

Why Artificial Intelligence Giants are Heading North to Montréal



The world's best economic promotion agency at your service





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Top Reasons to Invest in AI in Greater Montréal



Top reasons to invest in AI in Greater Montréal



Top 3 best places to invest in AI in North America



1st in Canada for university research funding with \$1.34+ billion yearly



More than \$3 billion in AI investments announced in Greater Montréal since 2016



World leaders, including **Google, Microsoft** and **Facebook**, opened AI research labs in Montréal in the last few years



600+ researchers MSc, PhD, post-doc and applied AI students at **Mila**, **the world's largest academic research lab** in deep learning and reinforcement learning



Home of **Scale AI**, Canada's AI supply chain supercluster and the International Centre of Expertise for the Advancement of Artificial Intelligence (**ICEMAI**)



Cutting-edge expertise developed by world-renowned researchers such as **Yoshua Bengio, Joëlle Pineau, Doina Precup, Hugo Larochelle** and **Irina Rish**



More than **14,000 university students** enrolled in artificial intelligence and data-related programs



Numerous possibilities for collaboration between researchers and the industry with **Prompt, Scale AI, Mitacs**

02

A World-Class Artificial Intelligence Hub



Mila, a thriving AI hub in the Mile-Ex neighborhood

- With **600+ researchers**, Mila is the **world's largest academic research lab specialized in deep learning and reinforcement learning**
- A collaborative ecosystem of AI researchers, startups and major companies
- Examples of strategic global partners within Mila:



A unique centre of excellence: IVADO (Institute for Data Valorisation)



More than **1,400** scientists
(professors, professionals and
students) with complementary areas of
expertise

Close to **150**
members and partners

Over **270**
collaborative
research projects

Research centres



Network partners




Academic partners



International partners



40+
research chairs
& labs

A portrait of Yoshua Bengio, a middle-aged man with grey hair, wearing a grey and white striped sweater over a black turtleneck. He is standing in front of a window with a metal railing.

YOSHUA BENGIO
a pioneer in deep learning

Montréal's leading AI researchers

- 1st in Canada and 2nd in the world in the **2021 Top Scientists Ranking for Computer Science & Electronics**
- **Winner of the Turing Award 2018:** “Nobel Prize of computing”
- **Winner of the Killam Prize** in Natural Sciences in 2019
- **Fellow of the Royal Society**
- Full Professor, Department of Computer Science and Operations Research, **Université de Montréal**
- Founder and Scientific Director of **Mila**
- Scientific Director of **IVADO**
- **CIFAR** Fellow and Program Director, Learning in Machines and Brains
- Worked at the CIFAR research institute alongside **Yann LeCun** (now at Facebook) and **Geoffrey Hinton** (now at Google)



World-renowned researchers who make Montréal shine



Joëlle Pineau

Associate Professor with the **School of Computer Science at McGill University** and **CIFAR Senior Fellow**, Program in Learning in Machines and Brains. She is also the Head of the **Facebook AI Research lab**, as well as a member of **Mila**



Doina Precup

Associate Professor with the **School of Computer Science at McGill University** and **CIFAR Senior Fellow**, Program in Learning in Machines and Brains. She is also the Head of the **DeepMind Lab** in Montréal, as well as a member of **Mila**



Gregory Dudek

Chaired professor of computer science at McGill University and **Director of McGill School of Computer Science**. He is also the Head of the **Samsung AI Center**, as well as a member of **Mila**



Aaron Courville

Associate Professor in the **Department of Computer Science and Operations Research (DIRO)** at the University de Montréal, and **CIFAR Fellow**, Program in Learning in Machines and Brains. He is also a member of **Mila**



Simon Lacoste Julien

Associate Professor in the **Department of Computer Science and Operations Research (DIRO)** at the University de Montréal and **CIFAR Fellow**, Program in Learning in Machines and Brains. He is also Director at **Samsung SAIT AI Lab** and a member of **Mila**



Andrea Lodi

Full Professor at École Polytechnique de Montréal and the **Canada Excellence Research Chair in Data Science for Real-Time Decision-Making**, as well as a member of **Mila**





Major public investments to support AI development and adoption

\$93.5M

from the First Research Excellence Fund (2016)

\$100M

over the next 5 years for the creation of a Québec AI cluster (2017)

\$44M

for the Pan-Canadian Artificial Intelligence Strategy (2017)

\$313M

for Scale AI Supercluster (2018) and for the development of AI talents (2019)

\$329M

over the next 5 years to accelerate the adoption of AI in Québec (2019)

\$15M

for the International Centre of Expertise in Montréal for the Advancement of Artificial Intelligence (ICEMAI) (2019)

