



The App Economy in Canada

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INTRODUCTION

The global App Economy started in 2007, when Apple introduced the first iPhone. Apple's opening of the App Store in 2008 – followed by Android Market (later renamed Google Play), Blackberry App World (later renamed Blackberry World) and other app stores – created a way for developers to write mobile applications (“apps”) that could run on smartphones anywhere. These apps became an essential part of daily life for most people – and an indispensable tool for business.

The rise of the App Economy has unleashed an abundance of “app developers.” These workers create, maintain, and support an ever-expanding range of apps. Mobile games are the most visible part of the App Economy, but certainly not the only component of it. Mobile apps include such key uses as shopping applications, home banking programs, smart automobile interfaces, healthcare apps for monitoring patients, and sophisticated apps for running manufacturing plants.

The extent of the App Economy workforce in a country reflects how quickly that country is embracing the next stage of the Information Revolution, which depends on mobile technology to digitize physical industries such as manufacturing and healthcare.

However, official economics statistics do not provide an easy way to measure the size of the App Economy. In response, PPI developed a methodology based on a systematic analysis of online job postings.¹ In particular, we look for job postings that call for app-related skills

such as knowledge of the iOS, Android, or Blackberry operating systems (though support for the Blackberry operating system is currently scheduled to cease at the end of 2019).

Based on this methodology, in this paper we provide an employment analysis of Canada's App Economy. We provide an estimate of the total number of App Economy jobs; a breakdown of the jobs among iOS, Android, and Blackberry ecosystems; and an estimate of App Economy jobs by province. We estimate that Canada has 262,000 App Economy workers as of November 2018.

THE DEFINITION OF AN APP ECONOMY JOB

For this study, a worker is in the App Economy if he or she is in:

- An IT-related job that uses App Economy skills – the ability to develop, maintain, or support mobile applications. We will call this a “core” App Economy job. Core App Economy jobs include app developers; software engineers whose work requires knowledge of mobile applications; security engineers who help keep mobile apps safe from being hacked; and help desk workers who support use of mobile apps.
- A non-IT job (such as human resources, marketing, or sales) that supports core App Economy jobs in the same enterprise. We will call this an “indirect” App Economy job
- A job in the local economy that is supported by the income flowing to core and indirect App Economy workers. These “spillover” jobs include local retail and restaurant jobs, construction jobs, and all the other necessary services.

- To estimate the number of core App Economy jobs, we use a multi-step procedure based on data from the universe of online job postings. Then the number of indirect and spillover jobs is estimated using a conservative job multiplier. The methodology is described in detail in previous research.²

CANADA'S APP ECONOMY

Table 1 presents two pieces of information. First, we estimate Canada has 262,000 App Economy jobs as of November 2018. We also break down the total by ecosystem, finding the iOS ecosystem includes 200,000 jobs, the Android ecosystem includes 199,000 jobs, and the Blackberry ecosystem includes 27,000 jobs. The three sum to more than the total because many App Economy jobs belong to multiple ecosystems.

Using a different methodology, the Information and Communications Technology Council (ICTC) estimated total App Economy and related employment in Canada at 51,700 in its 2012 report, “Employment, Investment, and Revenue in the Canadian App Economy.”³ We infer from this that Canadian App Economy jobs roughly quintupled from 2012 to today. That's consistent with what we have seen for the United States over the same time period.

TABLE 1: CANADA'S APP ECONOMY

	THOUSANDS OF APP ECONOMY JOBS (NOVEMBER 2018)
TOTAL	262
IOS ECOSYSTEM	200
ANDROID ECOSYSTEM	199
BLACKBERRY ECOSYSTEM	27

Data: Progressive Policy Institute, Indeed.com

iOS, Android, and Blackberry jobs sum to more than total because many App Economy jobs are in multiple ecosystems.

Now we compare Canada to some of its industrialized peers. In absolute numbers, Canada's App Economy is relatively small. But, when we adjust for country size, Canada is doing very well. App intensity represents the number of App Economy jobs divided by total employment, where the latter figure is drawn

from the International Labor Organization for standardization.

Canada's app intensity of 1.4 percent ranks ahead of the United States, the United Kingdom, Germany, and Japan – and only slightly behind Korea.

