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TRACKING CANADIAN INNOVATION AND ENTREPRENEURSHIP

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Canada

EDC
TAKE ON THE WORLD

CONTENTS

Canada has done much to strengthen ecosystems in recent years. Active public sector support for startup ecosystems and an abundance of natural resources provide Canada with the potential to establish important global hubs.

EXECUTIVE SUMMARY

Canada is considered a good market for innovation and entrepreneurship, but considerable weaknesses persist, resulting in composite scores and rankings that are distant from top-tier countries and markets.

Key weaknesses in Canada include:

- enterprise-level innovation capabilities;
- insufficient spending on innovation, technology adoption and use;
- enterprise-level capacity to adapt to automation needs, requirements and shifts in the market; and
- a range of business environment deficiencies.

But there are also strengths. At the business startup level, Canada has done much to strengthen ecosystems in recent years. Active public sector support for startup ecosystems and an abundance of natural resources provide Canada with the potential to establish important global hubs.

There are challenges for Canada as it moves forward in its quest for competitive positioning among global leaders in innovation, including:

- the relatively limited presence of the Canadian private sector in venture financing;
- how to make market finance more prominent;
- how to make clusters, incubators, accelerators and hubs more commercially sustainable;
- how to address the absence of Canadian cities as recognized hubs in a third of innovation activity around the world; and
- how other Canadian cities can learn from Toronto (and others around the world) to become more diversified innovation hubs.

According to the WIPO index, Canada ranks 16th in the world in a sample of 132 countries. This is a reasonably strong ranking placing Canada in the second decile of countries, but with a score (53.1) that shows distance from the top tier of countries whose scores are near or exceed 60.

INTRODUCTION

The purpose of this report is to provide a short profile of Canada's position relative to other countries' innovation and ecosystem performance. It identifies Canada's strengths and weaknesses compared to peer economies and global markets.

This profile is the first of a series of upcoming research papers that focus on themes relevant to innovation and entrepreneurship. Additional research topics focus on:

- Government of Canada support for clusters and innovation;
- Business entry and exit, and implications for innovation; and
- Access to finance, with emphasis on venture capital, private equity, and stock market listings.

METHODOLOGY

The assessment of Canadian ecosystems and innovation is based on findings from three sources—all with different areas of focus and methodologies, but all linked to innovation and entrepreneurship. These are:

- The World Economic Forum (WEF) and the World Intellectual Property Organization (WIPO);
- Startup Blink, a service that focuses on startups around the world; and
- The Conference Board of Canada (CB).

These observations are supplemented by additional research on relevant topics related to business formation and growth (or lack thereof) in Canada, and how this impacts technology adoption and adaptation, labour intensity versus capital intensity, productivity and efficiency, and related enterprise-level and business segment patterns. (Sources are found in References and Endnotes.)

SUMMARY OF FINDINGS FROM WIPO, STARTUP BLINK AND THE CONFERENCE BOARD OF CANADA

WEF/WIPO

WIPO has built an index for innovation that applies to a sample of 132 countries, thereby serving as a comprehensive comparator of the status of country innovation levels[1]. Its dashboard focuses on science and innovation investments, technological progress, and socioeconomic impact. Each has short- and long-term measures to gauge year-on-year trends. The WIPO indicators and data for country rankings are subsequently broken out into pillars to arrive at a composite score for the index. These pillars are institutions, human capital and research, infrastructure, market sophistication, business sophistication, knowledge and technology outputs, and creative outputs.

According to the WIPO index, Canada ranks 16th in the world in a sample of 132 countries. This is a reasonably strong ranking placing Canada in the second decile of countries, but with a score (53.1) that shows distance from the top tier of countries whose scores are near or exceed 60.

In most cases, Canada is relatively strong by global measures. Strengths include university training, electricity output and software spending.

Canada fares particularly well in market sophistication (1st), which represents a mix of credit, investment and trade, diversification and market scale. This ranking is puzzling as other sources identify financing constraints as problematic, trade diversification as limited and heavily dependent on the U.S. market, and scale as a problem across the board from domestic market size to enterprise-level capacity.