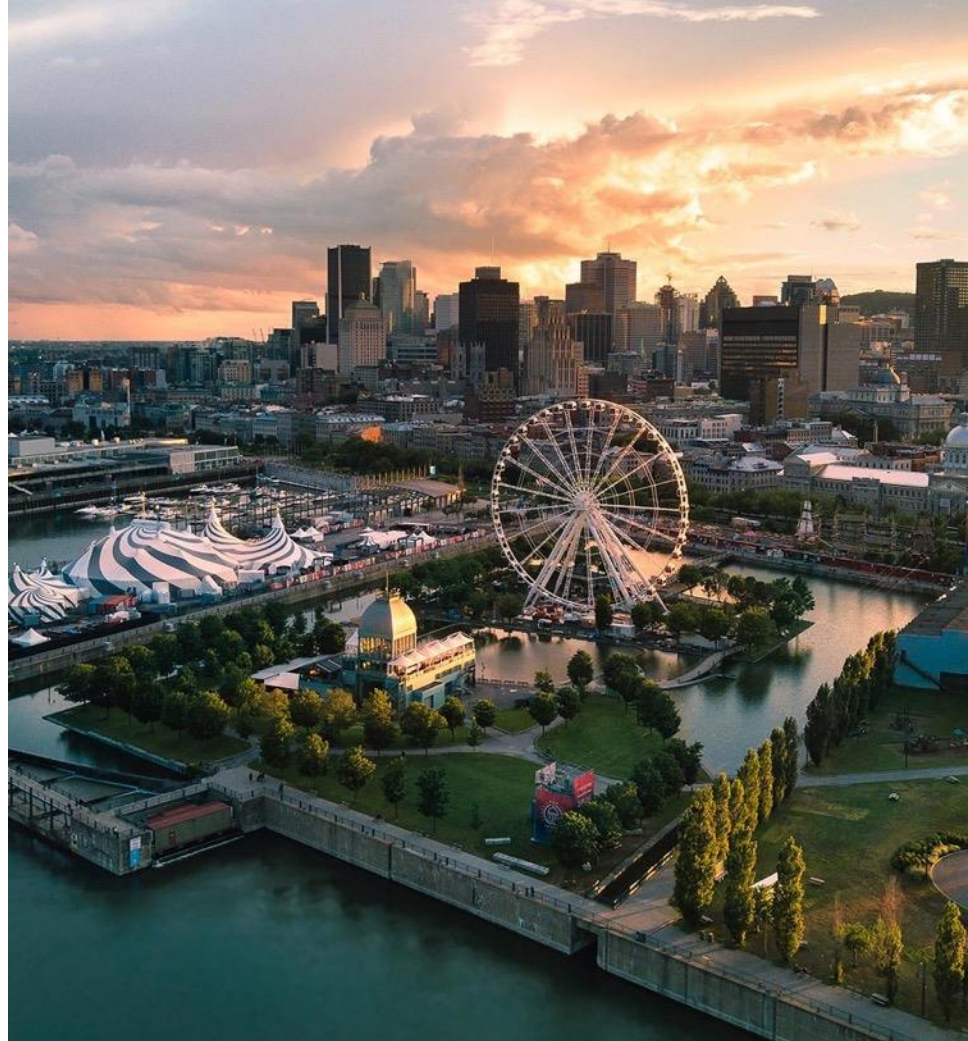
Montréal selected for Canadian AI cluster headquarters

SCALE AI

Canada's AI supply chain supercluster, dedicated to building the next-generation supply chain and boosting industry performance by leveraging AI technologies



Québec's AI organization fostering the development of Québec's AI ecosystem and mobilizing stakeholders in the field around common projects

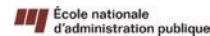


Old Port, Grande-Roue and downtown Montréal © Loïc Romer



OBVIA, fostering responsible AI and digital technology

- The **International Observatory on the Societal Impacts of AI and Digital Technology (OBVIA)** helps maximize the positive effects of AI and digital technology on society and minimize its negative impacts
- **Founding institutions:** 18 universities and colleges in Québec, such as:



- **Over 100 partners** in Québec, across Canada and internationally
- Financing **innovative research projects** through grants
- **Over 220 researchers** working across disciplines



The International Centre of Expertise for the Advancement of Artificial Intelligence (ICEMAI) launched in Montréal

- Spearheaded by Montréal International as part of the **Global Partnership on Artificial Intelligence (GPAI)**
- It is one of the two centres of expertise along with the centre in Paris who will work closely with the GPAI Secretariat, housed at the **OECD**
- ICEMAI will support two of the four themes the GPAI will be working on: **responsible use of AI** and **data governance**
- It will also analyze measures to strengthen our national capacity to **commercialize** and **adopt AI-related technologies**



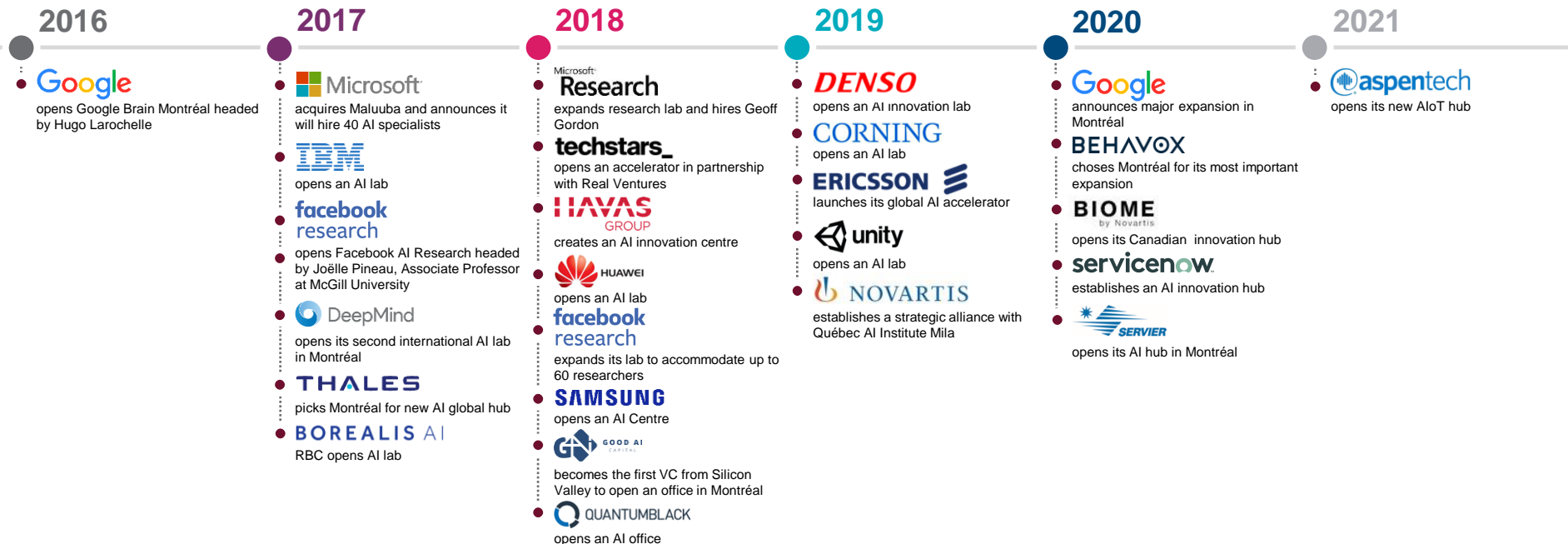
- **\$15M investment** by the Government of Québec and the Government of Canada
- **A collaboration of industry, the scientific community and civil society:**



