

Environmental Scan

University of Alberta
Strategic Plan

OCTOBER 2022

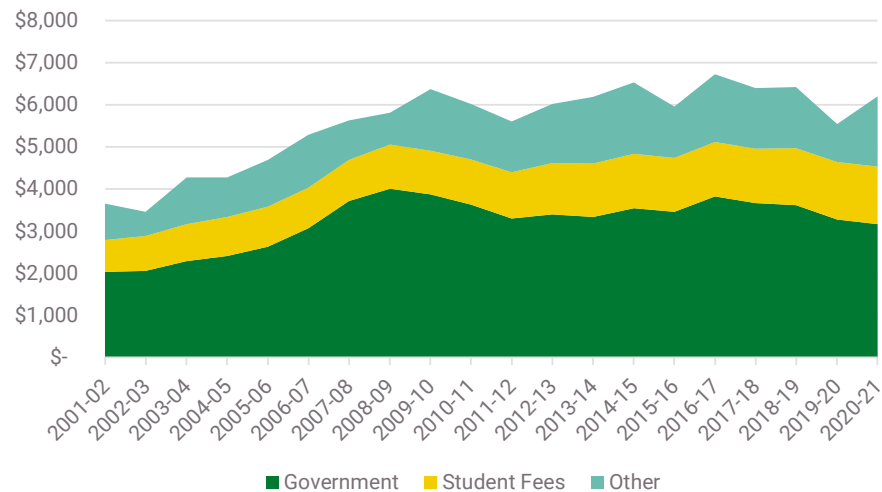


Government Funding

Government Funding Has Been Flat or Falling for Over a Decade

The period from about 1999 to 2008 was the only period since the 1970s during which government funding to institutions rose at the same rate as funding to the health care sector. In Alberta, the rate of increase in funding in the final years of the Klein government and the early years of the Stelmach government was extraordinarily rapid. However, growth in government funding to institutions ended around the time of the Great Financial Crisis in 2008.

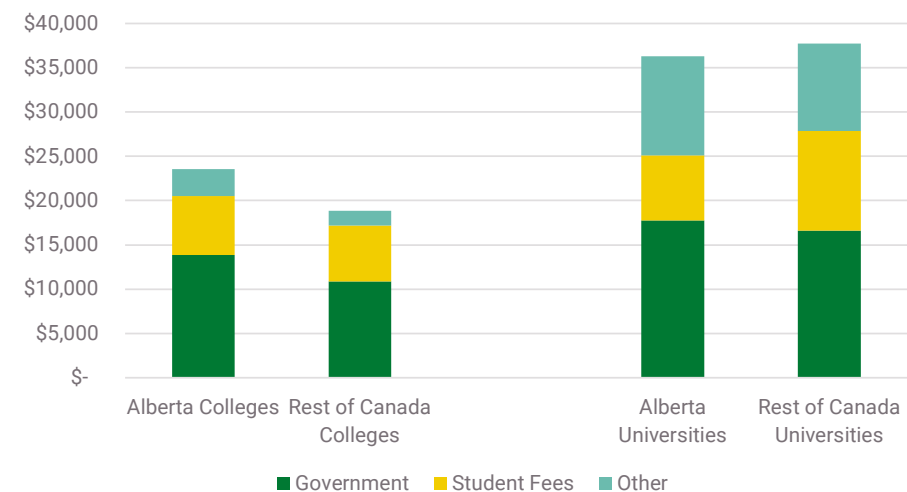
Figure 1: Total revenue by source, Alberta post-secondary institutions, 2000-01 to 2020-21



Though the Knowledge Infrastructure Program provided an additional funding boost from 2009-11, spending was relatively consistent in real terms until the late 2010s. It was at this point that the UCP government began reducing funding to bring Alberta more closely in line with the rest of the country, a job it had mostly achieved by 2020-21.

Another key point: around the world and across Canada, governments are putting more fetters on institutions and the way they spend. Accountability for provincial dollars is increasing at the same time as transfers are decreasing. This seems unlikely to change in the near future regardless of which party is in power.

