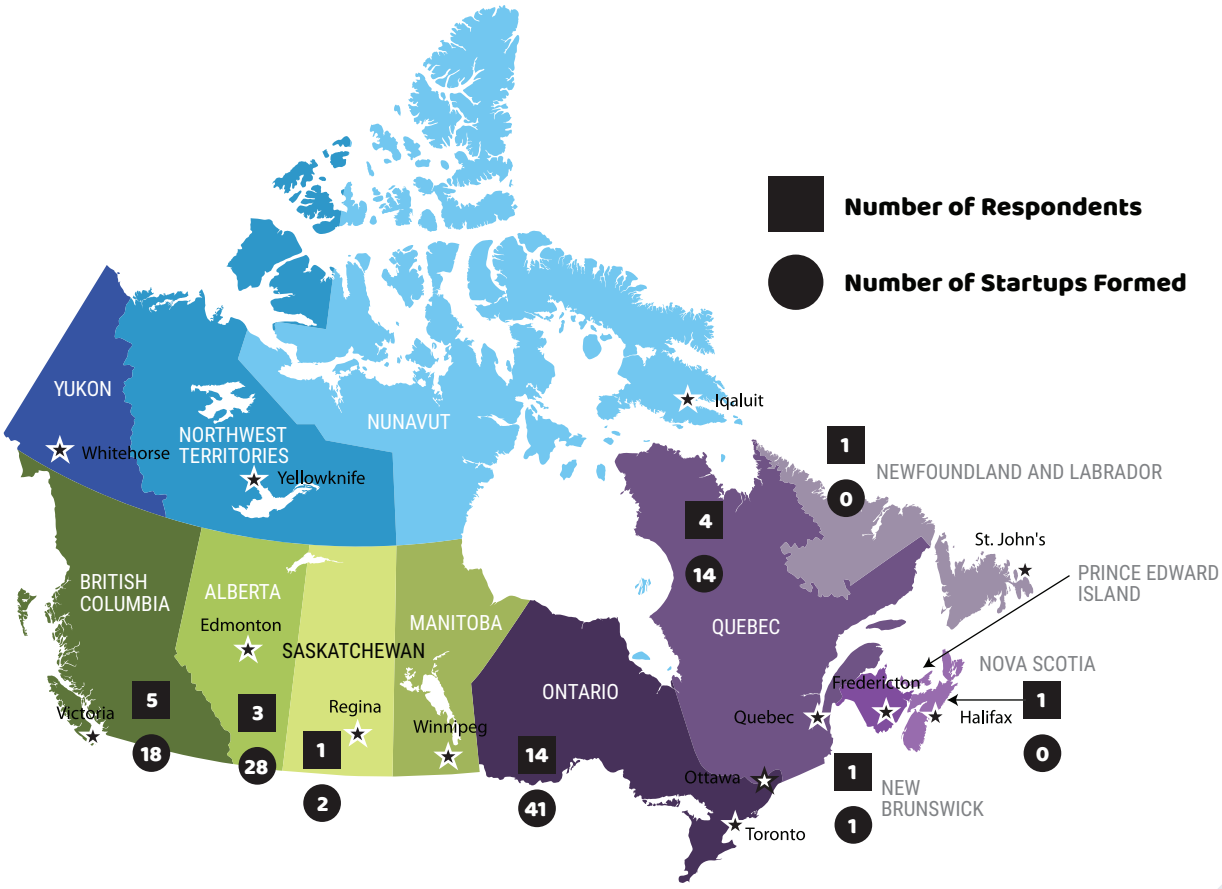
- In 2020, the number of newly formed startups declined to 104, a drop of 11.9% from the previous year.
- Of these startups, more than 86% were incorporated within the institution's home province.
- The number of startups still operational at the end of the year declined to 726, a drop of 28.2% from 2019.

Startups

	2015	2016	2017	2018	2019	2020
Startups Formed	90	100	111	119	118	104
Startups in Home Province	82	89	99	110	106	90
Startups Still Operational at End of Year	521	564	907	980	1,011	726
Number of Responses to Survey	34	34	33	31	27	30
Average Startups Formed per Respondent	2.6	2.9	3.4	3.8	4.4	3.5
Average Startups Still Operational per Respondent	15.3	16.6	27.5	31.6	37.4	24.2
Office Staff (Full-Time Equivalents)	299	328	314	275	267	318
Startups Formed per Office Staff	0.30	0.31	0.35	0.43	0.44	0.33
Total Research Expenditures (CAD $10 Millions)	$609	$607	$614	$605	$645	$697
Startups Formed per $10M Research Expenditures	0.15	0.16	0.18	0.20	0.18	0.15

Startups vs. Total Research Expenditures





Benchmarking

How Does Your Institution Measure Up?

We know that survey contributors already use the historical data to see how their institutions stack up. So, this year, using research expenditures to level the playing field, we're taking a closer look at how tech transfer operations tick for different peer groups.

WHAT TO MEASURE

For this initial benchmarking report, we selected five of the most common measurements that broadly capture the overall performance of tech transfer offices. A sixth key measurement, research expenditures, was used to normalize the data.

- Disclosures
- New Patent Applications
- Licences and Options
- Gross Licensing Income
- Startups Formed

Canadian Peer Group Comparison

	Average	Median	Per $10 Million Research Expenditures ($CAD)	Per Office Full-Time Equivalent
Disclosures	60.29	33	2.42	5.31
New Patent Applications	31.54	19	1.27	2.78
Licences and Options	26.29	13	1.06	2.31
Gross Licensing Income	$4,520,853	$1,108,383	$181,486	$398,063
Startups Formed	3.71	2	0.15	0.33

About the Survey

AUTM invited 70 Canadian institutions — universities and colleges, hospitals and research institutions, national laboratories and third-party technology investment firms — to participate in the AUTM 2020 Canadian Licensing Activity Survey. AUTM received 30 completed surveys, for a response rate of 43%. The numbers from these institutions reflect the significant role played by technology transfer in today's innovation economy.

Most of the data collected in this survey is also available in AUTM's Statistics Access for Technology Transfer (STATT) Database. To access this searchable database of 30 years of academic licensing data, visit **www.autm.net/statt.**

Suggested Citation

AUTM report titled *AUTM Canadian Licensing Activity Survey: 2020, A Survey Report of Technology Licensing (and Related) Activity for Canadian Academic and Nonprofit Institutions and Technology Investment Firms* can also be referenced by its abbreviated title, *AUTM Canadian Licensing Activity Survey: 2020*, editors Olivia Novac, Josianne Vigneault, Drishi Vilkhu and Nadine Weedmark.

About AUTM

AUTM is the nonprofit leader in efforts to educate, promote and inspire professionals to support the development of academic research that changes the world and drives innovation forward. Our community comprises more than 3,000 members who work in more than 800 universities, research centres, hospitals, businesses and government organizations around the globe.

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