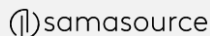
Government of
Canada's
Advisory Council
on Artificial
Intelligence

In addition to local and international experts

A few of the world leaders developing their AI expertise in Montréal



Other foreign companies that have chosen Greater Montréal



A strategic hub for solving environmental challenges with AI

- Nearly **20 members of Mila**, specialize in research that can help fight the harmful impacts of climate change, such as:
 - **David Rolnick**, McGill University
 - **Yoshua Bengio**, Université de Montréal
- Examples of AI research projects on **climate change** and **environmental research**:
 - Using AI to visualize the impacts of climate change
 - AI and climate change: opportunities, considerations, and policy levers to align AI with climate change goals

- Mila has numerous projects with industry and academic partners including the **carbon footprint of AI** and the **reduction of greenhouse gas (GHG) emissions** in the energy sector:



An open-source software that help track the location-dependent carbon footprint of algorithms and code. CodeCarbon is a collaboration between BCG's GAMMA, Comet, and Haverford College



An organization created by an international group of volunteers from academia and industry with the goal of catalyzing impactful work at the intersection of climate change and machine learning



A booming startup ecosystem

- One of the top startup ecosystems in the world
- US\$2.7 B+ in VC investments between 2018 and 2020 in Montréal
- Lucrative funding for Montréal's AI companies:



raised **US\$100M** - October 2018 - Series D



acquired for **US\$79M** – July 2019 - by Aspen



raised **US\$40.3** - November 2019 - Series A



raised **US\$32M** - July 2020 - Series B



CDPQ-AI Fund:
\$250M dedicated to AI (2019)

Top AI accelerators and incubators to help develop tomorrow's breakthroughs



This program focuses on advancing the development and application of AI across industries and markets



Recognized as one the world's top incubator programs by UBI Global's Top 20 University Business Incubators for 2019–20. The program for AI startups is run in partnership with Thales



A partnership with HEC Montréal, this program focuses on AI and data science to capitalize on Montréal's expertise in the sector



This program provides structured and unstructured mentoring and coaching by proven entrepreneurs over a four-month residency program for two cohorts of 8 to 10 companies per year



This program is for early or idea stage AI-enabled startups



This program specializes in the consumer electronics technology market, with a special interest in companies leveraging AI



Recognized as one the world's top incubator programs by UBI Global's Top 20 University Business Incubators for 2019–20. It offers programs for startups at every juncture of their growth

Sample of leading local companies active in AI in Montréal

Examples of Montréal companies using AI in various fields



IMAGIA: AI-driven personalized care



InVivo AI: facilitating accurate toxicity screening in the earliest phases of drug discovery



wrnch: digitizing human motion and behaviour from standard video



AFX Medical: AI-powered radiology tools intended to treat brain disease



Algolux: using machine learning to empower cameras to see more clearly



Myelin: AI synthesis of ASD scientific data



LANDR: machine learning audio production platform, offering audio creators a suite of tools to support the lifecycle of creation



Fluent.ai: personalized intent recognition that learns from speech, behavior and context, for command and control interfaces



Automat: helping companies use AI to talk to their customers, understand them and serve them better



envision.ai: applies the science of deep learning to the art of visual media



Via: helping energy companies across the globe realize the value of their data through AI and blockchain



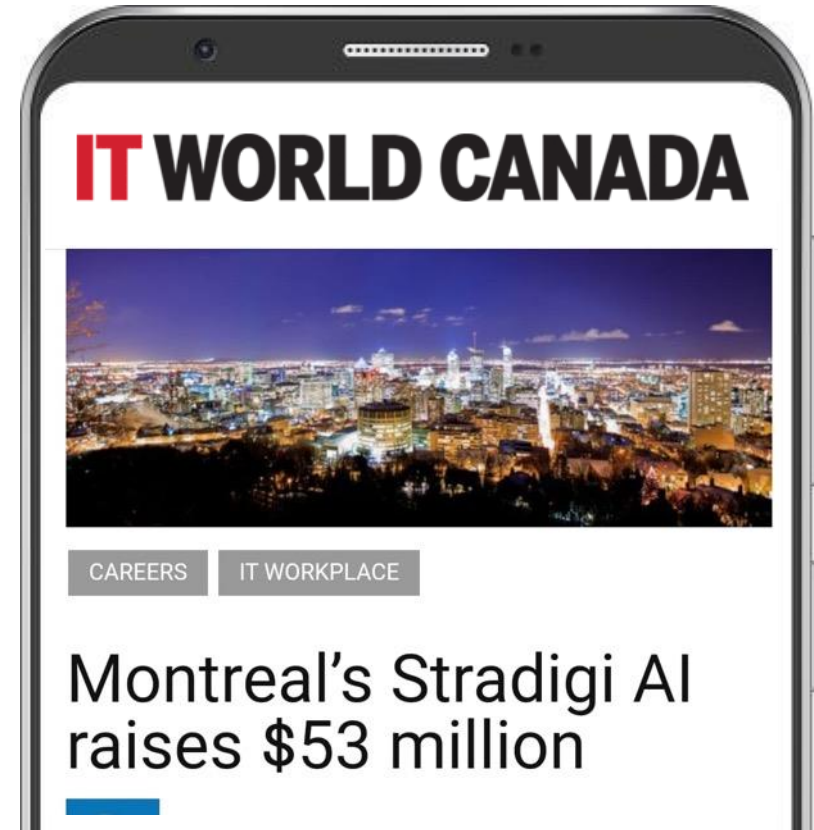
Moov.ai: deploys tailor-made AI and machine learning solutions bringing a concrete ROI to business challenges