Such a ranking also seems misplaced considering so many other countries have scale built into their own markets and firms (e.g., United States and China), greater access to financing, and more diversified trade patterns. In brief, the ranking reflects the methodological challenge (and risk) of relying on indexes as sole or primary indicators of strength and weakness.

In the case of the market sophistication pillar, Canada's ranking is influenced by indicators related to venture capital (investment) and weighted average applied tariff rates, domestic industry diversification and domestic market scale. For the reasons noted above, Canada's ranking seems misplaced. It's also noted that indicators don't include domestic credit to the private sector, which is an area in which Canada doesn't distinguish itself well among Organisation for Economic Co-operation and Development (OECD) countries, particularly in terms of the provision of long-term financing[2]. Nor does it account for the heavy reliance on government financing and foreign investment in venture financing and private equity, which translates into limited representation from the Canadian private sector.

Canada also receives a high ranking (5th) for institutions, which relate to the political environment, regulatory environment, and business environment. This ranking aligns with Startup Blink's view that Canada's business environment is positive and comparatively strong when measured against performance benchmarks in other countries (see below). However, additional research has identified relative strengths and weaknesses in Canada's business environment[3], raising questions about whether such a high ranking is justified. Canada's institutional framework is considered to be comparatively strong by global measures. However, it's unclear if Canada's ranking should be as high as five among the 132 countries in the sample. Supplementary research has shown Canada's ranking in relation to the other 37 OECD countries on a range of macro-financial, business environment, and trade and investment indicators wouldn't be as high as five on a composite basis. This, again, showcases the methodological challenge—and risk—of these kinds of ranking systems.

Canada's rankings in human capital and research (18th), infrastructure (30th), business sophistication (20th), knowledge and technology outputs (23rd) and creative outputs (19th) lower the overall country score and ranking for Canada. In most cases, Canada is relatively strong by global measures. Strengths include university training, electricity output and software spending. Joint ventures and strategic alliances are identified as a strength, although it's unclear how these combinations will strengthen Canadian business performance in leading industries of the future. In theory, they should. But implementation has its risks, as demonstrated by some Canadian-financed research through universities and government laboratories that may have ceded intellectual property to joint venture partners without adequate protection or royalty flows to Canadian entities.

Canada's limited prominence in global value chains suggests the WEF and WIPO may be over-emphasizing the importance of certain indicators in this regard. Besides, as a majority of direct investment abroad (CDIA) is linked to the Canadian financial sector, it's unclear what role this plays in enhancing Canada's competitive position in the real sector in Canada.

There should be a favourable effect from integrative trade, such as financial sector purchases of fintech software/apps produced in Canada, much like traditional oil and gas (O&G) investment abroad that sourced management and some precision equipment from Canadian manufacturers. However, it's unclear from these indicators how the connections are made. Canada's relatively weak performance in relation to intellectual property (IP) royalty outflows versus inflows also raises questions about whether some of the rankings are higher than they should be (e.g., creative outputs). Likewise, there may have also been incidents of IP outflows without adequate protections for Canadian businesses or joint venture partners.

Major weaknesses that may not be fully accounted for in terms of broader economic impact include:

- insufficient gross capital formation;
- low levels of ICT services imports and foreign direct investment (FDI) net inflows;
- relatively weak new business formation and density; and
- industrial design capacity.

Also noted in the WIPO report is that several high-income economies struggle to obtain a better balance between their level of investments and their level of innovation results, to the detriment of their overall innovation performance and index ranking. This group includes O&G producers and exporters like Canada. Key strengths and weaknesses are noted in Table 1 based on world rankings.

Table 1: Canadian strengths and weaknesses in innovation

	Greatest strengths	Greatest weaknesses
Human capital and research	QS university ranking, Top 3	Government funding/pupil, secondary, % GDP/cap
Infrastructure	Electricity output, GWh/mn pop	• Gross capital formation, % GDP • GDP/unit of energy use • ISO 14001 environmental certificates/ bn PPP$ GDP
Business sophistication	Joint venture/strategic alliance deals/bn PPP$ GDP	• ICT services imports, % total trade • FDI net inflows, % GDP
Knowledge and technology outputs	• Citable documents H-index • Software spending, % GDP	• New businesses/th pop. 15–64 • ISO 9001 quality certificates/bn PPP$ GDP • ICT services exports, % total trade
Creative outputs	Generic top-level domains (TLDs)/th pop. 15–69	Industrial designs by origin/bn PPP$ GDP

Source: *Global Innovation Index,* WIPO, 2021

Within Canada, Toronto shows the greatest capacity, ranking in the Top 25 in six of 11 categories. Canada also had three cities ranked in the Top 25 in education technology and energy and environment technology.

