



Innovation, Science and  
Economic Development Canada  
Canadian Intellectual Property Office

Innovation, Sciences et  
Développement économique Canada  
Office de la propriété intellectuelle du Canada

Canada

# IP Canada Report 2021





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## Message from the CEO



It is a great honour to present the Intellectual Property Canada Report 2021, the sixth installment of an annual series that the Canadian Intellectual Property Office (CIPO) started in 2016, providing an overview of intellectual property (IP) activity in Canada and abroad by Canadians.

This report relies on data from both CIPO and the World Intellectual Property Organization (WIPO) to present trends and key statistics that support decision making. Furthermore, it demonstrates CIPO's proficiency in developing data-driven approaches to undertake both economic research and IP analytics. At CIPO, we believe that IP research and data analysis play a key role in providing the required evidence to support the decision-making process that leads to economic success. We achieve this through collaborative inquiry into IP issues with the Canadian and international research and policy community.

For over 1 year, CIPO dedicated its research capabilities to understanding the impact of the COVID-19 pandemic on IP activity and how Canadian organizations are responding to this crisis. IP research is helping us understand trends and adjust to evolving demands for serving Canadians. The IP Canada Report 2021 highlights areas where IP helped businesses adapt and ultimately succeed during this time of economic challenge.

This year's report also includes 2 special features showcasing CIPO's capabilities. The first provides a detailed and intuitively presented analysis of IP awareness and use along the innovation path. The second examines standard-essential patents.

As always, these reports are possible thanks to the research carried out at CIPO and the collaboration of the Canadian Food Inspection Agency. I am pleased to bring to you this year's report.

**Konstantinos Georgaras**

Chief Executive Officer

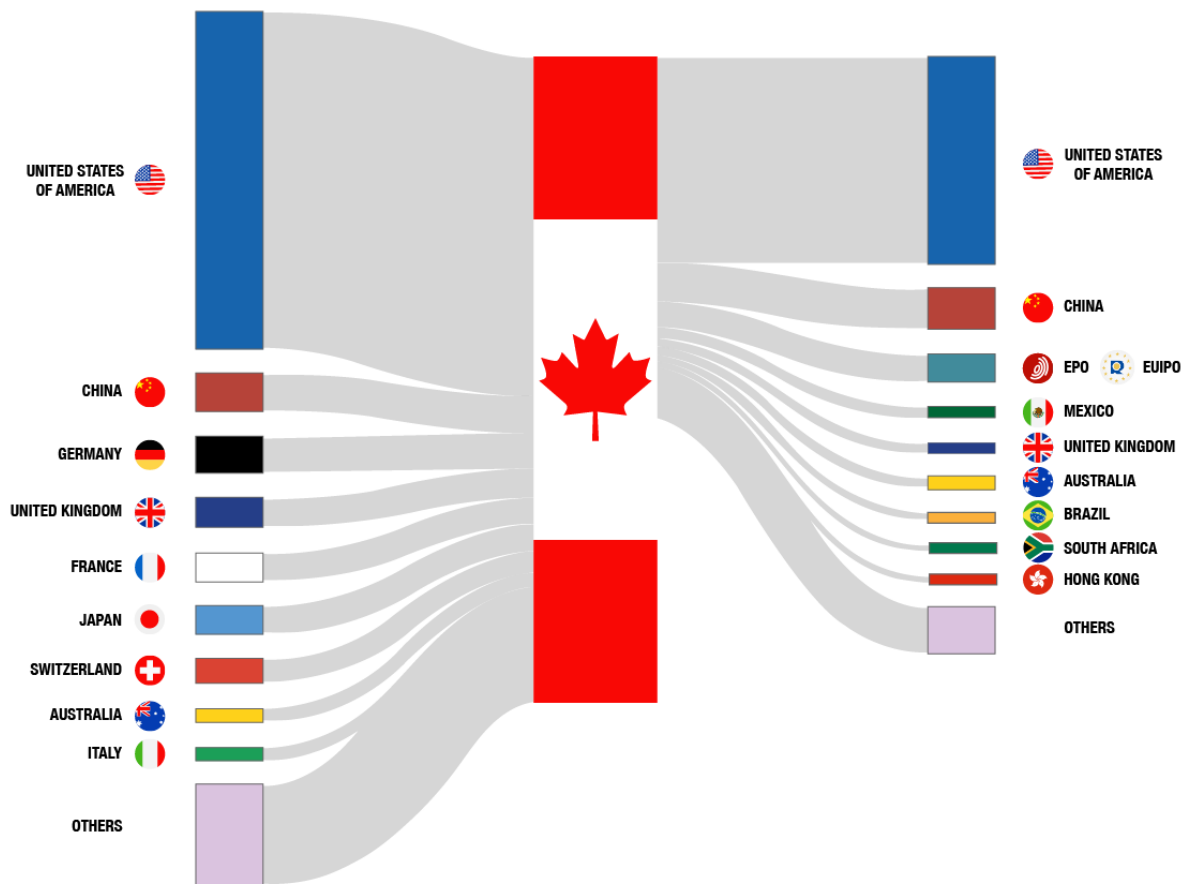
## About us

The Canadian Intellectual Property Office (CIPO) is a special operating agency of Innovation, Science and Economic Development Canada (ISED) responsible for administering intellectual property (IP) in Canada. CIPO contributes to Canada's innovation and economic success by providing greater certainty in the marketplace through timely delivery of high-quality IP rights, fostering and supporting invention and creativity through knowledge sharing, raising awareness to encourage innovators to better exploit IP, helping businesses compete globally through international cooperation, promoting Canada's IP interests, and administering Canada's IP system and office efficiently and effectively.<sup>i</sup>

# Executive summary

Canada is a major international destination and source of IP rights, with almost 160,000 applications each year for patents, trademarks, and industrial designs coming to CIPO from applicants around the world, and originating from Canadian residents and filed in other jurisdictions. The IP Canada Report presents trends and research in IP use both in Canada and by Canadians globally using data from CIPO and WIPO.