Stradigi AI, a global leader in AI platform for businesses, based in Montréal



“Stradigi AI redefines how enterprises work by scaling AI-powered decision-making capabilities for any business user”

Source: IT World Canada, November 14, 2019.



At the forefront of AI for good initiatives

- **For ethical & responsible AI**



< >
Montréal Declaration
Responsible AI_
< / >

An initiative of the Université de Montréal

Since December, 2018
more than 1,900 signatures
from citizens and 108
organizations

- **Research centres with AI for good initiatives**



Fostering a dialogue on the socially responsible use of AI and the development of social and environmental applications.
Montréal's AI4Good lab aims to get more women working in Artificial Intelligence and other events

HumanIA

Directing AI towards the common good through humanistic and multidisciplinary studies and research

inven.T
Centre d'innovation technosociale

Catalyst for technosocial and responsible innovation projects



TechAide AI4Good Conference and Hackathon 2020

**SINCE ITS OFFICIAL LAUNCH IN 2016,
TECHAIDE HAS RAISED \$1.34M FOR
CENTRAIDE**

Many organizations support the development of the AI ecosystem



An applied research and expertise centre in IT, dedicated to making organizations more effective and competitive through the development of innovative technology and the transfer of leading-edge knowledge



The statistical office of UNESCO and the UN depository for cross-nationally comparable statistics on education, science and technology, culture, and communication



A joint initiative of 12 colleges and 7 universities in Montréal, PIA was established to address gaps in education stemming from developments in the field of AI



The first institute of distributed AI in Montréal, created by ÉTS and Ultra Electronics to adapt AI techniques for use in systems functioning in extreme conditions



An umbrella organization of Québec universities using advanced research computing to support the research community and business sector



A centre for innovation and applied research, JACOB aims to accelerate the application of AI into the economic fabric of Québec



Helping Québec companies increase their competitive advantage through R&D financing and partnerships with the institutional research community



Connecting researchers with the industry, Mitacs works closely with Mila's team, partner companies, and match the innovation projects to the most qualified research interns in the field

AI stands on a strong information technologies ecosystem

- **160,000+ IT workers** and **7,000+ companies** in Greater Montréal
- **Lowest operating costs in North America** for software development, ahead of Toronto, Boston, New York and San Francisco
- **Broadly diversified industry:**



Top 5

video game development hubs in the world



1st

city in Canada and a world leader in digital creativity



Top 5

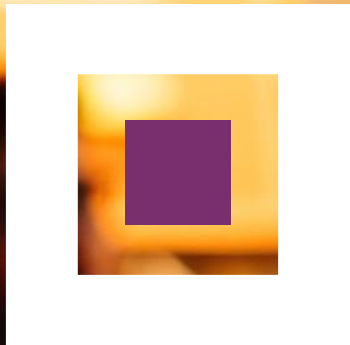
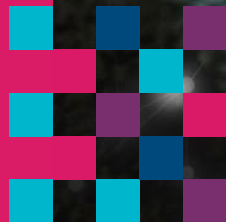
highest tech jobs concentrations among the largest metropolitan areas in Canada & the U.S.

Examples of major companies located in Greater Montréal



03

A Deep and Growing Pool of Highly Qualified Talent



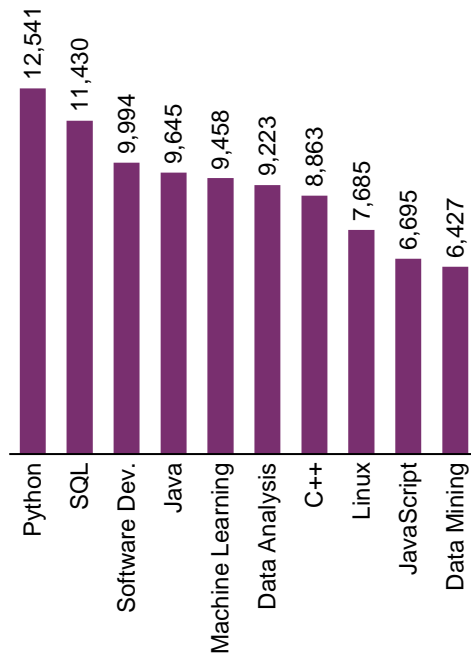
There are more than 27,000 workers with AI skills in Montréal, an increase of 17% over the past 12 months