Figure 2: Total revenue by type of institution and source, Alberta 2020-21



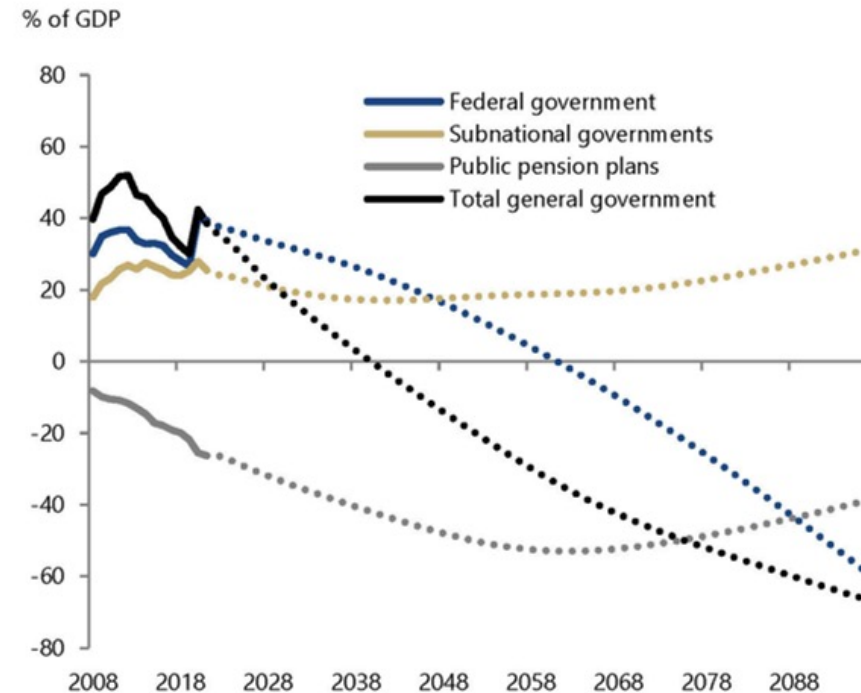
Fiscal Federalism

The Changing Dynamics of Fiscal Federalism Will Impact Post-Secondary Financing

The Parliamentary Budget Office monitors the financial sustainability of government expenditure at both the federal and provincial levels. The most recent report suggests that while provincial governments will struggle with the consequences of the demographic transition (see trend 3), federal finances are set for a dramatic improvement over the next few years, simply because its income and expenditure profile is less tied to demographic changes than are those of provinces. Given that the provincial government funds post-secondary operations while the federal government funds research and (to an extent) infrastructure, this may herald big increases in federal transfers.

However, if transfers are not an option, this imbalance may also lead to a very big change in the funding structure of Canadian universities, one in which research plays an ever-greater role simply because that's the only tool the better-off level of government has at its disposal.

Figure 3: Government net debt relative to GDP



Sources: Statistics Canada and Office of the Parliamentary Budget Officer.

Note: The projection period covers 2022 to 2096.

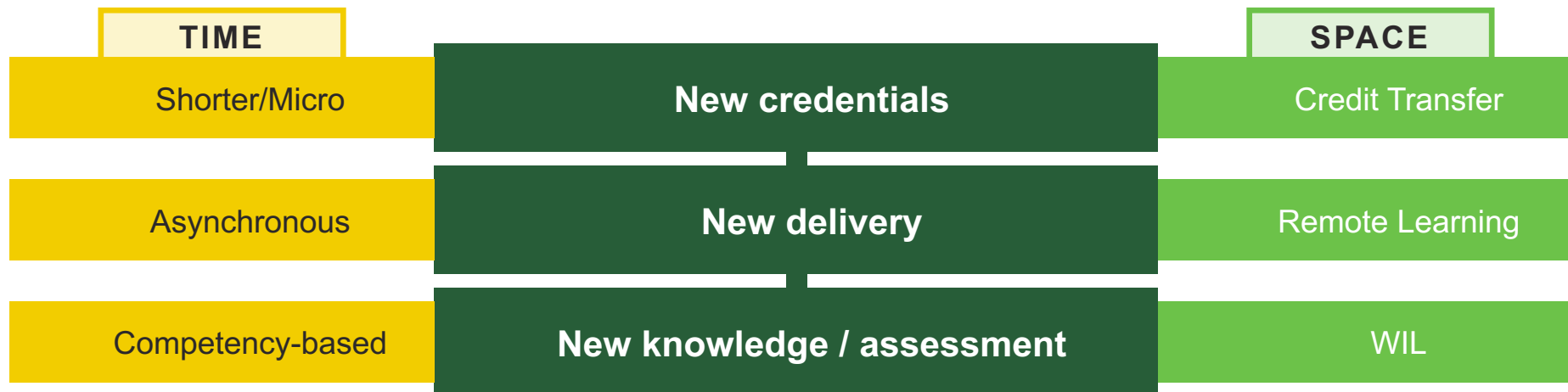
New Delivery Models, New Credentials

For the past few decades, many of the biggest developments in higher education have been about moving away from education being a solid-block full-time commitment at a single institution, with the classroom/laboratory as the physical locus of knowledge exchange. Part-time studies, credit transfer and more recently micro-credentials have all been chipping away at the notion that higher education requires full-time sequential attendance at a single institution. At the same time, work-integrated learning (WIL) and remote/online education have moved the centre away from the classroom somewhat.

There is no sign that any of these trends are slackening. However, neither is there much sign that any of them are likely to upend traditional undergraduate studies any time soon. Remote/online education in theory makes it possible for institutions to deliver education anywhere in the world, but few international

students seem inclined to use it outside of emergencies (in part because institutions seem reluctant to reduce prices for this delivery model). Micro-credentials have the potential to change the face of life-long learning and in particular Master's Degrees, but the government's inaction on creating strong supportive policy frameworks to support them is slowing their uptake.

The clearest opening for new delivery models is in online professional programs and – just possibly – older students in Bachelor's programs (roughly 20% of undergraduate students preferred the online COVID teaching environment, a figure which skewed towards older and part-time students). But doing well in this space requires significant investments in IT infrastructure, user experience and instructional design.