Figure 1. Flow of IP applications into Canada in 2020 by origin (left) and from Canada in 2019 by destination (right)



## High resilience during the first year of the COVID-19 pandemic

The IP Canada Report 2021 is the first of its series to present the main IP filing trends in Canada during the year the coronavirus disease was declared a global pandemic. Although this represented a very serious disruption in economic growth worldwide, IP activity in Canada showed important signs of resilience, with patent filings from residents and trademark filings by non-residents each growing 5%, and industrial design filings increasing by 20%. These statistics suggest that IP users are very capable of adapting when faced with challenging economic conditions. Over the last 10 years, patent filing activity has decreased 2%, while trademarks and industrial designs increased a remarkable 44% and 54%, respectively. The increasing use of the filing systems offered by the Patent Cooperation Treaty (PCT), the Madrid Protocol (for trademarks), and the Hague Agreement (for industrial designs) proves that the modernization of Canada's IP regimes is indeed facilitating international participation in the Canadian market. In 2020, 80% of patents, 27% of trademarks, and 37% of industrial designs were filed in Canada using the PCT, Madrid, and Hague systems, respectively.

In 2019, activity abroad by Canadians experienced positive growth for patents (1%), trademarks (8%), and industrial designs (10%). Between 2010 and 2019, filing activity for these 3 IP rights grew 3%, 117%, and 10%, respectively, suggesting the importance of efforts by Canadian inventors, businesses, and designers to broadening and diversifying their markets.

## Canadian firms recognize the contributions of IP

The innovation path involves a series of steps that begin with a firm becoming increasingly aware of IP, and end with that firm reaping the rewards from holding IP. Recent research carried out at CIPO revealed that IP plays an important role in all steps of the innovation path. This research showed that the awareness and use of IP is more prominent among larger firms, innovators, investors in research and development (R&D), exporters, high-growth firms, and certain IP-intensive industries, such as clean technology. Among the results, a new finding—and perhaps the most interesting—revealed that Canadian firms have a high level of recognition of the contributions of IP to their business.

## Increasing recognition of the importance of patents associated with standards

Patenting trends show that standard-essential patent (SEP) inventions increased worldwide at an annual average rate of 14% between 1990 and 2018. An ongoing IP analytics study carried out at CIPO shows that Canadian institutions held 372 SEP inventions over that time and that SEP inventions are tied predominately to the telecommunications sector.

# Introduction

The IP Canada Report 2021 is the sixth report in an annual series that presents trends and research in IP usage, both in Canada and by Canadians. The first 4 sections of this report present the trends on applications for patents, trademarks, industrial designs, and plant breeders' rights, respectively. Plant breeders' rights protect new varieties of plants in a similar fashion to patents and are administered by the Canadian Food Inspection Agency (CFIA).<sup>ii</sup> CIPO provides the data related to the IP activity in Canada in 2020 on the IP rights that it administers,<sup>iii</sup> while the CFIA is responsible for the data on plant breeder's rights. International data are obtained from WIPO's Statistics Data Center.<sup>iv</sup> International data lag domestic data by 1 year because of the time needed to compile data across all WIPO members; accordingly, in this report, data for filings outside of Canada are available only up to 2019.

Canadians recognize the importance of IP to economic prosperity. Canada ranked 16th in WIPO's 2021 Global Innovation Index. However, its innovation input rank (8th) substantially exceeded the innovation output rank (23rd).<sup>v</sup> IP rights, like patents, trademarks, and industrial designs, are key in a country's innovation output. Enhancing Canadians' use of IP rights both domestically and abroad is critical for success in an economy increasingly driven by intangible assets.

The long-term trends for IP filings in Canada have shown a high degree of resilience since the onset of the COVID-19 pandemic. Patent filings have experienced a 5% decrease in 2020, after 3 consecutive years of growth. On the other hand, trademarks and industrial designs have observed an increase despite the economic effects of the crisis, with trademarks increasing 2% for a seventh year in a row and industrial designs experiencing a 20% increase, the highest rate since 2010. Plant breeders' rights saw a 9% decrease in 2020, following a 12% increase in the previous year.



Also presented in this report is descriptive research using recently available data from the Survey of Intellectual Property Awareness and Use (IPAU Survey). The findings shed light on how IP relates to firm-level outcomes such as innovation, international expansion, and high growth. Last, a summary of an ongoing IP analytics study explores global trends in SEP inventions, highlighting an uptick in patented inventions that protect the owners against infringement of a particular technological standard.

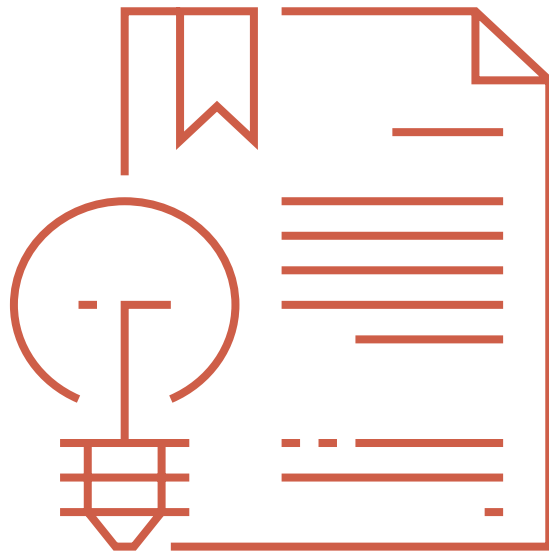
CIPO also administers 4 other forms of IP that are not included in this report: copyrights, integrated circuit topographies, official marks, and geographical indications. A copyright does not need to be registered to be enforceable in Canada,<sup>vi</sup> so formal data do not fully encompass its usage. Integrated circuit topographies refer to the 3-dimensional configurations of electronic circuits embodied in integrated circuit products or layout designs and are not included because of a lack of readily accessible data on domestic and international activity.<sup>vii</sup> Official marks are protected under the *Trademarks Act* and include any badge, crest, emblem, or mark adopted and used by any public authority in Canada.<sup>viii</sup> A geographical indication can identify a wine, a spirit, or an agricultural product or food of a category set out in the *Trademarks Act*. CIPO is responsible for processing requests for protection of geographical indications and ensuring that they are entered on the list of protected geographical indications maintained by the Registrar.