STARTUP BLINK

A second index that's more comprehensive and global than that of the Conference Board of Canada (presented below) and roughly equivalent in coverage to the WIPO index is found in the Global Startup Ecosystem Index 2021 produced by Startup Blink[4]. This index is constructed and ranked by composite scores that are based on quantity, quality and business environment indicators[5] for countries around the globe. This includes emerging markets and isn't as geographically restrictive as the research carried out by the Conference Board. The index ranks the Top 100 countries (and 1,000 cities) as compared with only 16 by the CB research.

According to this index, Canada is the fourth best market for startups, trailing only the U.S., United Kingdom (U.K.) and Israel. In this regard, Canada is recognized for having several strong startup ecosystem hubs. But none of Canada's cities ranked in the Top 20 among global metropolitan areas where ecosystems predominate.

According to the index, Canada needs to strengthen its quality score, which means:

- strengthening ecosystems (including traffic, domain authority, customer base);
- attracting more investment into R&D centres from international technology corporations;
- attracting more investment from multinational companies with global value chains;
- scaling up startups to increase employees per startup; and
- generating more investment and listings.

Scores show the U.S. is much stronger in terms of quantity and quality scores, and that its total score is well above all others[6]. The U.K. and Israel are clustered together as a distant second group, with the U.K. showing greater numbers and Israel showing better quality ecosystem indicators. Canada is then more closely aligned with Germany and Sweden, differentiating itself slightly with a greater quantity score. Therefore, Startup Blink gives Canada higher rankings than both WIPO and the Conference Board.

At the city level, rankings show the U.S. accounts for nine of the Top 25 cities for startups and ecosystems. A relatively dispersed group accounts for the remaining 16 cities in 12 countries. Only China (3) and India (3) have more than one city in the Top 25 apart from the U.S. Likewise, most non-U.S. cities in the Top 25 have populations exceeding 10 million[7]. Therefore, scale is a key factor, and may partly explain why Canadian cities aren't included in the Top 25[8]. But this isn't the only reason, as several cities with smaller populations than major Canadian cities rank higher in the index[9].

The index also looks at 11 industries and sectors and ranks cities in relation to their capacity to support and sustain startups in specified economic activities. Within Canada, Toronto shows the greatest capacity, ranking in the Top 25 in six of 11 categories. Canada also had three cities ranked in the Top 25 in education technology and energy and environment technology. While this is positive, these two activities accounted for less than 6% of global startups and about 3% of global unicorns[10]. Therefore, they're relatively small segments of the general innovation market.

Apart from this, Canadian cities were absent in all other categories apart from Toronto. No Canadian cities were represented in e-commerce and retail technology, foodtech, hardware and IoT (internet of things), health technology or transportation. Together, the sectors in which there's no representation from Canadian cities approximates 30% of startups and 36% of unicorns. Therefore, Canadian ecosystems are significantly lagging in about a third of overall innovation opportunities. Canadian cities by industry and sector ranked in the Top 25 of each category are shown below in Table 2.

Table 2: Canadian city ecosystem strength by economic activity

Activity	% of Canadian startups	% of Canadian unicorns	Canadian cities in Top 25
E-commerce and retail technology	9.8	18.2	none
Education technology	3.7	2.9	Kitchener-Waterloo (12) Vancouver (22) Toronto (25)
Energy and environment technology	2.0	0.3	Toronto (13) Vancouver (15) Montreal (25)
Fintech	11.5	16.8	Toronto (12)
Foodtech	2.8	0.3	none
Hardware and IoT	5.6	2.9	none
Health technology	9.0	6.1	none
Marketing and sales technology	5.9	1.2	Toronto (18)
Social and leisure technology	12.0	4.0	Toronto (24)
Software and data	34.7	38.9	Toronto (21)
Transportation	3.0	8.4	none

According to the Conference Board, Canada is one of the least innovative countries among the 16 countries included in the CB research. The countries in the sample account for nearly half of all OECD countries and are, therefore, peer countries for Canada based on relative per capita incomes.

