CANADA’S NEXT MOONSHOT?
TALENT

Prosperity after the pandemic demands a strategy that focuses on investments in the workforce, equity, and science-based growth.
The pandemic has ushered in vast changes for Canada. Regions and cities are simultaneously navigating workplace transformations and global political shifts. Bold and co-ordinated actions from governments, public institutions and business are required to address the scope of the challenges faced by Canada’s economy, society, and people.

As University of Toronto President Meric Gertler has argued, the future will belong to those cities and regions that prioritize effective government, innovative economies and social cohesion. These elements are critical to retaining and recruiting the talent that will ultimately advance recovery in Canada.

“Government effectiveness will now take centre stage, at a time when scientists, thinkers and creative minds the world over are seeking refuge in safe, stable, well-managed places,” Gertler argued recently.

Other countries are learning from the pandemic. U.S. President Joe Biden has launched a national science strategy that connects public health, sustainable and green economic growth and continued geopolitical security. Investments in infrastructure and talent are proposed to develop the full potential of tomorrow’s sectors: bio-tech and biomanufacturing, clean energy and artificial intelligence. This is Canada’s time to set and advance its vision of the future and make equivalent investments.

A strategy that harnesses talent and equity to science-based growth can forge a new model of sustainable prosperity.

This strategy would include:

- Leveraging the talent ecosystem to contribute to critical national missions, including made-in-Canada supply chains in sectors such as Health and Biosciences and Clean Technology.
- Developing robust networks and strategies to close innovation and commercialization gaps.
- Prioritizing measures that ensure populations hardest hit by the employment impacts of the pandemic can retrain, and that all learners are equipped with capacities and skills for lifelong career resilience.
- Investments in infrastructure and the social and physical determinants of health. These include housing, public transportation and health and education.

Around the world, universities are playing a critical role in all these areas. As Canada’s top ranked university and among the top 20 universities in the world, the University of Toronto has strengths and partnerships across these fields.

Universities have stepped up in multiple ways during the pandemic, from critical health research to online education and the volunteer efforts of students, faculty and staff. This discussion paper highlights the contributions postsecondary institutions and the U of T can make to recovery now and health security in the future.

“What more can we do to stand out in the global competition for talent? Canada could create a ‘talent moonshot,’ one that’s strongly funded and co-ordinated across the public and private sectors. Our goal: recruit the world’s most talented scientists, engineers, artists and scholars to develop made-in-Canada solutions to global challenges, working alongside those who are already here.”

- Meric Gertler, President, University of Toronto.
FOCUS ON HEALTH SECURITY

The mobilization of Canada’s research community to respond to the pandemic has been compared to that of wartime. Thousands of research teams and innovators across Canada are still fighting in the battle to secure Canadians’ health against an invisible and nimble foe.

Supported by ~$1.1-billion in federal funding and additional provincial, institutional and industry research grants, researchers are making significant gains in understanding the virus and its effects including:

- The relative risks of contracting the virus for a range of health-care workers
- The one-year outcomes for people with COVID-19 and their families
- The policies needed to recover from the stress of lost employment and missed schooling

In co-ordination with provincial and national governments, the region can leverage these strengths and renewed collaborative networks among research institutions, hospitals and companies in the biomedical innovation ecosystem to make “health security” a pillar of its future.

A new era of health security, however, requires reversing Canada’s lagging R&D investments. Over the last two decades, Canada’s share of economic activity dedicated to research and development dropped from 2% of GDP in 2004 to 1.54% in 2019. Canada’s business expenditures on R&D (BERD) are well below the OECD average.

One of the pandemic’s most painful lessons has been revealing the connection between national supply chains in health and economic growth. A commitment to health security would lend confidence to talent and firms in Canada and abroad that this is the place to embark on high-risk, high-reward research that will revolutionize patient care and wellbeing.

“Last year confirmed the power and impact of our scholars and interdisciplinary teams in tackling the world’s most important challenges. In 2021, we will need to redouble our efforts, ensuring that the basic research and the applied and translational ... are further strengthened ... .”