The 40 key skills taken into account to define AI workers*

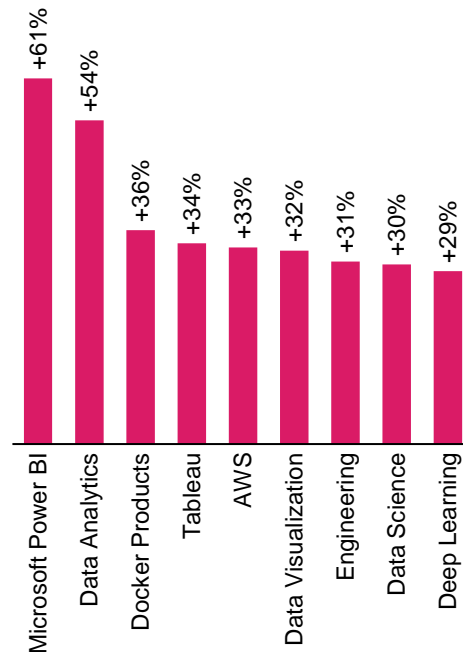


Number of Montréal LinkedIn profiles** that list the skills above: **27,373**

Number of AI workers who have the skills below



Fastest-growing skills among AI workers over the past 12 months



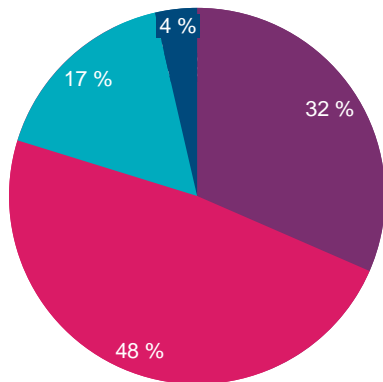
*Key skills identified using LinkedIn's Talent Insights tool are not cumulative or exclusive.

**Excluding profiles for the following titles: *founder*, *co-founder*, *CEO* and *President*.

Source: LinkedIn, Talent Insights, November, 2021.

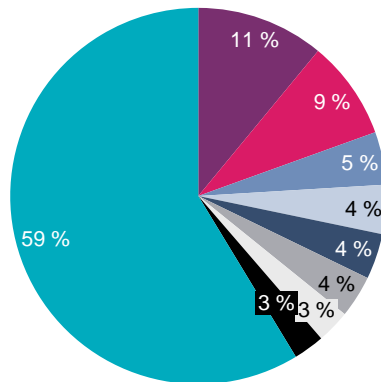
17% of Montréal's AI workers have a PhD and 48% have a master's degree

Highest level of education among AI workers
(100% = 27,373)



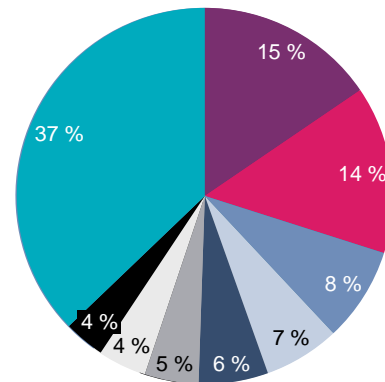
- Bachelor's degree
- Master's degree
- PhD
- Other

Fields of studies of AI workers



- Computer Science
- Computational Science
- Electrical and Electronics Engineering
- Computer and Information Sciences and Support Services
- Computer Software Engineering
- Mathematics
- Information Technology
- Physics
- Autre

Universities where AI workers earned their degrees



- Concordia University
- McGill University
- Université de Montréal
- Polytechnique Montréal
- HEC Montréal
- Université du Québec à Montréal
- École de technologie supérieure
- Université de Sherbrooke
- Autre

The best student city in the Americas and Canada's university capital

- **Canada's university capital:** 15 university institutions and 60 colleges
- **320,000 post-secondary students**, including more than **200,000 university students** and **35,500 international university students**
- **1st in Canada for university research funding** with \$1.34+ billion yearly



Best student city in the Americas
tied with Boston

QS Best Student Cities Rankings
2022

1	Montréal tied with Boston
2	Toronto
3	New York
4	Vancouver
5	San Francisco



A new generation ready to take over

More than 14,000 university students are enrolled in artificial intelligence and data-related programs in Greater Montréal:

AI-related University programs	Students enrolled 2019-2020	University graduates 2019
Computer Sciences	10,181	2,061
Computer Engineering and Computer Science	2,328	464
Mathematics	1,416	313
Applied Mathematics	168	33
Probabilities and Statistics	203	51
Total	14,296	2,921

Source: Ministère de l'Éducation et de l'Enseignement supérieur, 2021; compilation Montréal International.



The Village au Pied-du-Courant and Jacques Cartier Bridge © Montréal International

04

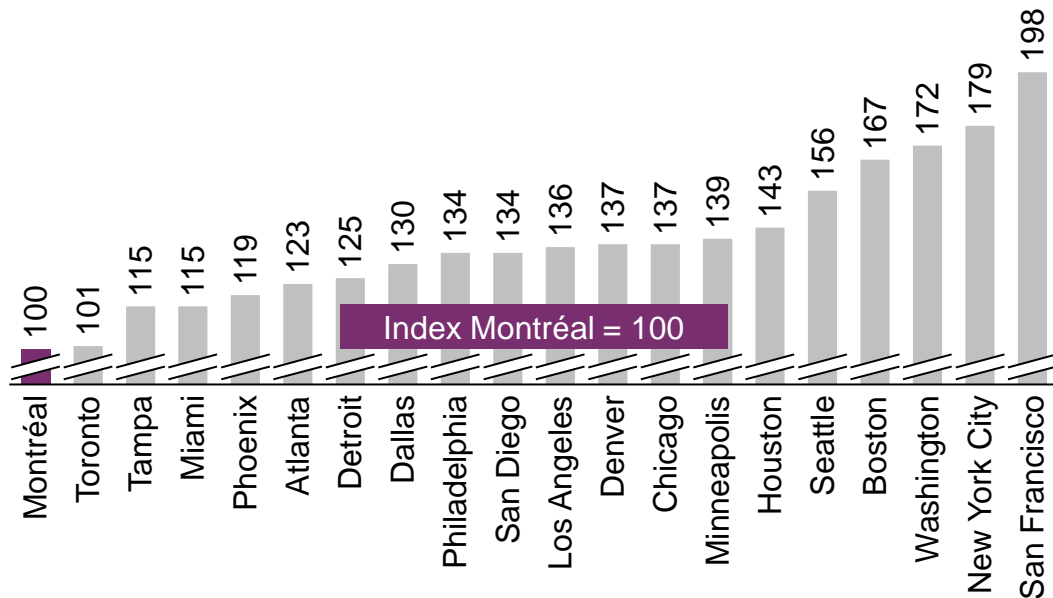
Attractive Operating Costs and Incentives