# Patents

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Inventions can be developed, used, and sold within the specified legal protection period that is granted by governments through patents. In this way, patents provide a means to profit from new inventions while revealing, during the protection phase, detailed technical knowledge to the public, fostering innovation locally and globally. In terms of volume, CIPO received 34,565 patent filings from residents and non-residents in 2020, representing the first decrease since 2016. Interestingly, this overall reduction was a result of a decrease in foreign applications and was not offset by the incremental increase in resident activity. Patent applications filed abroad by Canadians remained steady in 2019.

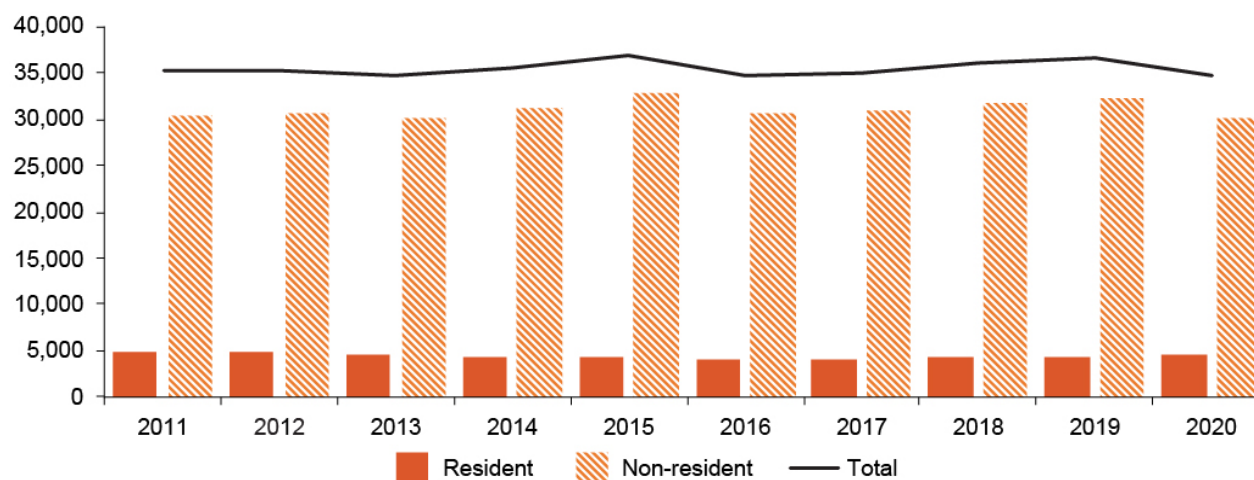




## Patent applications filed in Canada

Despite the effects of a worldwide recession brought on by the pandemic, resident patent applications at CIPO grew 5% in 2020, offsetting a 3% decrease in 2019. Contrary to what happened in 2019, the overall 5% decrease in patent filings in 2020 is attributed to a 7% decrease in non-resident activity, which makes up 87% of CIPO's patent applications. Figure 2 presents a 10-year trend, showing that non-resident filings have returned to 2016 levels, after a slow but consistent increase since that year. Heavily influenced by non-resident activity, the total patent filing trend has followed a similar tendency over the 10-year period, dropping 5% in 2020 alone and 2% over the decade.

**Figure 2. Patent applications in Canada by residency status, 2011–2020**





The top 6 filing countries at CIPO in 2020 are shown in Figure 3. With 45% of all filings, the United States is by far CIPO's top applicant, with 15,652 applications. This represents a 6% decrease in application volumes, compared with those of 2019. Canadian applicants, represented by Canada, remain in second position, with 4,452 applications. With a 5% increase in 2020, Canada was the only top patent filer whose applications at CIPO observed a positive growth in the year the COVID-19 pandemic started. Germany and Japan retained their positions in third and fourth, with 1,967 and 1,446 filings, respectively. A sizable decrease in filings originating from France has helped push China up from sixth to fifth position in 2020. A smaller decrease in applications from China made that country move from sixth to fifth position in 2020 with 1,426 filings, switching places with France, with 1,380 counts.