– Christine Allen, Associate Vice-President and Vice-Provost, Strategic Initiatives, University of Toronto.

The life sciences ecosystem in the GTA is central to improving the region’s health security, strengthening partnerships with industry and driving future economic growth.

55%

Of Canada’s pharmaceutical companies are located in the GTA.

> $2B

The life sciences sector contributes more than ~$2-billion to the local economy.

230

Life sciences startups founded at U of T and its affiliated hospitals over the past 10 years.

$1B

In funding raised by 39 of the 230 startups.
How did the world develop not just one, but multiple, effective vaccines in less than a year? Through unprecedented government investments that de-risked the process of pharmaceutical discovery, development and manufacturing.

As a result, decades of research in mRNA vaccines, coalescing in the COVID-19 vaccine, have been predicted to form the foundation of a “revolution in medicine,” potentially leading to an HIV vaccine, personalized cancer vaccines, and thousands of jobs.

Canada’s Pan-Canadian Artificial Intelligence Strategy is another example of the power of market-shaping government policies. The Strategy injected $125-million into the country’s top AI talent and research and encouraged a dynamic private sector to lead to 50,000 jobs at 670 AI-focused firms across the country.

How can these models inform post-pandemic government strategies to grow the capacity of the private sector to deploy research knowledge into competitive products and processes?

• Accelerating transformative solutions. Significant support for high-risk research can bring together leading researchers from multiple fields, including sectors such as biopharmaceuticals, artificial intelligence, advanced materials and quantum technologies to provide new answers to complex human health challenges including rare diseases and emerging pathogens. Similar programs at Harvard’s Wyss Institute, Stanford University and the Chan Zuckerberg BioHub have led to rapid responses to medical challenges, including increased virus sequencing capacity.

• State-of-the-art next generation platforms, the integration of industry partners in the innovation pipeline, and business development teams embedded in research initiatives are all necessary to rapidly test and move high-impact applications through technology readiness levels, IP creation and protection, and viable commercial products and processes.

• Physical proximity remains critical to knowledge generation and translation. Infrastructure can leverage the strengths of existing collaborative networks. The GTA is home to multiple globally-leading clusters in life sciences, financial services, transportation and logistics and clean tech.

Toronto’s Discovery District, for example, brings together all members of the innovation community, connecting startups with established global leaders and facilitating the exchange of talent and ideas. These relationships are further supported through current U of T partners such as Toronto Innovation Acceleration Partners (TIAP), Centre for Commercialization of Regenerative Medicine (CCRM), JLABS@Toronto, and the Ontario Institute for Cancer Research (OICR), among others.
The impact of the pandemic on work vividly brought to life debates about the future of our workplaces, the segmented labour market and the transformative potential of automation to change work.

What are some of the principles that should inform workforce development strategies in the region post-pandemic?

- Postsecondary education is critical to developing lifelong capacities in communication, teamwork, emotional intelligence and creative problem-solving. That is why access to higher education is critical. In support of this commitment, the University of Toronto provides the highest amount of financial aid per student among Ontario universities.

Students who are underrepresented in higher education can benefit from targeted programs. At U of T, financial and mentorship programs have been created for students who face additional barriers to postsecondary education, such as Indigenous and black students. In professional faculties, where a lack of social capital can present invisible yet insurmountable obstacles, additional mentorship strategies have been implemented.

- The sectors that will drive the economy of the future demand highly trained employees. Canada, however, lags in the production of PhDs ranking 26th in the OECD in advanced degree attainment (MAs and PhDs). U of T has been a leader in educating an advanced workforce, and in supporting the world’s top students to study in Toronto. But investments in scholarships for advanced studies and post-doctoral research are essential.

- Online learning can be a platform for experiential learning and global collaboration. Throughout the pandemic, our faculty and students have seized opportunities to deploy virtual platforms to build global fluency and develop experiential learning opportunities remotely, ensuring employers in the GTA continue to benefit from access to the world’s most talented and skilled graduates.