TABLE 2: HOW CANADA'S APP ECONOMY COMPARES INTERNATIONALLY

COUNTRY	THOUSANDS OF APP ECONOMY JOBS	APP INTENSITY*	DATE OF ESTIMATE
CANADA	262	1.4%	Nov. 2018
GERMANY	327	0.8%	Apr. 2018
JAPAN	579	0.9%	Apr. 2016
KOREA	420	1.6%	Apr. 2018
UNITED KINGDOM	353	1.1%	Apr. 2018
UNITED STATES	1729	1.1%	Dec. 2016

*App intensity is the number of App Economy jobs divided by total employment

Data: Progressive Policy Institute, Indeed.com, ILOstat

Canada's relative success can be attributed in part to its prioritization of digital connectivity and skills. Digital Canada 150 aimed to create jobs and economic growth by, among other things, connecting rural areas to high-speed Internet and investing in Canadian businesses and consumers through technology integration and skills development.⁴ Accomplishments include extending high-speed Internet to an additional 356,000 households, completing multiple spectrum auctions to improve wireless service, investing an additional \$200 million to help

entrepreneurs learn about IT technologies, and supporting up to 3,000 internships in high-demand fields. These types of policies help increase access to and employment in the App Economy.

GEOGRAPHIC DISTRIBUTION

Our methodology also allows us to look at the geographic distribution of App Economy jobs by province and by ecosystem. If we estimate fewer than 500 jobs in a region, we don't report the number.

TABLE 3: CANADA APP ECONOMY JOBS BY GEOGRAPHY (THOUSANDS)

COUNTRY	IOS ECOSYSTEM	ANDROID ECOSYSTEM	BLACKBERRY ECOSYSTEM	ALL APP ECONOMY JOBS
ONTARIO	101.6	103.6	18.9	140.3
QUEBEC	41.6	41.3	2.5	53.4
BRITISH COLUMBIA	34.2	35.6	1.6	41.6
ALBERTA	13.2	10.4	2.8	15.4
MANITOBA	3.5	2.7	NA	3.8
SASKATCHEWAN	3.1	2.6	NA	3.3
NEW BRUNSWICK	1.3	1.6	NA	1.8
NOVA SCOTIA	1.2	0.8	0.6	1.6

NA = fewer than 500. The estimated number of App Economy jobs in Prince Edward Island, Newfoundland and Labrador, Yukon, Northwest Territories, and Nunavut all fall below the NA threshold. App Economy jobs can belong to multiple ecosystems.

Data: Progressive Policy Institute, Indeed.com

Not surprisingly, Ontario leads in App Economy jobs, followed by Quebec and British Columbia. Also not surprisingly, the Blackberry ecosystem jobs are concentrated in the company's home province of Ontario.

EXAMPLES OF APP ECONOMY JOBS

The Canadian App Economy is vibrant across a wide range of industries and geographies. As of October 2018, digital studio Adfab was searching for a front-end developer in Montréal with App Economy skills. Mobile device solutions firm Asset Science was seeking a mobile application developer with iOS and Android experience. Mango Software Inc. was looking for an Android developer in Montréal. IT firm CORE Resources was hiring a senior software engineer with Android experience in Mississauga.

Looking at Ontario in particular, as of October 2018, mapping software company Avenza Systems Inc. was searching for a full stack developer with experience in iOS and Android app development in Toronto. Life insurance company Manulife was seeking a senior Android developer in Kitchener. Digital billing company Sensibill was looking for a software developer with Android and iOS experience in Toronto. Household labor marketplace AskforTask was hiring a senior Android developer in Toronto.

As of October 2018, commercial contractor Flynn Group of Companies was hiring a mobile iOS developer in Mississauga, Ontario. Airline software firm NAVBLUE was seeking a software developer in Waterloo, Ontario. Fintech company Borrowell was looking for a React Native developer with experience building iOS and Android apps in Toronto. Consulting firm Neel-Tech Inc. was searching for an iOS developer in Mississauga.

In Quebec, as of October 2018, drone company Microdrones was hiring a senior Android developer in Vaudreuil-Dorion. Event app company Greencopper was seeking a mobile developer with iOS and Android experience in Montréal. Mobile payment company Mobeewave was searching for a mobile Android developer in Montréal. IT firm SolidByte was looking for a programmer with knowledge of iOS and Android programming in Montréal.

British Columbia has plenty of App Economy activity as well. As of October 2018, payment technology firm Alpha Pay was looking for an iOS or Android mobile developer in Richmond, British Columbia. Financial cloud company Global Relay was hiring a senior Android developer in Vancouver. Shopping app company StylePixi was seeking an iOS developer in Vancouver. Digital development firm Atimi was searching for a senior native mobile developer with iOS experience in Vancouver.