**Figure 3. Top 6 countries filing for patents in Canada, 2020**

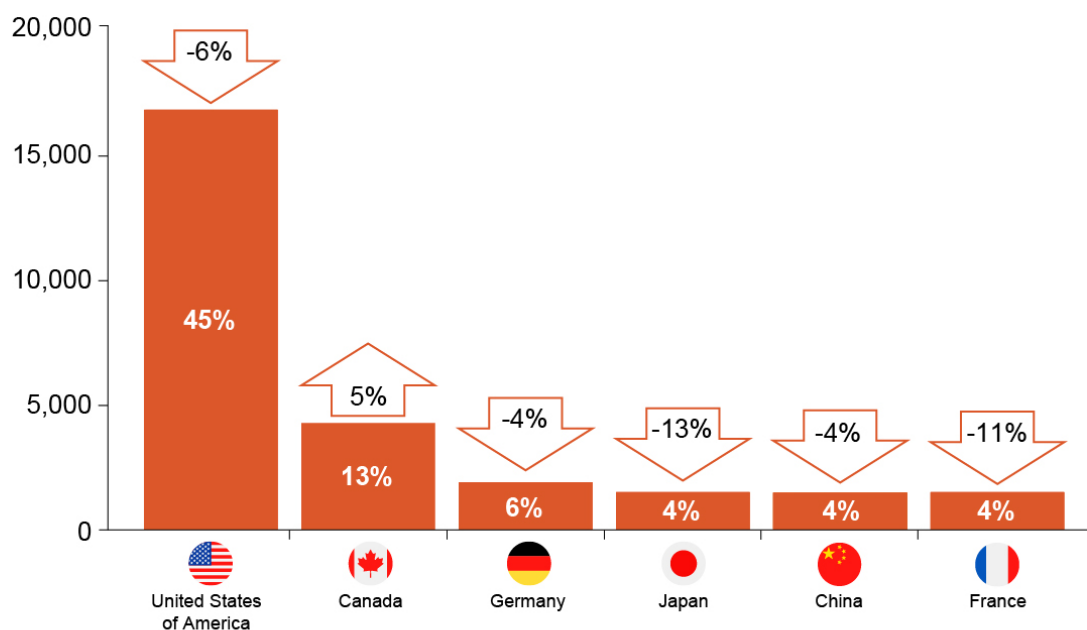
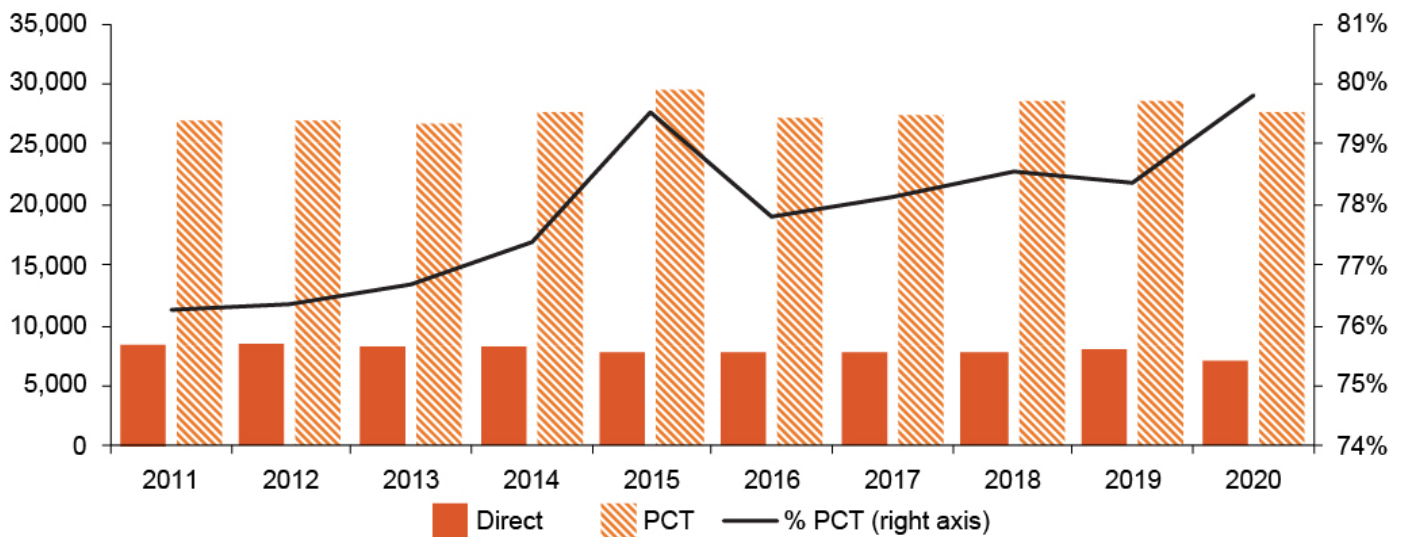






Figure 4 disaggregates filings at CIPO by filing route. The PCT system allows applicants to designate multiple signatory countries in a single application. Applicants have the option to file using this system or the traditional way of applying at each individual office of the jurisdiction where protection is sought. These are known as “direct filings.” In 2020, 6,985 applications were filed using the direct route and 27,580 through the PCT route. These levels represent a 12% and 3% decrease, respectively, compared with 2019. The decrease in direct filings can be attributed largely to the 19% decline in direct filings from the United States. Over the last 10 years, however, the share of applicants using the PCT system has been trending upward, reaching a historical high of 80% in 2020, which was achieved only once before, in 2015, as shown in Figure 4. The high rates of use highlight the PCT system as excellent choice for patent filings in Canada.

**Figure 4. Patent applications in Canada by filing route, 2011–2020**





## Patent applications filed abroad by Canadians

Canadian applicants patent internationally to protect their inventions abroad. Patent filings abroad by Canadians were up 1% in 2019. The long-term trend is positive, as Figure 5 indicates, with a 3% increase between 2010 and 2019 and nearly no growth since 2015, following notable volatility between 2010 and 2014.

Figure 5. Patent applications filed abroad by Canadians, 2010–2019

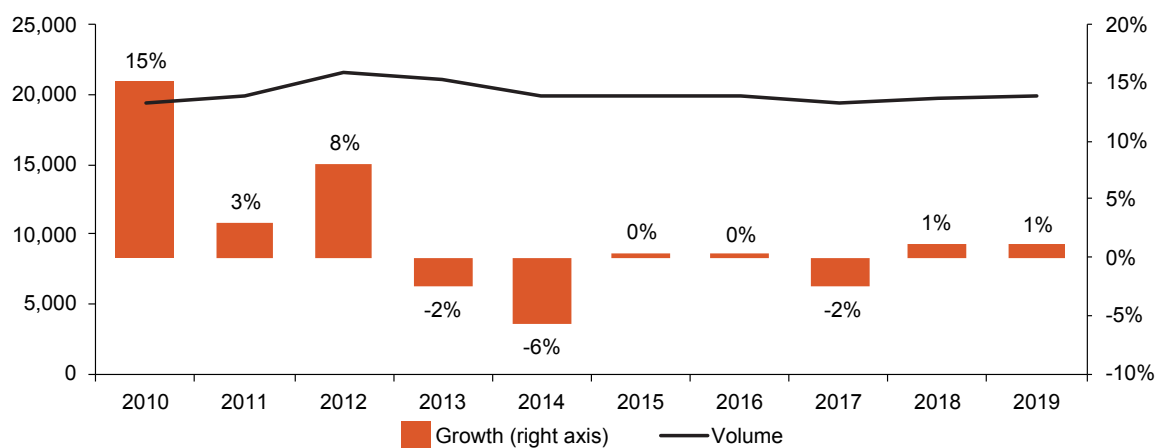
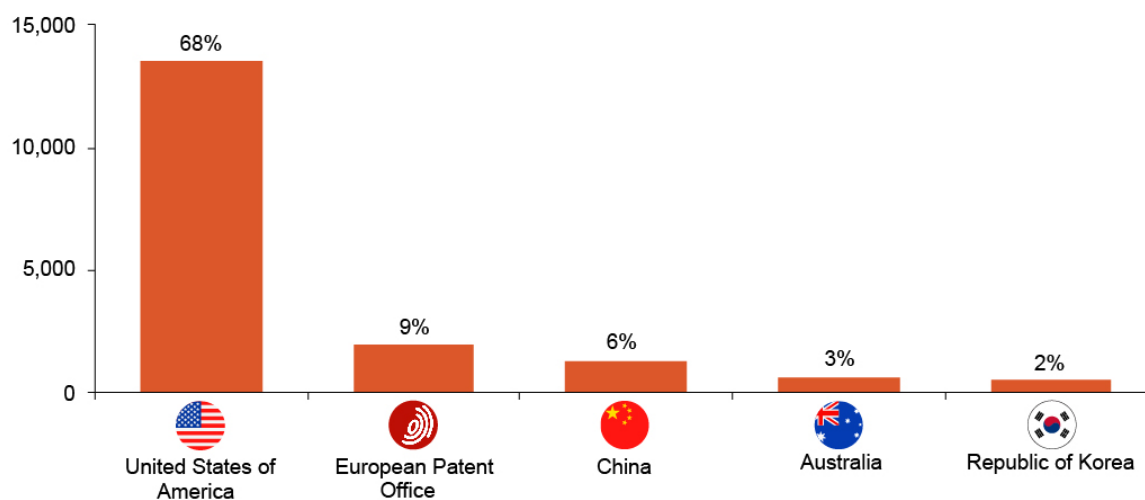