Technological Development

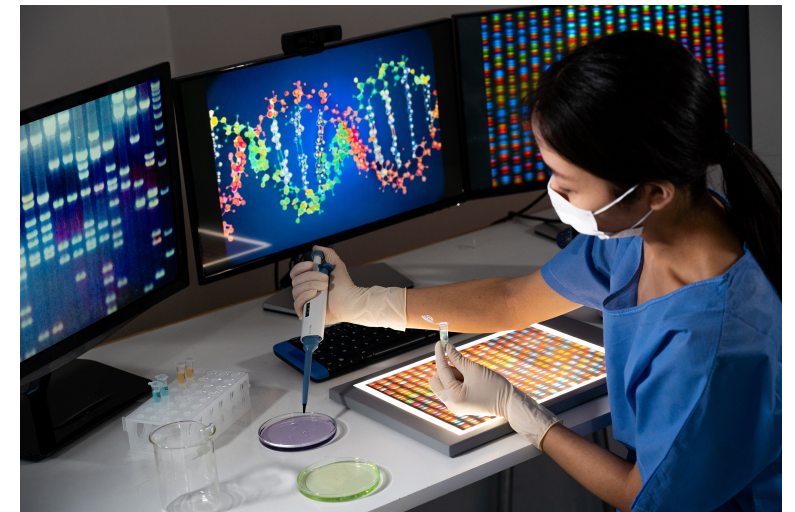
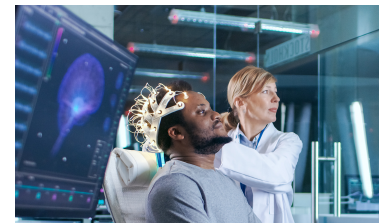
Over the past few decades, the main focus of technological change has been around computing power and programming algorithms. While this seems certain to continue to some degree, owing particularly to machine learning and artificial intelligence, the innovation pendulum seems to be swinging back towards industries involving real atoms rather than just bits.

The reason for this is the energy sector. The introduction of renewables at scale is starting to induce significant declines in the price of energy. This is combined with improvements in battery technology which not only reinforce the renewables revolution, but also allow the porting of energy into mobile devices such as cars, e-bikes, robots, etc. Thus, changes in the energy sector may also herald significant shifts in manufacturing as well.

There will be worldwide implications to the electrification of energy grids which will likely drive major shifts in employment; in Alberta specifically there will almost certainly be continued dislocations as oil and gas may struggle to compete against these new energy entrants. Already the International Energy Agency has declared not just “peak oil,” but also “peak gas.”

Another area of significant innovation is health care. New areas of research such as gene synthesis, gene therapy and brain-computer interfaces may not end up having a great deal of consumer impact in the next decade but R&D investments in these areas seem likely to increase significantly in the next few years.

The could all change life at the University of Alberta in several ways. Technology could certainly continue to change course delivery and pedagogy. Government and private sector research priorities may change. And changes in the structure of the economy may change student demand across fields of study. No one can predict any of this with certainty but keeping various possibilities in mind is an important part of any planning exercise.



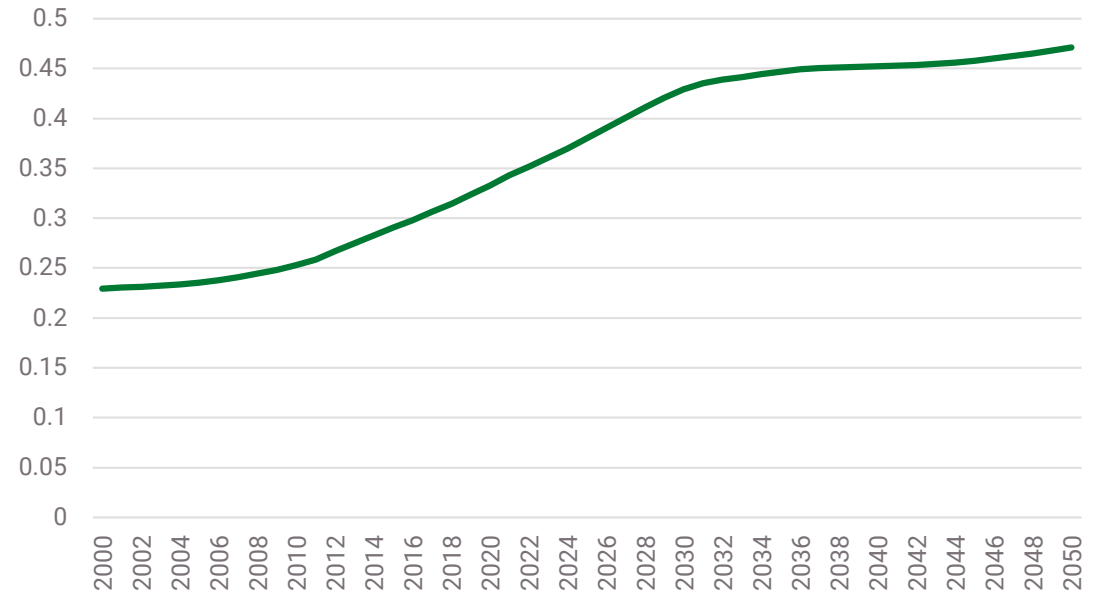
Demographic Change

Labour Market Pressures Will Be With Us for a Long Time to Come

Though much commentary on labour shortages has blamed recent tight markets on COVID and the so-called “Great Resignation,” it is in fact the product of a much larger and longer-term process. Simply put, the aging of the population means that the ratio of Canadians of working age to the total population is going down rapidly and will continue to fall through to the mid-2030s before stabilizing; in Alberta, the trend line is similar, but the effect will be less pronounced given its somewhat younger population base. The effect of this demographic change will be to create permanent labour shortages across Canada similar to those Alberta experienced during the oil boom, and to push up wages, especially for lower-skilled workers. This will influence post-secondary enrolment, as high-wages for low-skilled workers increases the opportunity-cost of attending post-secondary education. The effect will be to put steady downward pressure on enrolments unless universities find better ways to help students mix work and study. It will also probably exert downward pressure on the length of degree and non-degree programs (including greater uptake of micro-credentialling).