Operating a business costs less in Greater Montréal than in any other major metropolitan area in Canada and the U.S.

Operating costs index for software development

20 largest metropolitan areas in Canada and the U.S., 2021



28% cost advantage

for **software development** compared to the average 20 largest metropolitan areas in Canada and the U.S.

Advantageous AI and IT salaries for employers

Annual base salaries (US\$) for AI / IT professions

	Montréal	Toronto	Vancouver	New York	San Francisco
Software Developer	\$66,172	\$66,414	\$68,672	\$104,404	\$124,957
Computer Programmer	\$68,072	\$68,321	\$70,644	\$107,932	\$129,179
Software Engineer in AI	\$75,757	\$76,034	\$78,619	\$122,504	\$146,620
Machine Learning Engineer	\$94,969	\$95,316	\$98,557	\$157,006	\$187,915
Data Scientist	\$94,969	\$95,316	\$98,557	\$157,006	\$187,915

Low mandatory benefit costs for employers

Examples of mandatory benefit costs for employers, 2021

Gross annual salary*	\$50,000	\$100,000	\$125,000
Québec Public Pension Plan (employee: 5.9%; employer: 5.9%, max. \$3,427.90)	2 743,50 \$	3 427,90 \$	3 427,90 \$
Québec Parental Insurance Plan (employee: 0.494%, employer: 0.692%, max. sal. of \$83,500)	346,00 \$	577,82 \$	577,82 \$
Employment Insurance (employee: 1.18%, employer: 1.65%, max. sal. of \$56,300)	826,00 \$	930,08 \$	930,08 \$
Health Services Fund (max. 4.26% if global salary total is more than \$6,5M)	2 130,00 \$	4 260,00 \$	5 325,00 \$
Commission des normes du travail (Labour standards board) (0.07%, max. sal. of \$83,500)	35,00 \$	58,45 \$	58,45 \$
Commission de la santé et sécurité du travail (Occupational health and safety board) (0.42% in service sector, max. sal. of \$83,500)**	210,00 \$	350,70 \$	350,70 \$
Workforce Skills Development and Recognition Fund - Québec Training Law 1% (1% of their total payroll in training for employers with total annual payroll over \$2M)	500,00 \$	1 000,00 \$	1 250,00 \$
Total benefit costs	6 790,50 \$	10 604,95 \$	11 919,95 \$
Total cost	56 790,50 \$	110 604,95 \$	136 919,95 \$
Total benefits in % of gross annual salary	13,58 %	10,60 %	9,54 %

Note: *Paid vacation represents a minimum of 4% of salary and is included in gross salary. Some rates apply up to a maximum insurable revenue.

**The rate for the service sector (65110 - *Bureau de courtage; bureau de services professionnels; bureau offrant des services de soutien administratif*) is 0.42%. The average premium rate in 2021 is \$1.77 per \$100 of payroll.

Source: Revenu Québec, 2021.

E-Business tax credit could cover up to 30% of eligible salaries

SCENARIO

Québec refundable tax credit for the development of E-Business:

- Covers up to **30%** of employee salaries, including **24% refundable**, up to **\$25,000** per employee, per year

ASSUMPTIONS¹

- Foreign-controlled company
- 20 employees eligible @ \$80,000/year
- 100% of their work is related to eligible activities under the E-Business



Note:

1. All values are in \$CA.

2. The unused portion of the non-refundable tax credit can be carried back three years or forward 20 years.

Source: Ministry of Finance of Québec, 2021; Montréal International's analysis, 2021.

R&D tax credits: 15% non-refundable from Canada and 14% refundable from Québec

SCENARIO	Canada	Québec
Scientific Research and Experimental Development (SR&ED) tax incentive program	Qualifying salaries and wages	\$1,500,000 (A) \$1,500,000 (D)
	Other eligible expenses @ 55% ¹	\$825,000 (B) -
	Subcontractor ²	\$160,000 (C) \$100,000 (E)
	Exclusion on the first \$225,000 of R&D expenditures ³	- \$(225,000) (F)
	Deduction of the Québec R&D credit ⁵	\$(192,500) (G) -
	Total qualifying expenditures	\$2,292,500 (A) + (B) + (C) - (G) \$1,375,000 (D) + (E) - (F)
	Refundable Québec credit @ 14%	- \$192,500 (G)
	Non-refundable federal credit @ 15%	\$343,875 (H) -
	Total tax credit	\$536,375 (G) + (H)

ASSUMPTIONS
▪ Foreign-controlled company, more than \$75M assets
▪ 15 eligible employees @ \$100,000/year
▪ 100% of their work is related to eligible activities
▪ Subcontractor: \$200,000

Note:

1. Up to 55% of qualifying salaries and wages, federal only: expenditures should be related to R&D activities.

3. Only 80% of the amount paid to a subcontractor is eligible for a federal tax credit and 50% for Québec tax credit.

4. Québec only: For SMEs (less than \$50M assets) there is an SR&ED tax credit exclusion on the first \$50K of R&D spending. For large companies (more than \$75M assets) and companies under foreign control, the exclusion applies on the first \$225K of R&D spending. This amount is deducted of the qualifying salaries and wages.