Figure 6 presents the top 5 destinations for Canadian patent applicants in 2019. The United States, the European Patent Office (EPO), and China have for some time retained their first, second, and third positions, with 13,432, 1,839, and 1,168 applications, respectively. Also, the United States increased its share of Canadian filings from 66% in 2018 to 68% in 2019, while EPO increased its share from 8% to 9% over that same period, further consolidating the presence of Canadian innovation in those 2 markets. Australia represents the fourth leading destination with 568 filings, an increase of 20% relative to Canadian filing activity in 2018. The Republic of Korea was the fifth destination, with 410 applications. Combined, these 5 jurisdictions represent 88% of all international patenting by Canadians, with almost 7 of every 10 patent applications destined for Canada's main trading partner, the United States.

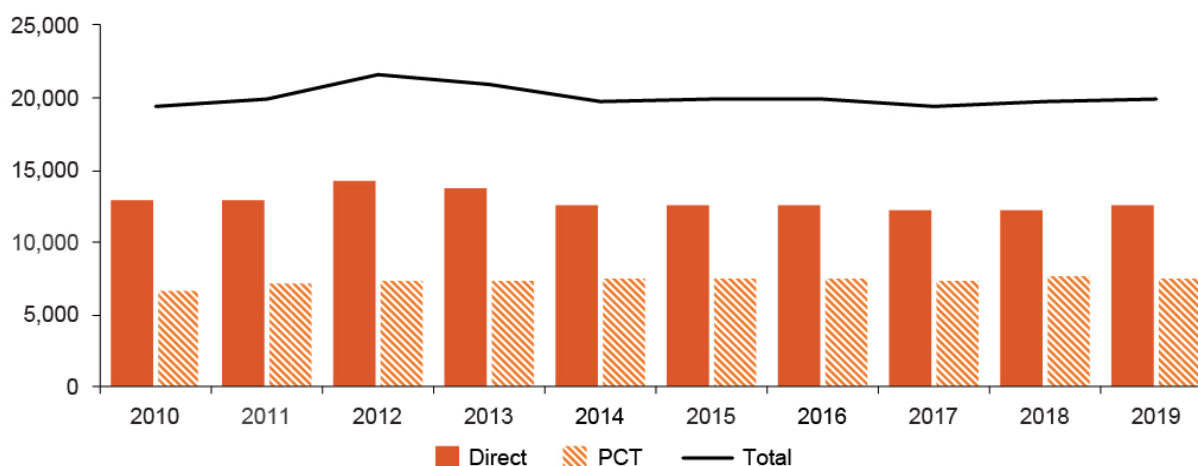
**Figure 6. Top 5 international destinations for Canadian patent applicants, 2019**





Applications abroad by Canadians from 2010 to 2019 by filing route are presented in Figure 7. Of the total applications abroad in 2019, Canadians filed for 12,499 patents using the direct route and 7,399 using the PCT system. PCT filings represented 37% of the total, a 1% decline compared with 2018. Combining patent applications from the 2 filing routes, Canadians filed for a total of 19,898 patents abroad.

**Figure 7. Patent applications filed abroad by Canadians by filing route, 2010–2019**



## Conclusion

Patent activity in Canada in 2020 has been characterized by a 5% decline in total activity, driven largely by a 7% decrease in non-resident filings. The silver lining for 2020, however, is the 5% increase in domestic filings at CIPO. Overall, applications abroad by Canadians have remained steady during the last 5 years, with a 1% increase in 2019 and a 3% increase since 2010.

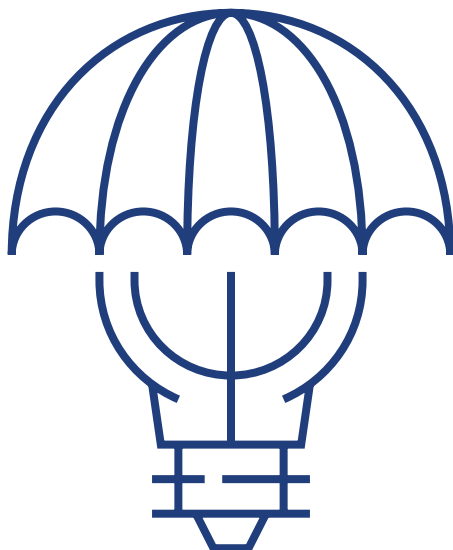




# Trademarks

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The ability to protect words, designs, sounds, shapes, or colours used to distinguish goods and services make trademarks a key element in a branding strategy.<sup>ix</sup> Trademark applications at CIPO and abroad by Canadians have experienced uninterrupted growth. The positive growth in filings at CIPO during 2020 would, in principle, suggest an important degree of resilience to the negative effects of the pandemic. This section of the report delves into applications filed with CIPO in 2020, shedding light on how the pandemic impacted trademark activity depending on the origin and area of trade.





## Trademark applications filed in Canada

In 2020, 69,793 trademark applications were filed with CIPO, establishing a new record, with a 2% increase from 2019. From this total, 27,963 applications were from residents, while 41,830 were originated by non-residents. Figure 8 presents the 10-year trends, disaggregating the filings by origin. Since 2011, trademark applications at CIPO grew 44%, resident filings increased 31% and non-resident activity grew by 54%. In 2020, applications from residents saw a year-over-year decrease of 2%, the first reduction since 2013. Non-resident filings, on the other hand, have shown uninterrupted growth in the last decade and a 5% increase in 2020, confirming the interest among foreign IP holders in protecting their brands in Canada and the successful implementation of the Madrid Protocol.