CONFERENCE BOARD OF CANADA

The Conference Board of Canada (CB) has constructed an innovation index for several years to gauge Canadian capacity to leverage innovation in the economy for positive outcomes[11]. According to CB, the report card evaluates Canada, its provinces, and 15 peer countries on the following seven indicators:

- Public research and development (R&D)
- Scientific articles
- Entrepreneurial ambition
- Venture capital investment
- Business R&D
- Patents
- Labour productivity

CB also evaluates the performance of the provinces on enterprise entry rates and automation vulnerability for which there are no comparable international data. Data for Canada's three territories aren't included[12] although they're embedded in Canada-wide aggregates.

According to the Conference Board, Canada is one of the least innovative countries among the 16 countries included in the CB research. The countries in the sample account for nearly half of all OECD countries[13] and are, therefore, peer countries for Canada based on relative per capita incomes.

Rank and scores by country are presented in Table 3 below. These rankings are at odds with other sources, reflecting differences in methodology and focus[14].

Table 3: Conference Board rankings of country innovation

CB rank	Country	CB score	Re Startup Blink	Re WIPO
1	Switzerland	A	Reasonably consistent	Consistent
2	United States	A	Reasonably consistent	Consistent
3	Sweden	A	Reasonably consistent	Consistent
4	Denmark	B	Reasonably consistent	Consistent
5	Austria	B	CB higher	CB higher
6	Finland	B	Reasonably consistent	Consistent
7	Germany	C	CB lower	CB lower
8	Norway	C	Reasonably consistent	Consistent
9	Netherlands	C	CB lower	CB lower
10	Japan	C	CB lower	Consistent
11	Canada	C	CB lower	Consistent
12	Belgium	C	CB lower	CB higher
13	Ireland	D	CB significantly lower	CB lower
14	Australia	D	CB significantly lower	Consistent
15	France	D	CB significantly lower	CB significantly lower
16	United Kingdom	D	CB significantly lower	CB significantly lower

Notes: Observation re Startup Blink compares CB rankings with relative position in Startup Blink (SB) index discussed below; "A" compared to SB Top 10, "B" re SB 11-25, "C" re SB 25-50, "D" re SB 51-100. Observation re WIPO Index is if "A" is => 60; "B" is => 55 but < 60; "C" is => 50 but < 55; "D" is < 50.

Sources: Conference Board of Canada, Startup Blink, EDC

About 13,140 of Canada's 1.15 million business enterprises have more than 100 employees, most have fewer than 10 employees and budgets for investment in new technologies, cyber-protection and innovation are limited.

The CB rankings are also broken out by province. Apart from Ontario and Quebec, both of which had grades similar to Canada as a whole ("C"), the remaining eight provinces had lower grades ("D").

The CB index shows that Canadian performance across provinces is variable. In general, there's substantial public financial support for R&D, and what is perceived as a high level of entrepreneurial ambition. However, in other areas such as publications in reputable scientific journals, Canada is unable to distinguish itself. More importantly, Canada fares poorly in measures of venture capital financing, business-level investment in R&D, patents and labour productivity. Most provinces score reasonably well on enterprise entry, although Quebec shows significant weakness. There's significant variability across provinces in automation vulnerability, with Ontario, Quebec and British Columbia showing reasonable strength, but other provinces showing weakness.

More broadly, according to CB, weaknesses in Canada include:

- enterprise-level innovation capabilities;
- insufficient spending on innovation, technology adoption and use;
- enterprise-level adaptation to automation needs, requirements and shifts in the market; and
- the business environment.

Many of these weaknesses may relate back to the relatively small size of most Canadian businesses, as only about 13,140 of Canada's 1.15 million business enterprises have more than 100 employees, most have fewer than 10 employees[15], and budgets for investment in new technologies, cyber-protection and innovation are limited[16].