A final consideration here is that tight labour markets will undoubtedly make it more challenging for the university itself to hire and retain staff.

Figure 4: Ratio of over-65s to 25–64-year-olds, Canada, 2000-2050 (projections)



A Changing Alberta: Growing Youth Population, Growing Jobs

While one frequently sees stories about the consequences of an aging population, it is important to understand that Alberta is quite different from the rest of Canada demographically. According to the latest Statistics Canada census (2021):

- The Albertan population is younger (38.4 years old on average versus the national average of 41.6).
- The proportion of 0–14-year-olds is higher at 24.9% (versus a national average of 20.9%).
- The number of 18-year-olds is projected to consistently increase in the province until at least 2033.

Indeed, while the country is looking at an increase in the number of 18-year-olds over the next five years, in Alberta the numbers of young people are projected to continue rising well into the 2030s (see Figure 5).

In terms of industry, Alberta has continued, like other parts of the world, to move away from goods production over the past twenty years. While most jobs categories have seen an increase in job creation since the turn of the century, 85% of total new jobs arose in the service sector, and the proportion of all jobs in the service sector rose from 74% to 77%. As Figure 6 shows, two of the top three fastest growing occupations are primarily served by the university sector.

Figure 5: Projected number (in 10,000s) of 18-year-olds in Alberta, 2022-2033

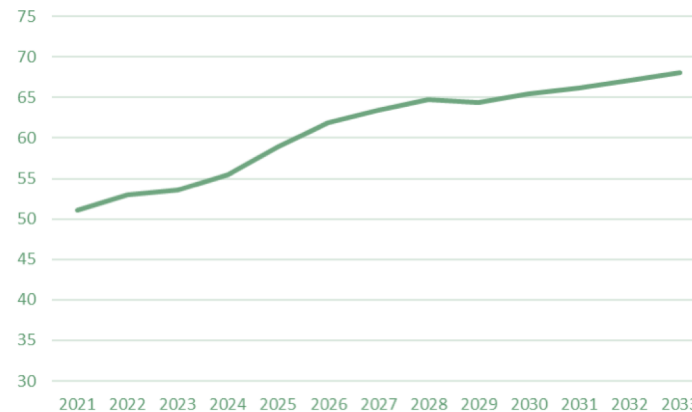


Figure 6: Change in Total Employment by Occupation, Alberta, September 2000 to September 2022



Equity, Diversity, and Inclusion

Post-Secondary Institutes are Increasingly Committing to Equity, Diversity, Inclusion, and Decolonization in their Plans

Post-secondary institutions are increasingly articulating commitments that reflect shifts in the societies they serve. In a recent scan of over 50 institutional strategic plans from across Canada, commitments to improving EDI on campus were cited in 80% of the plans, either as a main pillar or category or as a secondary goal /objective in support of a main pillar or categories. EDI was the second-most frequently included strategic priority in our scan.

University strategic plans are speaking to instances of societal evolution in matters of Indigenization and decolonization. Since the Truth and Reconciliation Commission (TRC) published its Calls to Action in 2015, Canadian post-secondary institutions have responded by including language in their strategic plans pledging to take tangible steps or to more broadly work towards Indigenization and decolonization at the institution. Two-thirds of the strategic plans reviewed now include references to Indigenization and decolonization, a marked increase compared to the pre-TRC era.

For the University of Alberta, these two commitments have specific implications. Nearly half of U of A applicants come from the City of Edmonton, and among youth in Edmonton nearly half (48.3%) are either Indigenous or belong to a visible minority group. As the university serves an increasingly diverse student body, diverse community, and as it employs an increasingly diverse staff, past educational and work structures and conditions may not meet the needs of today's populations in their pursuit to obtain a post-secondary education or to contribute to the University's ambitions.