Figure 8. Trademark applications in Canada by residency status, 2011–2020

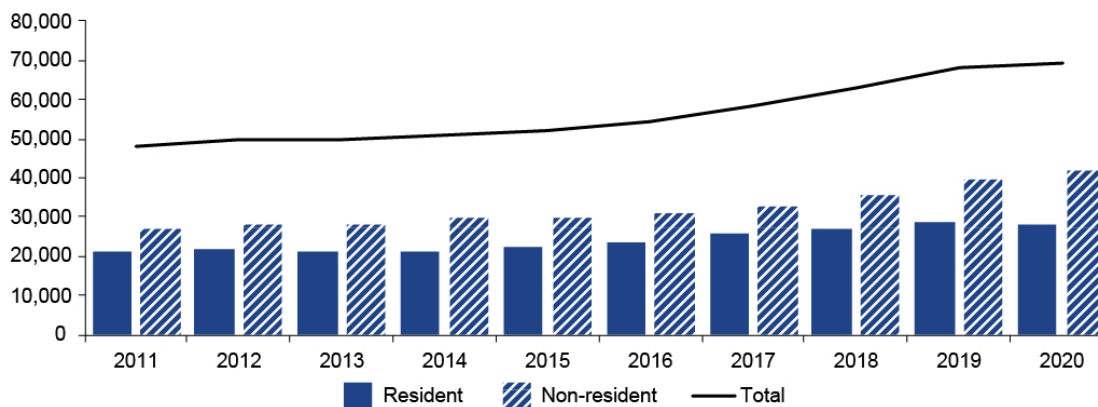
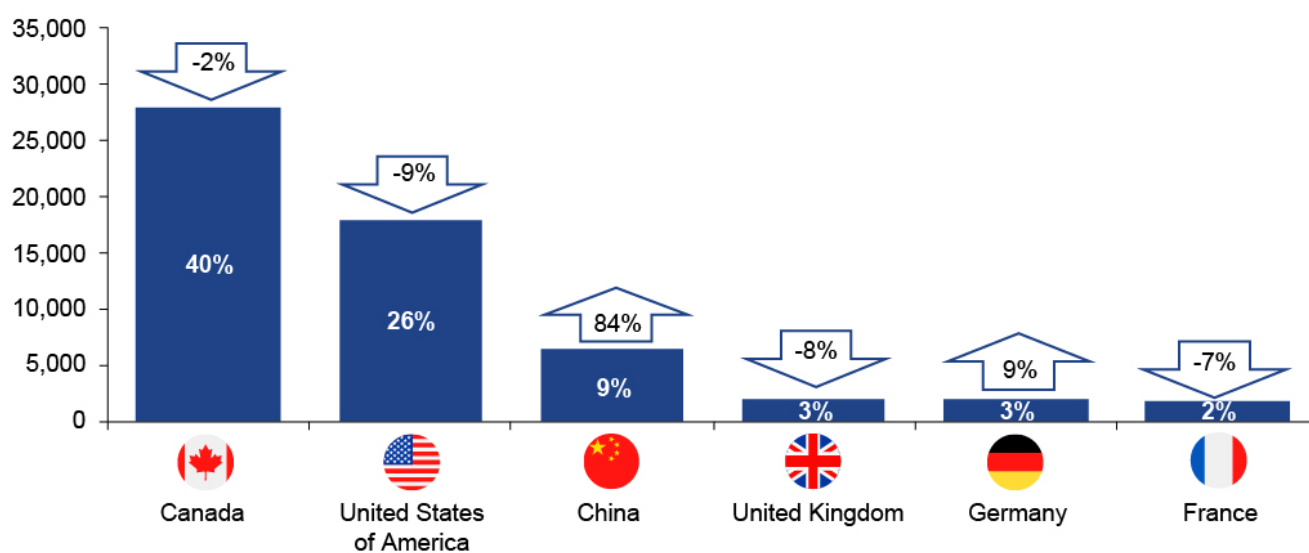




Figure 9 presents the top 6 countries of origin for trademark filings at CIPO for 2020. Canada was once again the top filing country, with 27,963 applications. The United States, China, the United Kingdom, Germany, and France all retained their respective positions in the 2020. The share of participation in total filings, however, has suffered some shifts because of a general decrease in filings by major countries of origin, with the notable exception of China, which increased its trademark applications at CIPO by 84%, almost doubling the size of its share, from 5% in 2019 to 9% in 2020.

**Figure 9. Top 6 countries filing for trademarks in Canada, 2020**

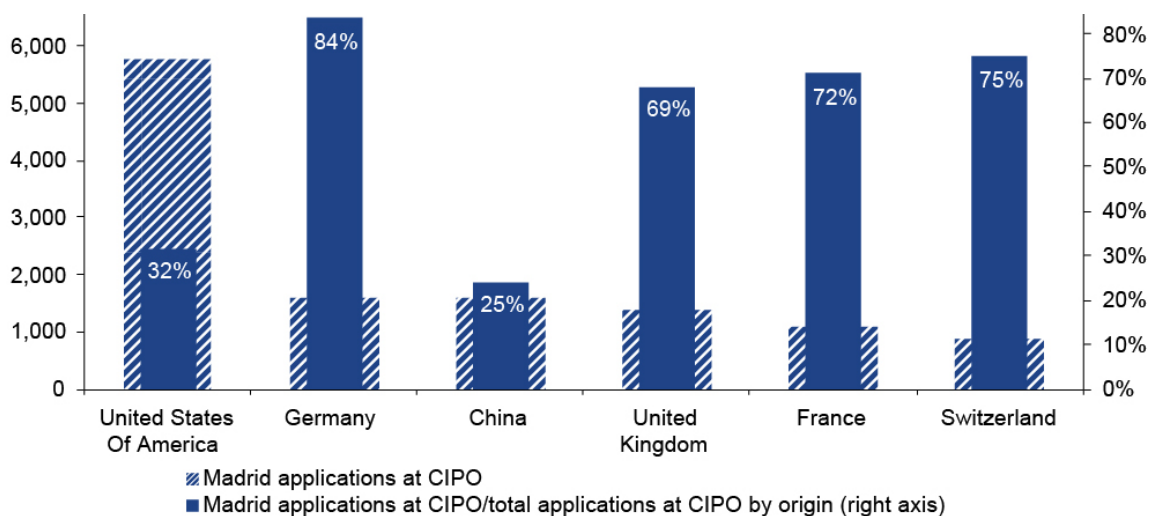




The year 2020 was the first full year where Canada was as member of the Madrid Protocol. Of the 41,830 non-resident applications received in 2020, 18,895 were filed using the Madrid system,<sup>x</sup> representing an impressive 45% of non-resident filings and 27% of the total trademark filing activity at CIPO.