High tax rates, non-tariff barriers to investment entry in strategic sectors, costly telecommunications charges, and weakness in capacity to export in many services don't help with Canadian capacity to address growth challenges, irrespective of the quality of laws, regulations, court systems, and some business-related legal processes.

SUMMARY OF OBSERVATIONS

There's a general consensus that Canada is a good market for innovation and entrepreneurship, but that considerable weaknesses persist, resulting in composite rankings that are distant from top-tier countries and markets. In the case of the World Intellectual Property Organization (WIPO), Canada's rankings are good, but not at the top by most measures. There are also questions about how WIPO arrived at its rankings where Canada was among the top performers. In particular, "market sophistication" indicators deviate from many financing and investment realities on the ground.

Some of these issues are taken up by the Conference Board (CB). According to CB, weaknesses in Canada include enterprise-level innovation capabilities, insufficient spending on innovation, technology adoption and use, enterprise-level adaptation to automation needs, requirements and shifts in the market, and the business environment. This is reflected, for example, in Canada's less robust information system network when compared with OECD averages, as measured by the number of secure internet servers per one million people. The identification of business environment weaknesses is where CB's judgment is much harsher than the other two sources that provide Canada with high rankings and support.

CB's position is strengthened by realities on the ground in terms of challenges faced specifically by business enterprises and their relatively small size, as only about 1% of Canada's business enterprises have more than 100 employees and sufficient budget, expertise and capacity to invest in advanced technologies. However, this characteristic isn't so different from other markets around the world where the overwhelming majority of firms are micro or small-scale, and generally lack the financial, operational and managerial capacity to tackle market power challenges of medium- and large-scale firms in hyper-competitive markets[17]. Nonetheless, in the absence of scale and with limited growth of Canadian businesses from small to medium[18], many, if not most Canadian businesses, show weakness or difficulty in the face of rapid change and disruption.

High tax rates, non-tariff barriers to investment entry in strategic sectors, costly telecommunications charges, and weakness in capacity to export in many services don't help with Canadian capacity to address growth challenges, irrespective of the quality of laws, regulations, court systems, and some business-related legal processes. Even in this last case, Canada has its weaknesses such as greater amount of time required to legally enforce contracts when disputes emerge.

But there are also business environment strengths, as mainly noted in the Startup Blink assessment. At the business startup level, Canada has done much to strengthen ecosystems in recent years. Active public sector support for startup ecosystems and an abundance of natural resources provides Canada with the potential to establish important global hubs. For this to happen, Canada will need more recognizable successes to distinguish themselves in global markets. This may mean more willingness to encourage joint ventures with international firms that have superior market linkages and networks abroad. Startups, like Slack and Shopify, have achieved noteworthy success, although Canada also has the spectre of failures or major market share losses to avoid repeating (e.g., Nortel, Research in Motion/Blackberry).

To boost networks and relationships needed for the critical mass that characterizes global hubs, Canada will require incentives to keep talented entrepreneurs in Canada and attract high quality international talent. The latter is already an observed policy

objective, as made explicit by immigration policy and work visa permits provided to foreign students upon graduation. Canada's strong university rankings also serve as an attraction, particularly for those students who would otherwise seek out education in the U.S., but go elsewhere due to perceived or real barriers in that market. However, other countries are competing for the same talent (and investment dollars), particularly post-Brexit. Therefore, these incentives are necessary conditions for success, not sufficient conditions.

Other factors (e.g., regulatory framework, market conditions, access to finance, creation and diffusion of knowledge, entrepreneurial capabilities and culture) will likewise have an impact on outcomes. However, determining their impact will be challenging, as some of these themes are hard to measure (e.g., impact of knowledge diffusion) or even define (e.g., entrepreneurial capabilities and culture). Key considerations for Canada moving forward include:

- The reshoring of supply chains and fight against climate change: These offer additional opportunities to Canada on the condition that political obstacles don't get in the way to stifle these opportunities or make operations more onerous than they need to be. Some of the recommendations from the Brookfield Institute and others in relation to the Government of Canada's supercluster initiative may be relevant for observations and strategic questions that relate to potential supply chain reshoring in Canada and North America.
- Life sciences, biotechnology, health care, agricultural applications, industrial decarbonization, and smart applications in housing, transportation and other areas: These offer significant potential for innovation and successful entrepreneurship, depending on the policy environment. The government has already signalled its plans to support expansion in life sciences, biotechnology and health care through venture capital support, and investment tax credits for carbon capture and related environmental initiatives signals movement towards decarbonization to meet net zero targets for 2050.
- Federal and provincial government budget priorities supporting energy and environmental initiatives: These offer opportunities in cleantech and "smart" applications in transport, housing and urban planning. The challenge will be enticing the Canadian private sector to invest, as opposed to relying on governments and international investors, as has largely been the case to date, and which is also partly reflected in the scale of tax credits related to carbon capture initiatives.

Key questions and challenges for Canada as it moves forward in its quest for competitive positioning among global leaders in innovation include:

- Degrees of dependence on government and crown corporations for sustainable financing under market and globally competitive conditions, and by extension, the relatively limited presence of the Canadian private sector in venture financing[19];
- How to address weaknesses identified in the various indexes so that market finance becomes more prominent, and clusters, incubators, accelerators and hubs become more commercially sustainable while spawning creativity, innovation and IP protection;
- How to address the absence of Canadian cities as recognized hubs in a third of innovation activity around the world; and
- How other Canadian cities can learn from Toronto (and others around the world) to become innovation hubs, or more diversified hubs, as Toronto is the only Canadian city that is able to support activity in more than one area of specialization.

REFERENCES

Canada and OECD norms: A comparison of business environment indicators, EDC, 2021

Canada and OECD norms: A comparison of macro-financial indicators, EDC, 2021

Canada and OECD norms: A comparison of trade and investment indicators, EDC, 2021

Financing SMEs and entrepreneurs: An OECD scoreboard, OECD, 2012-2020

Firm size comparisons: Canada, U.S. and Europe, EDC, 2021

Global Startup Ecosystem Index 2021, Startup Blink

www.conferenceboard.ca/focus-areas/canadian-economics/industry-outlooks/10971

www.conferenceboard.ca/focus-areas/canadian-economics/industry-outlooks/11397

www.conferenceboard.ca/focus-areas/canadian-economics/industry-outlooks/11385

www.conferenceboard.ca/focus-areas/canadian-economics/industry-outlooks/11130

www.conferenceboard.ca/focus-areas/canadian-economics/industry-outlooks/11300

www.conferenceboard.ca/focus-areas/canadian-economics/industry-outlooks/11341

www.conferenceboard.ca/focus-areas/canadian-economics/industry-outlooks/11157

www.conferenceboard.ca/focus-areas/canadian-economics/industry-outlooks/11175

www.conferenceboard.ca/focus-areas/canadian-economics/industry-outlooks/11382

www.conferenceboard.ca/focus-areas/canadian-economics/industry-outlooks/11118

www.conferenceboard.ca/focus-areas/canadian-economics/industry-outlooks/11241

www.conferenceboard.ca/focus-areas/canadian-economics/industry-outlooks/11066

www.conferenceboard.ca/focus-areas/canadian-economics/industry-outlooks/11428

www.conferenceboard.ca/focus-areas/innovation-technology/innovation-report-card

www.weforum.org/agenda/2021/09/worlds-most-innovative-countries-innovation/

The outlook for Canadian private sector patterns through 2024, EDC Economics, 2021

Upping our game: How Canada's financial sector can spur economic performance, CD Howe Institute, 2021

ENDNOTES

[1] The WIPO methodology is highly dependent on other indexes as a source of data. Reliance on this index as a sole source of Canadian strengths and weaknesses is misguided. At the same time, WIPO is focused on intellectual property. This is a core component of innovation and entrepreneurship, and is useful as a benchmark for a country's status and capacity as innovator and entrepreneur. In some countries, entrepreneurship is widely displayed, but shortcomings in innovation constrain value-added in the process. WIPO's index is useful in identifying how innovation and entrepreneurship link with industries of the future (e.g., advanced technologies, renewable energy, health care, agricultural applications) and development of economic value-added for future prosperity.