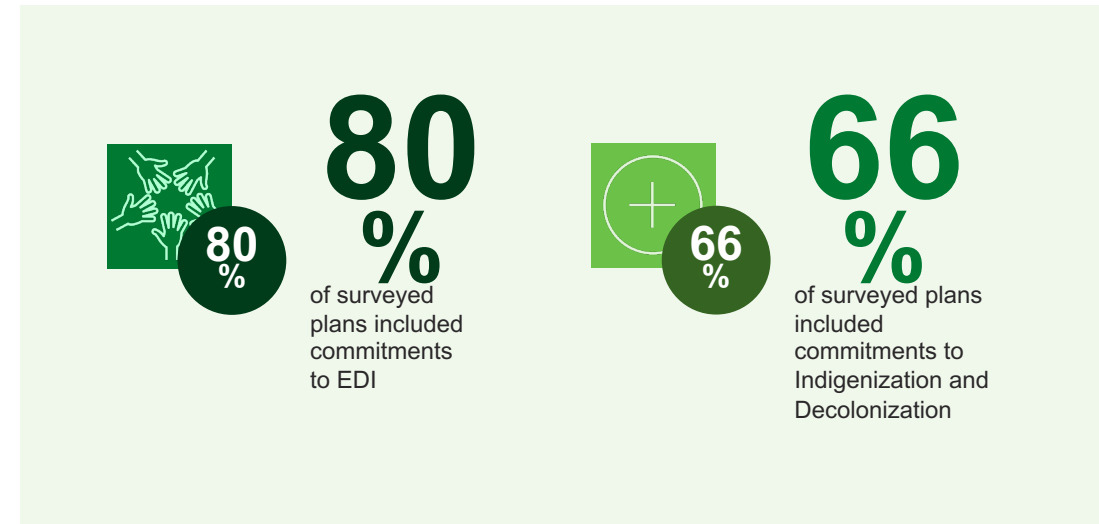
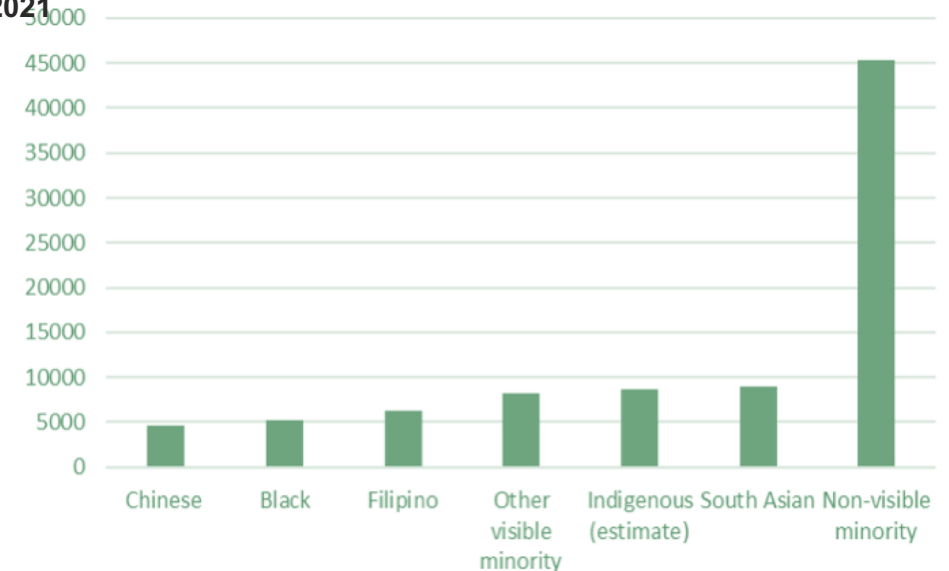


Figure 7: Ethnocultural diversity of Edmonton population aged 20-24, 2021



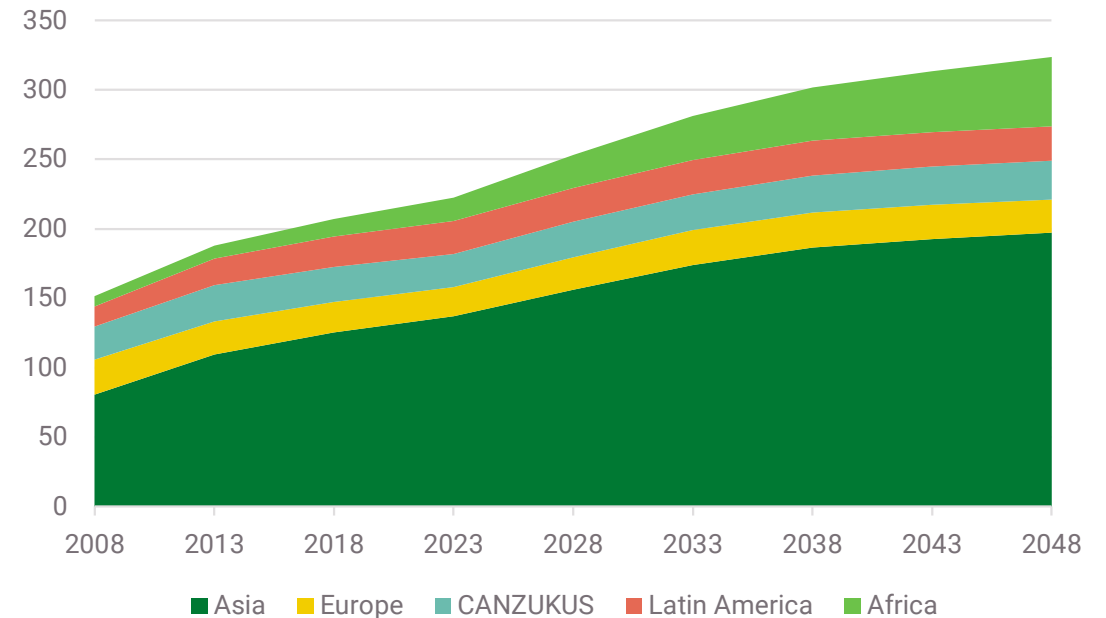
Academia Moves South and East

Academia's Global Centre of Gravity is Shifting East and South

The period between 1998 and 2013 was the fastest period of higher education enrolment growth in world history – a rate of roughly 8% per year. But since then, growth has slowed to about 2% per year, mainly because the global youth population has started to decline. While it will recover slightly in the 2030s, future growth in university enrolments is mostly going to come from increasing participation rates. In the global north, where higher education is already near-universal, there is little room for growth of this kind. This means that most of the growth will continue to occur in Asia and Africa – through to 2048, about 93% of all global growth is likely to come from these two areas.

The implication for universities in the developed world is not just that growth in international student numbers is more likely to come from these areas – it is likely that the “rising” universities of the first half of the twenty-first century are also likely to come from these areas as well. To the extent that international collaboration in research is important to any North American university, this evidence suggests that the search for the new research stars should be focused on Asia and Africa.