5. For the purposes of calculating the combined rate of the credit, the tax credit from the government of Québec is applied against the federal tax credit.

Source: Ministry of Finance of Québec, 2021; PWC, 2021; Compilation: Montréal International, 2021.

Combination of E-Business and SR&ED tax credits

Refundable tax credits for Scientific Research and Experimental Development (SR&ED) and E-Business¹:

- E-Business covers up to **30%**, including **24% refundable**, of employee salaries up to **\$25,000** per job per year
- SR&ED covers **15%** from the Government of Canada, and **14%, refundable**, from the Government of Québec

SCENARIO

Combination of the Québec refundable tax credit for the development of E-Business and the Canada Scientific Research and Experimental Development (SR&ED)

ASSUMPTIONS

- Foreign-controlled company
- 20 eligible employees @ \$80,000/year
- 100% of their work is related to eligible activities

	SR&ED	E-Business
	CANADA	QUÉBEC
Qualifying salaries and wages	\$1,600,000 (A)	\$1,600,000 (C)
Other eligible expenses @ 55% of A ²	\$880,000 (B)	-
Total qualifying expenditures	\$2,480,000 (A)+(B)	\$1,600,000 (C)
Federal credit @ 15% of total qualifying expenditures	\$372,000	-
Québec credit @ 30%³ of total qualifying expenditures	-	\$480,000
Total credit	\$852,000	

Other scenarios are possible to maximize the total credit amount depending on the R&D intensity

Note:

1. Company has to choose between the R-D or the E-Business tax credit for the Québec credits. Only the SR&ED applies in combination with the E-Business.

2. Up to 55% of qualifying salaries and wages, federal only: expenditures should be related to R&D activities.

3. If the company has no taxes to be paid, the Québec credit will be 24%.

Source: Ministry of Finance of Québec, 2021 - Compilation: Montréal International, 2021.



Aerial view of downtown Montréal © Montréal International

Other major incentives

Financial assistance for job creation and training

- **25%** of eligible costs for the implementation of a training program and **50%** of costs incurred for the creation of a human resource department

Tax holiday for foreign researchers and experts

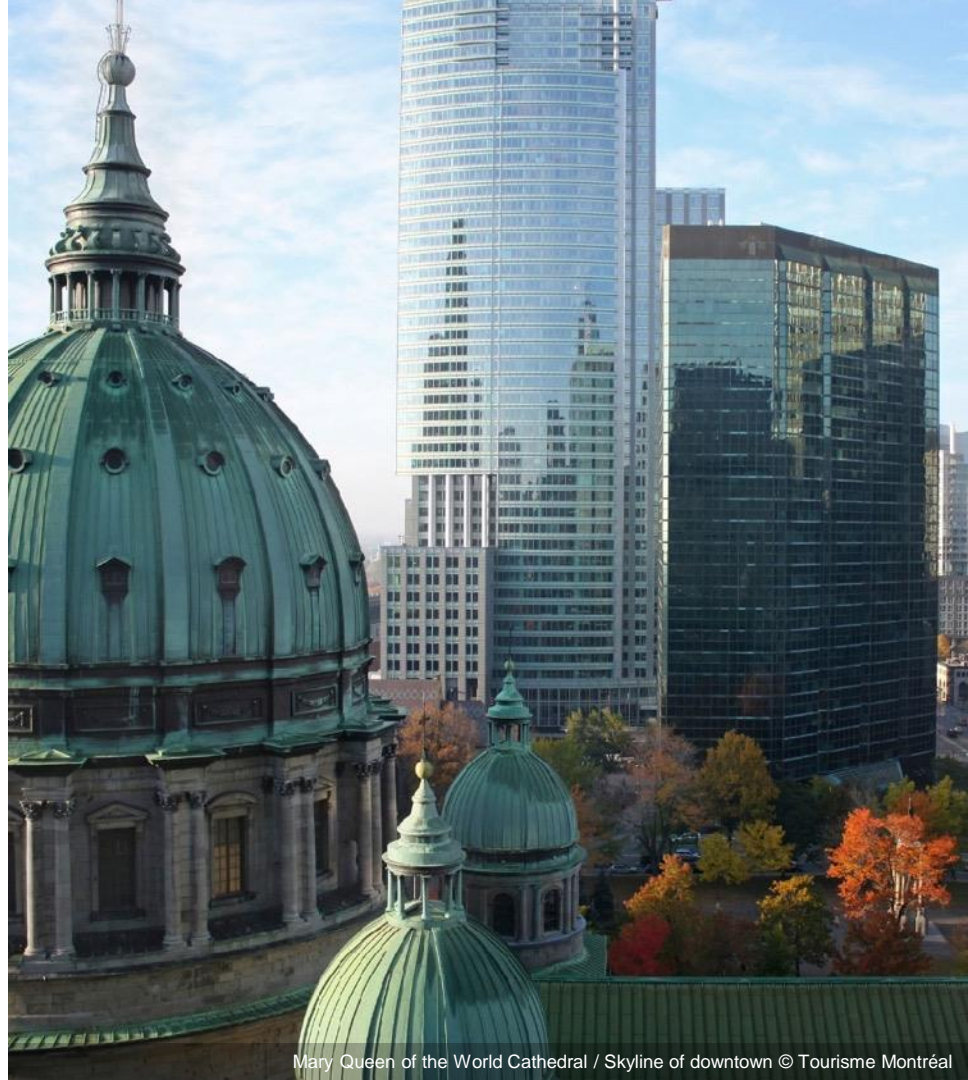
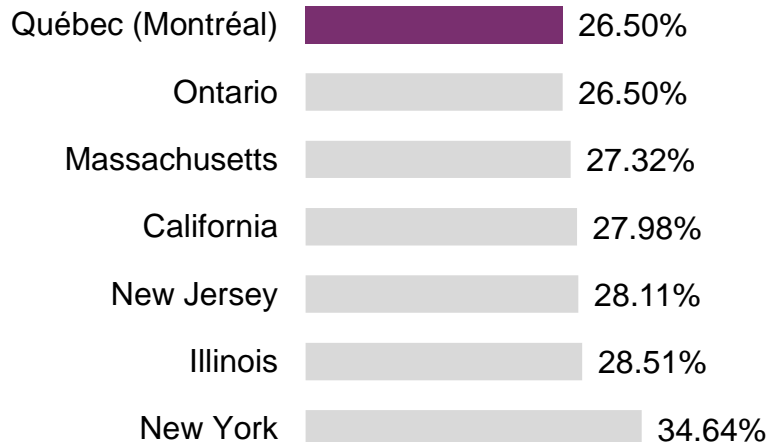
- Five-year Québec income tax exemption
- **0%** of provincial income tax on salary for the 1st and 2nd year
- **25%** for the 3rd year
- **50%** for the 4th year
- **75%** for the 5th year