The notable differences across countries of origin in their use of the Madrid system is presented in Figure 10. This figure sorts the top 6 countries of origin in terms of the number of international applications designating Canada, indicating what these Madrid filings represent to each country in terms of their total trademark filing activity at CIPO. The United States, for example, was the top Madrid filer designating Canada in 2020, with 5,789 applications, representing 32% of the total applications filed with CIPO by applicants from that country. The next most important Madrid applicants filed smaller amounts; however, the proportion of international filings designating Canada over their total trademark filing activity at CIPO was especially high among European countries, ranging from 69% (United Kingdom) to 84% (Germany). This reaffirms the idea that many European applicants see Canada and the United States as an integrated market, which may explain their strong preference to use the Madrid system when seeking trademark protection in Canada, considering that the Madrid system is more cost-effective when filing in 2 or more jurisdictions.

**Figure 10. Top 6 countries filing for trademarks using the Madrid system and designating Canada, 2020**







## Trademarks and the COVID-19 economic crisis

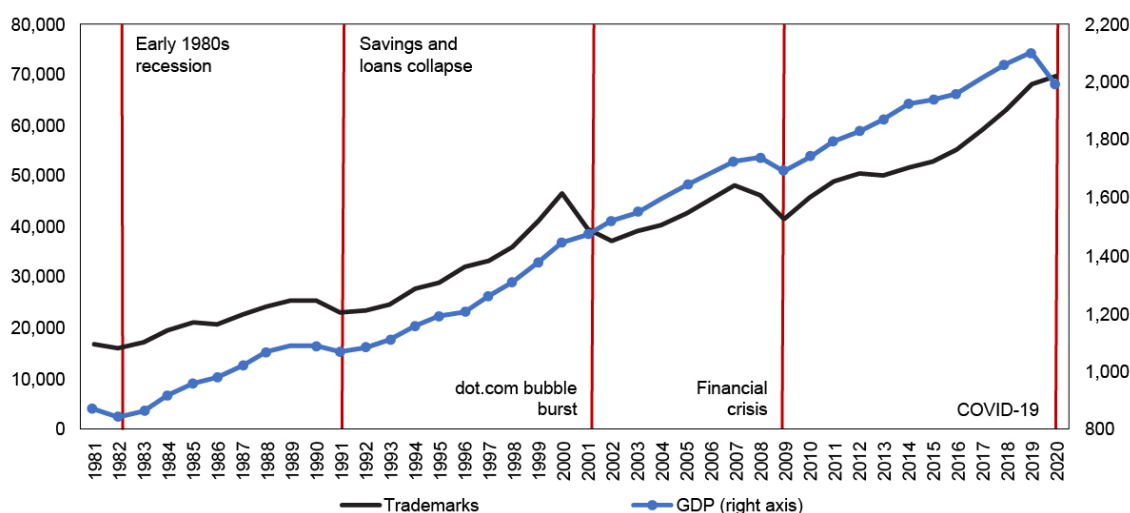
In December 2019, a novel virus first known as severe acute respiratory syndrome coronavirus 2 (later called SARS-CoV-2, or COVID-19) was identified in Wuhan, China. That month, the first lockdowns began in China. On January 30, 2020, the World Health Organization (WHO) declared the outbreak a public health emergency of international concern, and on March 11, 2020, the WHO declared the coronavirus disease a global pandemic. The speed to react and establish lockdowns as well as their intensities varied among countries. These lockdowns included curfews and restrictions on daily life that affected economic activities. In Canada's case, all aspect of the life of Canadians was affected by the largest public health crisis in 100 years.

As mentioned above, trademark filings at CIPO increased in 2020. The purpose of this special subsection on trademarks is to show that the overall increase in activity has not been homogeneous across the applicants' countries of origin and lines of trade.

## Trademark activity at CIPO during economic crises

Similar to what was observed in other economic series,<sup>xi</sup> trademark activity deviated from its long-run trend and grew to higher levels while the economy contracted. This marked the first time within the past 50 years that trademark filings in Canada increased, while the Canadian gross domestic product (GDP) experienced a negative shock. Figure 11 shows that the trademark activity at CIPO and the economic crises experienced by Canada since 1980 were generally correlated, but such correlation was not observed in 2020 amid the COVID-19 crisis.