- Global talent will propel the GTA’s future growth and competitiveness. As the federal government has recognized, international students are an important resource for Canada. With Canada’s largest number of international students, Ontario and the GTA have been significant recipients of the ~$22B international students contribute to the national economy. The University advocated strongly for the continued benefits of safely welcoming international students and has supported their arrival and integration on campus and in online learning.

U of T has played an essential role in continuing to make the GTA a first-choice destination for all talented students. This year, we have also partnered with leading organizations to address the reskilling needs of Canadian workers. To complement these efforts, the GTA can prioritize investments in infrastructure, such as housing and public transportation that enhance the public realm for all residents.

1 in 5  
U of T graduates has started at least 1 company

93%  
of U of T Graduates are employed within 2 years of Graduation

1  
U of T students are ranked first in employability among North American public universities
The virus transformed societal fractures into acute divides. At the same time, it enabled some of the world’s most highly-skilled talent, the lifeblood of creative cities, to work from anywhere.

But cities are resilient, as Richard Florida has suggested. Toronto will bounce back strongly. Supports such as affordable housing and daycare persuade families their future is in the city. Sustainable infrastructure promotes public health and healthy aging. Measures that advance inclusive political representation and help underrepresented groups to start businesses, bolster cultural amenities and public space, turn urban centres into a magnet for talent once again.

Through research, teaching and infrastructure projects, the University of Toronto is a significant contributor to the livability of the GTA. At the School of Cities, the pandemic has deepened intense collaborations with urban planners and communities to develop strategies that build business resilience in the GTA. At the Transportation Research Institute, researchers are studying how public transportation authorities can reverse declines in ridership.

The City of Toronto has recognized these contributions and those of other postsecondary institutions in the region, signing agreements with Toronto’s higher education institutions for research that advances solutions to the city’s post-pandemic recovery.

With the Schwartz Reisman Innovation Centre, the University is building infrastructure that reinforces the catalytic effects of interdisciplinary research and enriches the public realm. The 750,000-square-foot complex - located in Toronto’s Discovery District - brings together AI and biomedical experts with a world-class entrepreneurship network, helping smaller companies and emerging talent grow.

All the University’s projects are undertaken with a sustainability lens and in keeping with its Low-Carbon Action Plan, a GHG emissions reduction strategy that will create one of the most significant new spaces for the public in downtown Toronto.

“I don’t think we should ever go back to normal. The unearthing of the structural inequities suggests that, yes, we need to make sure everyone is vaccinated, but what are we going to do about the systemic racism of inequities that continue to plague Black and Indigenous communities?”

– Tanya Sharpe, associate professor, Factor-Inwentash Faculty of Social Work
The pandemic has tested the country, the province and the GTA. It laid bare the vulnerabilities of our health-care and health security systems, our labour markets and supply chains, and our communities.

Yet people, business, and institutions in the GTA have demonstrated the resilience that will power the recovery. Four areas have been suggested as the target of focused investments and cross-sectoral collaboration in both the upstream inputs of talent and research and the physical infrastructure of the region:

• Mission-focused “health security”

• Closing commercialization gaps through investments and supports that grow the capacity of the private sector to deploy research knowledge into competitive products and processes.

• Talent creation, recruitment and retention, particularly in high-value advanced sectors

• Investments in the region’s livability and social cohesion that redress the pandemic’s unequal impacts

Together, investments and commitments in each of these areas will inoculate the region against experiencing the devastating health impacts of another pandemic and boost the capacities of our companies, people and governments to meet any future challenges.

Throughout their history, The University of Toronto and the Greater Toronto Area have succeeded together. U of T has powered Toronto’s rise as a magnet for investment in advanced sectors of the economy. The city and region’s livability, diversity and good governance have supported the University’s talent and its global reputation.

Now, with recovery on the horizon, the Toronto region must be bold and ambitious and put measures to support its current and future workforce at the centre of strategies for renewed health, innovation, and inclusive prosperity.

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