Figure 8: The shifting balance of global higher education (projected enrolments, 2008-2048, in millions)



The Poly-Crisis

Interlocking Global Crises

Global events and catastrophes of the last few years have included pandemics, civil crises, inter-state violence or extreme climate-related events (e.g., historic levels of flooding in Pakistan or Germany, historic droughts in China and Europe). On balance, these seem likely to escalate and exacerbate one another. In particular, the combination of climate-based and conflict-based interruptions of global food exchange patterns seems likely to cause continued increases in food prices, which themselves are considered the leading indicator for increased civil unrest in parts of the developing world. Add to this the prospect of drying aquifers in various parts of the world, increasingly volatile weather patterns globally, and the potential for the creation of large-scale climate refugee populations, and it is easy to see why the next couple of decades are likelier to see higher degrees of economic and social volatility. These are unlikely to affect Canadian higher education institutions directly (except perhaps in the way that Keyano College was affected in the fires of 2016) but coping with these crises will put additional strains both on government funding and on the attention span governments have to deal with important but non-urgent files like higher education. It may also affect the free flow of students between countries, including to and from Canada. In short, increasing volatility is simply a headwind that higher education will need to cope with.

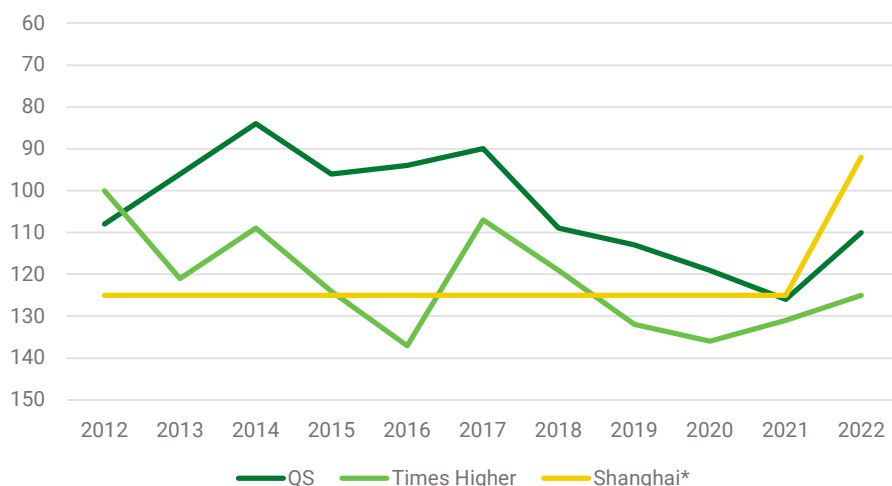


Research and Innovation

Since the Second World War, universities' roles as centres of discovery has taken ever-increasing importance. Consequently, institutional prestige, which is today mostly expressed in the form of international rankings, has also become increasingly connected to perceptions and measurements of research excellence.

The figures below show that the University of Alberta is consistently ranked around 100th in the world by ranking systems which mostly focus on research output. They also show that in general, University of Alberta does better on measures of output rather than it does on measures of impact.

Figure 9: University of Alberta Performance on Major Global League Tables, 2012-2022



Until the 1990s, the university's new role was typically expressed in terms of fueling basic research. Since the 1990s, however, universities have been expected to take on an increasingly direct role in economic development through commercialization activities, among other things. More recently, universities have also strongly emphasized solving problems of local and global societal importance, often articulated as a commitment to acting in the service of the United Nations' Sustainable Development Goals. A new ranking designed to measure this puts Alberta 11th in the world, though it should be noted that this ranking is boycotted by many research-intensive institutions.

Table 1: University of Alberta Performance, Whole Institution and by Broad Scientific Field, CWTS Leiden Rankings 2022

ALL DISCIPLINES		BIOMEDICAL & HEALTH		LIFE & EARTH SCIENCE	
PUBLICATIONS					
3 rd in Canada	59 th Globally	4 th in Canada	89 th Globally	2 nd in Canada	27 th Globally
IMPACT (TOP 5%)					
10 th in Canada	379 th Globally	7 th in Canada	288 th Globally	9 th in Canada	366 th Globally
MATHEMATICS & COMPUTER SCIENCE		PHYSICAL SCIENCES & ENGINEERING		SOCIAL SCIENCES & HUMANITIES	
PUBLICATIONS					
3 rd in Canada	78 th Globally	2 nd in Canada	78 th Globally	4 th in Canada	90 th Globally
IMPACT (TOP 5%)					
13 th in Canada	328 th Globally	96 th in Canada	457 th Globally	14 th in Canada	3497 th Globally

Research and Innovation

One of the main constraints on research output is money. It is no secret that research-intensive institutions are expensive to operate. The top institutions in the world spend billions of dollars on research every year. Figure 10 shows the research expenditures of the University of Alberta compared with those of top 25 public universities in the world in the Shanghai Rankings (UCSF is excluded on account of being medicine-only). Alberta does reasonably well on this measure compared to many of the top-25 universities, but it remains some distance behind the leaders. Figure 11 shows the change in income from the federal Tri-Councils and the Canada Foundation for Innovation over a 10- and 20-year time horizon (i.e., since 2000-01 and 2010-11) for all U-15 universities. The University of Alberta is about the median performer at both time-scales, but several competitors in Western Canada have done better.

Among the key question for any new University of Alberta strategy is how to increase income, and thus expenditure, on research. Increasingly, lower-ranked institutions seem to be settling on a “steeple of excellence” strategy. This strategy, first pioneered by Stanford over 60 years ago, entails putting focus on a few areas of (preferably interdisciplinary) excellence, in order to increase chances of attracting large funders. The University of Alberta has gone some way in this direction with its five “signature” areas of research. Could it do more?