Internship units to drive collaboration and innovation between universities and companies

- 500 internships created and \$2M invested in Québec to bolster AI research, talent development, and job creation

Québec offers corporations an attractive tax treatment

Comparison of corporate effective tax rate (%) Selected Canadian provinces and U.S. States, 2021



05

An Exceptional Quality
of Life

**MTL
INTL**

Montréal
International

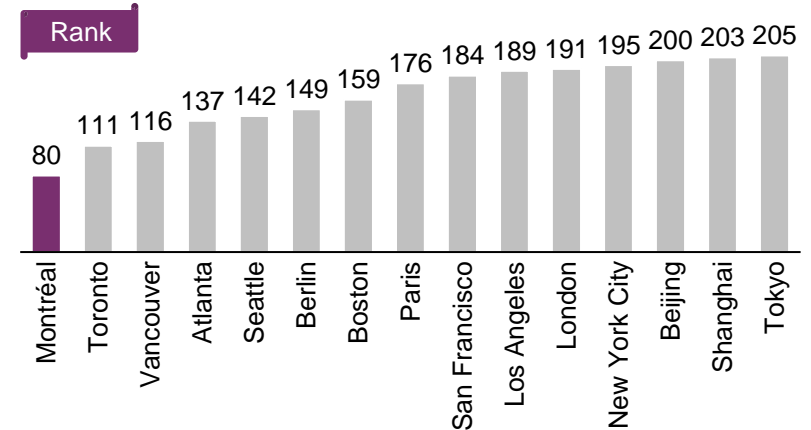




A low cost of living

Greater Montréal is **cheaper than almost all other large cities** in North America, Western Europe, China and Japan:

Mercer Cost of Living Index
World rank from least to most expensive*, 209 cities



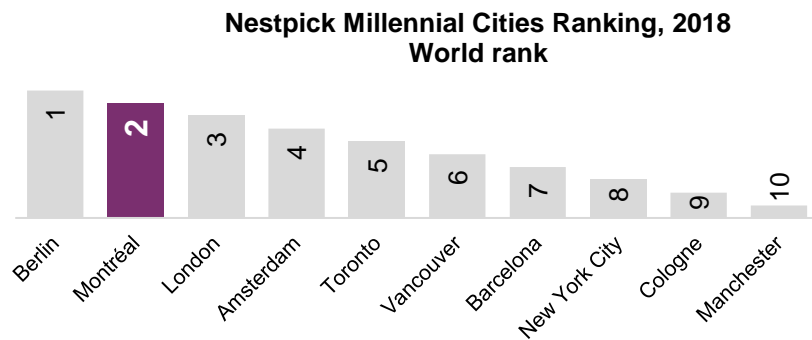
Greater Montréal offers a higher purchasing power thanks to:

- **Cheap housing**
- **Low medical insurance costs**
- **Generous family allowances**
- **Affordable child care**

* Montréal International's analysis.
Source: Mercer, "Cost of Living Survey," 2021.

An exceptional quality of life

- Montréal is the **2nd best city in the world** for millennials:



- Lowest homicide rate** among the 20 largest metropolitan areas in Canada and the U.S.
- Universal health care**
- Lowest education tuition fees** in North America
- Vibrant cultural metropolis** with 100+ festivals and 70 museums





Montréal's Olympic Stadium © Parc olympique

Globally recognized

Most reputable city in the Americas

Reputation Institute, 2018

Best city in Canada and 6th in the world

Time Out, 2019

Best student city in the Americas tied with Boston

QS Best Student Cities Rankings, 2022

Most affordable major city in Canada and the U.S.

UBS Prices and Earnings, 2018

Best Cycling City in North America

Coya, Global Bicycle Cities Index, 2019

Second most walkable city in Canada

Walk Score, 2020

3rd friendliest city in the world

Rough Guides, 2016

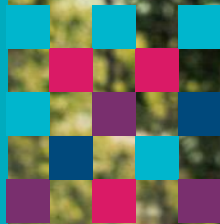
UNESCO City of Design since 2006

Top host city in North America for international association events

Union of International Associations (UIA), 2020

06

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