Considering Alberta, as of October 2018, GPS company Trimble Inc. was hiring a software engineer with iOS and Android experience in Calgary. Digital production firm Division [1] Media Corp was looking for a mobile app developer in Edmonton. The University of Alberta was searching for a lead software engineer with experience in Android and iOS in Edmonton. Aviation company Air Trail was seeking an intermediate iOS developer in Edmonton.

And the App Economy has spread to more rural areas as well. In Winnipeg, Manitoba, Pollard Banknote Limited – a leading supplier of instant lottery tickets – was hiring a senior applications developer with experience in mobile app development. In Saskatoon, Saskatchewan, Affinity Credit Union was searching for an iOS developer. In Fredericton, New Brunswick,

Welltrack – a company that provides a suite of interactive self-help tools – was looking for a mobile developer. And in Bedford, Nova Scotia, IBM's Client Innovation Centre was hiring a mobile application developer for iOS and Android.

Canadians are developing apps for the rest of the world, not only Canada. One well-known Canadian app that has spread globally is the messaging mobile app Kik, which was created in 2009 by University of Waterloo students and has 300 million users today around the world. Another example: Public transit app Transit was developed in Montréal in 2012. Today, Transit provides real-time crowdsourced data to users in 175 cities across the United States, Canada, and Europe. And well-regarded password manager 1Password, which was developed by Toronto-based AgileBits, has a global user base.

POLICY DEVELOPMENTS

As shown in this report, the Canadian App Economy has fared better in terms of scale than some of its industrial peers. Its growth (and app intensity today) since the introduction of the iPhone over a decade ago demonstrate the country is embracing the digital age and is well positioned to be a global leader. A few reforms could catalyze the next round of growth.

Unlike in the United States, where a patchwork of laws govern privacy, one law applies at the federal level in Canada – the Personal Information Protection and Electronic Documents Act (PIPEDA). But, while PIPEDA covers all health data, personal information, and employee information in one comprehensive structure, if a province has passed legislation deemed “substantially similar,” the province’s law prevails. For example, Alberta, British Columbia, and Quebec have laws in place that have been

deemed substantially similar, they serve as the prevailing law. But, as PPI has previously recognized, cross-border data flows means multiple regulatory regimes can be burdensome, unclear, and even contradictory for app developers – slowing the digitization of physical industries and economic growth.

The Canadian government began a review of its Broadcasting and Telecommunications Acts in 2018, with the intent of modernizing its legislative framework after the invention of new technology – particularly streaming services, otherwise known as “over-the-top” (OTT) providers.⁵ OTT providers are those companies delivering video streaming, voice calls, or messaging via the Internet without requiring users to subscribe to a traditional cable, satellite, or phone service. Policymakers should be cautious of taking a heavy-handed regulatory approach that would slow growth and, instead, should opt for a balanced approach that promotes competition without jeopardizing the cost savings this technology has afforded consumers.

Lastly, according to the Information and Communications Technology Council’s latest ICT Labor Outlook, Canada will need an additional 216,000 ICT professionals by 2021.⁶ Programs designed to incorporate and lower the cost of ICT skills development could help close this shortage. To that end, in their recent report on innovation and competitiveness, Canada’s Economic Strategy Tables recommend expanding on existing work-integrated learning opportunities, adopting portable competency-based credentials, and consolidating and streamlining skills and talent programming.⁷

CONCLUSION

Canada has a vibrant App Economy that spans the iOS, Android, and Blackberry ecosystems. Compared to most of its industrialized peers, Canada's app intensity is high, and represents a wide diversity of locations and jobs. Policy reforms such as streamlining privacy laws, taking a balanced regulatory approach when it comes to OTT providers, and closing the skills gap could help catalyze future growth.

References

- 1 PPI has issued App Economy reports on the United States, Japan, Vietnam, Indonesia, Korea, Thailand, Mexico, Brazil, Colombia, Argentina, Chile, and most of the countries of the European Union, including the United Kingdom, Germany, and France. Most notably, we have not yet issued reports on China and India.
- 2 A description of the methodology can be found in the appendix to Michael Mandel and Elliott Long, "The App Economy in Europe: Leading Countries and Cities, 2017," Progressive Policy Institute, October 2017.
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