Figure 10: Research Expenditures at University of Alberta plus Top 25 Public Universities in Shanghai Rankings

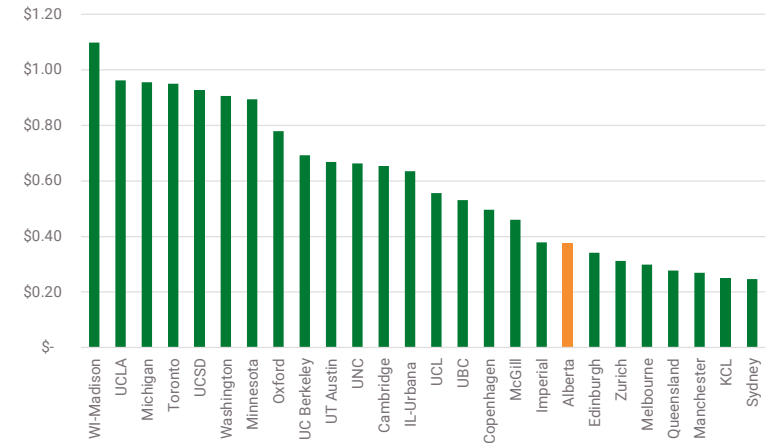
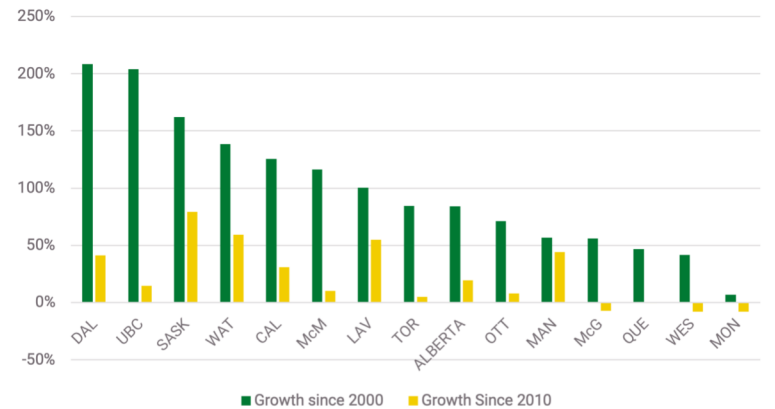


Figure 11: 10- and 20- year change in real income from CFI and Tri-councils U15 universities 2020-21



Student Experience

Undergraduate

Student experience is measured through all the interactions they have with their higher education institutions from application until graduation. Students expect increasingly high levels of engagement and personalization, both in and out of the classroom

According to the most recent NSSE survey (2020), U of A students place a high value on course choice, consistency between course coverage and examination content, and quality of course instruction. Outside the classroom, U of A students indicated the availability of high-quality study spaces, access to quality personal support services (e.g. counselling), and the opportunity to participate in research with faculty as an undergraduate as being of particularly high value. When benchmarked against its U15 comparators, the U of A performs on par in most areas.

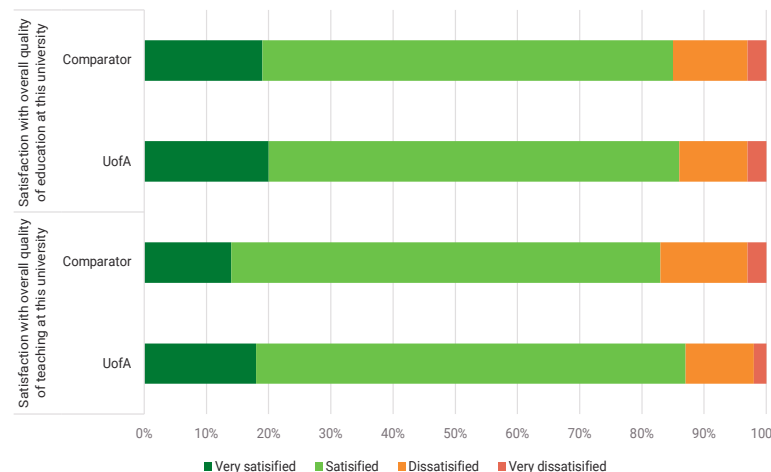
In the 2022 Canadian University Survey Consortium respondents indicated that the top 5 reasons (in order of popularity) they decided to attend university:

- To prepare for a specific career or job
- To get a more fulfilling job than I probably would if I didn't go
- More likely to get a job with a degree

- Apply learnings to make a positive difference in the community
- Earn money

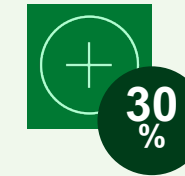
Universities have tried to provide student experiences that cater to these aspirations by promoting work-integrated learning, service learning, and other forms of experiential learning commonly believed to provide students with workplace marketable skills.

Figure 12: Senior students' overall satisfaction with quality of teaching and overall quality of education

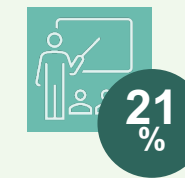


¹ James, C.J. and Rob Clayton. (2022) Reimagining the Student Experience. Toronto: KPMG. Retrieved from: <https://assets.kpmg/content/dam/kpmg/ca/pdf/2022/03/reimagining-student-experience-in-higher-education-final-en.pdf>.