[2] See *Financing SMEs and entrepreneurs: An OECD scoreboard, OECD, 2012-2020*.

[3] See four reports from EDC Economics, 2021: *Firm size comparisons: Canada, U.S. and Europe; Canada and OECD norms: A comparison of macro-financial indicators; Canada and OECD norms: A comparison of business environment indicators; and Canada and OECD norms: A comparison of trade and investment indicators*. Also see *Upping our game: How Canada's financial sector can spur economic performance,* CD Howe Institute, 2021.

[4] For information specific to Canada, partners include Kingston Economic Development, Queen's University, Bonjour Startup Montreal, Quebec International and the Vancouver Economic Commission.

[5] Information on partners, methodology, data sets used to create scores, and other relevant information can be found in the report.

[6] Part of this has to do with the role of Silicon Valley, which serves as an outlier in terms of scores, and is reinforced by the role of New York City as a source of financing for innovative ventures, scaleup (through private equity), and stock exchange listings. However, the lead of the U.S. isn't restricted to these two centres, as technology and financing permeate other activities with a broad network of hubs found across the country.

[7] Exceptions are London, Tel Aviv, Berlin, Stockholm and Singapore.

[8] As for Canadian cities, Toronto (26), Vancouver (42), and Montreal (46) are ranked in the Top 50. Other Canadian cities in the index of 1,000 cities include Ottawa (89), Kitchener-Waterloo (101), Calgary (116), Quebec City (125), Edmonton (126), Kingston (141) and Victoria (193). An additional 20 cities were ranked as part of the total of 1,000 cities in the index.

[9] This makes the success of London, Boston, and Tel Aviv (with less than 10 million in population that still managed to rank in the global Top 10) even more impressive. Other smaller cities are also punching above their weight. The Top 30 cities include three cities with populations of one to three million (Stockholm, Amsterdam and Denver), while the best-performing city with less than one million people is Jerusalem, at 54th. In the 100,000 to 300,000 population tier, Cambridge, U.K., is 76th. Among cities with less than 100,000 population, the top overperformer is Santa Barbara, California, which ranked 74th worldwide and was the only city in this tier to reach the global Top 100.

[10] Unicorns are firms with a market value of at least US$1 billion.

[11] See *Methodology, measuring innovation performance*, Conference Board of Canada.

[12] Data for the Territories on most of the innovation report card indicators were unavailable or, in some cases, were available but grouped the Territories together rather than distinguishing between Yukon, Northwest Territories and Nunavut. In some cases, data for the Territories are available, but for too few indicators to provide a reasonable picture of their overall innovation performance.

[13] As of early 2022, the OECD had 38 member countries. The CB sample includes 16 OECD countries.

[14] In the case of CB, the focus is on innovation. While related, this isn't the same as the focus of Startup Blink, which looks more closely at ecosystems and the environment for business startups. The methodologies and samples differ because the areas of focus aren't identical. There's also a timing consideration, at least in relation to the Startup Blink index, as the CB innovation scorecard is based on 2019 data, whereas the Startup Blink data and rankings are more recent.

[15] Average head count per firm in Canada is six. See Firm size comparisons: Canada, U.S. and Europe, EDC, 2021.

[16] See Fi*rm size comparisons: Canada, U.S. and Europe,* EDC, 2021.

[17] See *Firm size comparisons: Canada, U.S. and Europe,* EDC Economics, 2021.

[18] Canada has averaged about 100 firms per year graduating from "small" (less than 100 employees) to "medium" (100-499 employees) over the last 18 years, a relatively low level of growth. See The outlook for Canadian private sector patterns through 2024, EDC Economics, 2021.

[19] Most venture financing has been from federal and provincial governments (or their pension funds), and international private investors. The Canadian private sector's share of venture capital and private equity investment has been comparatively small.

ABOUT THIS REPORT

This report is part of a publication series of reports written by EDC Economics on the Canadian innovation ecosystem. The views expressed in this report are those of the author and shouldn't be attributed to Export Development Canada or its Board of Directors.

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