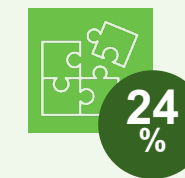
U of A students' top priorities for improvement *inside* the classroom:



Increasing the number or variety of course offerings in your major



Improving the quality of course instruction by professors



Ensuring a better fit between course content, assignments and tests/exams

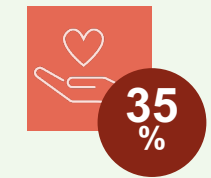
U of A students' top priorities for improvement *outside* the classroom:



Improving the quality/availability of study spaces



Providing students with more opportunities to undertake research with faculty



Expanding and/or improving the quality of personal support services (e.g., counselling)

*Six statistics above: NSSE (2020)

Another recent survey¹ indicated that **77%** of AB students reported that they wanted their post-secondary school to help develop **soft skills**, like creative problem solving, empathy, and emotional intelligence. In the same survey, **76%** of AB students wished their post-secondary school had a stronger focus on **mental health and well-being**.

Student Experience

Graduate

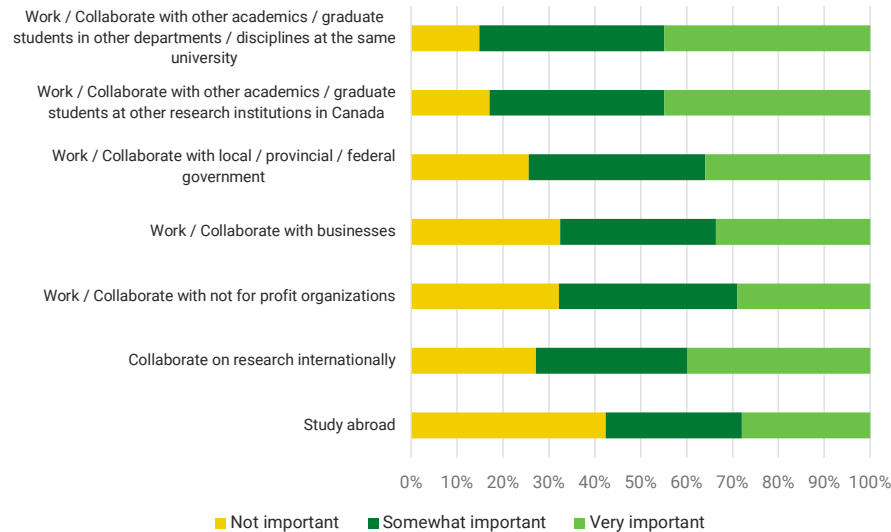
According to the most recent poll from the Canadian Graduate and Professional Student Survey (CGPSS), the following were most important to graduate students:

- The opportunity to work or collaborate with other academics or graduate students in other departments or disciplines at the same university
- Collaboration with other academics / graduate students at other research institutions in Canada
- International collaboration

Literature on graduate student experience often also includes discussion on the need for:

- “Alt-ac” career preparation.
- Funding and living affordability
- Mental health and well-being support

Figure 13: Importance of Various Educational Activities



² Johnson, N., Bates, T., Donovan, T., and Seaman, J. (2019). Tracking Online Education in Canadian Universities and Colleges: National Survey of Online and Digital Learning 2019 National Report.

Online

A growing segment of students study online. The year before the Covid-19 pandemic, more than 76% of colleges and universities in Canada offered online courses. The proportion has since risen to 92% of institutions that educate 7,500 students or more, and 93% of all universities.² The online education landscape is changing. Universities will need to adjust to meet expectations in this area.

In Person/Online Binary Fallacy

- An increasing proportion of on-campus students also take at least one online course.
- Rethinking space to accommodate hybrid learners.
- Changing needs for accessing services.
- Facilities used differently.

Student Expectations

- Expect augmented, virtual, and mixed reality technology.
- Hyper-personalized learning experience.
- Flexible and simplified learning experiences.

Student Success

- Identifying struggling students earlier to promote retention.
- Persistence and retention are a result of learner, provider, and instructional factors.
- Easy, digital access to supports and resources.

Figure Sources

Figure 1: Statistics Canada. Table 37-10-0026-01 Revenue of universities by type of revenues and funds and Table 37-10-0028-01 Revenues of colleges by types of revenues and funds

Figure 2: *ibid.*

Figure 3: Parliamentary Budget officer, Fiscal Sustainability report 2022

Figure 4: Statistics Canada, Centre for Demography. Statistics Canada Population Projections, M1 (medium) variant.

Figure 5: Statistics Canada Labour Force Survey, 2022

Figure 6: *Ibid*

Figure 7: Statistics Canada. Table 98-10-0337-01 Visible minority by ethnic or cultural origin: Canada, provinces and territories, census metropolitan areas and census agglomerations with parts

Figure 8: Higher Education Strategy Associates. <https://higheredstrategy.com/global-higher-education-to-2050/>

Figure 9: <https://www.qs.com/rankings/> and <https://www.timeshighereducation.com/world-university-rankings> and <https://www.shanghairanking.com/>

Table 1: CWTS Leiden Rankings 2022

Figure 10: Higher Education Strategy Associates Top 200 Global Universities Financial Database

Figure 11: Canadian Association of University Business Officers, Financial Information of Universities and Colleges, various years

Figure 12: NSSE 2020 Consortium Report, U15 xOntario. University of Alberta

Figure 13: Canadian Graduate and Professional Student Survey 2022 Summary Report, All students

Thank you.

Please reach out any time if you have any further reflections or questions.

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