**Figure 11. Impact of economic crises on trademark activity at CIPO, 1980–2020**



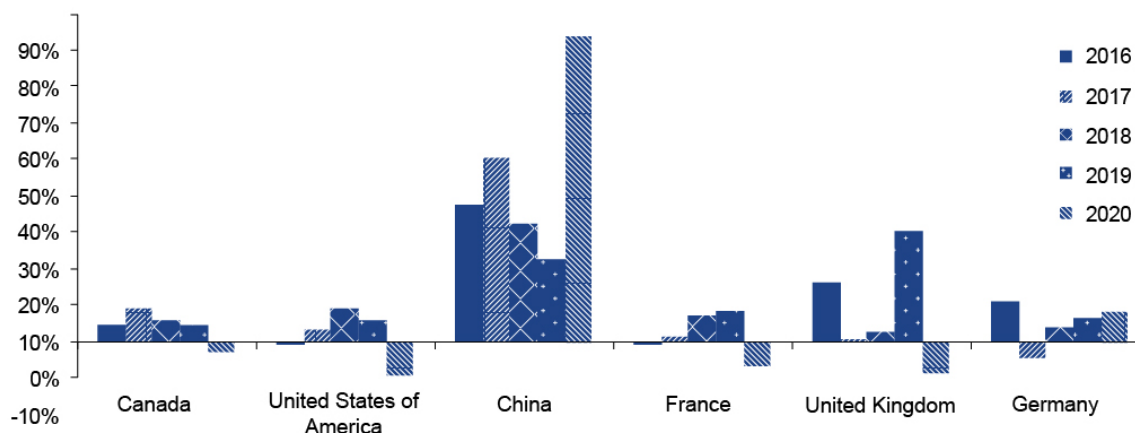


For this reason, since the onset of the pandemic, forecasts have been largely overstated as a result of the unexpected degree to which consumers and firms altered their behaviour, which helped steer the economy away from a starker decline. The heightened levels of adaptability brought about shifts in demand. Trademarks present an opportunity to protect consumer demand allocated towards a specific brand and have shown to be well correlated with private consumption. Large shocks to consumer demand occurred during the pandemic as businesses and IP holders found or developed new products, services, or ways to extract utility in the new virtually driven economy.

## Trademark activity at CIPO by origin

Trademarks can play a significant role in helping extend demand for a specific brand, good, or service both domestically and internationally. As such, they have shown to be linked with imports and exports. Consequently, the first step in identifying the factors associated with an increase in trademark filing activity in Canada is to understand its origin. Figure 12 presents the top 6 origins of trademark filings in Canada, this time in year-to-year variations in filings since 2016. Filings from China grew more in 2020 than in the 4 preceding years (annual increase of 84% in 2020) with such filings making up the majority of China's growth in trademarks, while Germany showed some resilience and the others suffered contractions.

**Figure 12. Top 6 countries filing for trademarks in Canada, year-to-year variations, 2016–2020**



The growth in Chinese filings aligns with the 14% increase in Canadian imports that country in 2020.<sup>xiii</sup> Chinese firms demonstrated a capacity to increase production and exports during the first half of 2020 while firms in other economies were required to cease or alter their operations, limiting their output capacities.



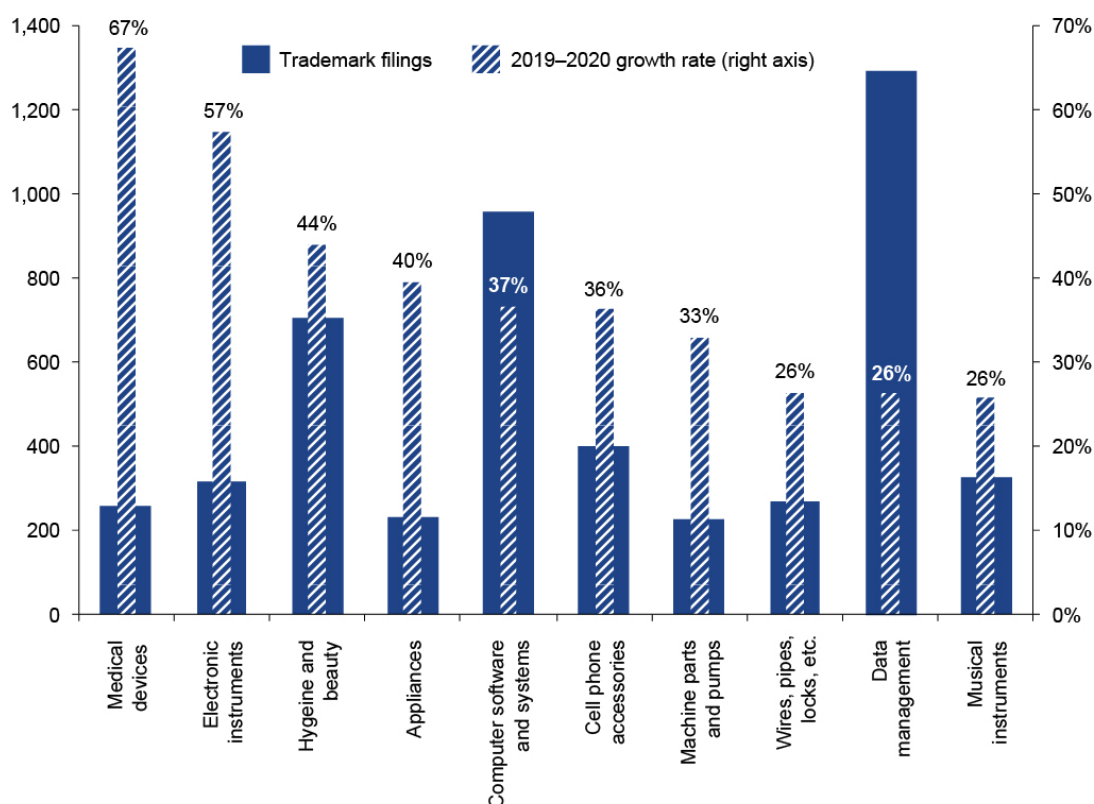
## Trademark activity at CIPO by lines of trade

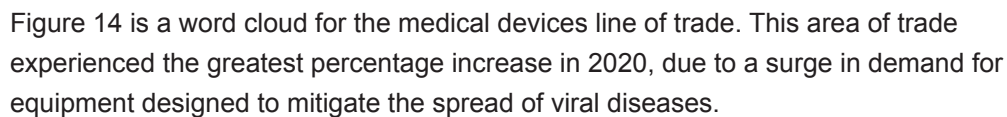
It is suspected that the increase in trademark filings was fostered by the surge of new areas and shifts in consumer demand. For instance, the stay-at-home orders brought on unprecedented demand for at-home gym equipment, home renovations, quality office furniture, and telecommunications, given the high demand for broadband internet access and devices.

CIPO conducted a natural language processing analysis that broke down and grouped the names of the internal goods and services classes linked on an application. In doing so, CIPO was able to generate intuitive clusters of common terms, which can be interpreted as “lines of trade.” With these models, it is possible to estimate the probability that an application could fall within a specific area of trade by assessing the observation’s goods or services wording.

After calculating the probabilities and assigning the applications to an area of trade, a trend analysis was conducted. Figure 13 presents the 10 lines of trade that observed the highest increase in trademark activity between 2019 and 2020, suggesting that the risk of disease transmission increased the demand for medical devices and hygiene-related solutions, while stay-home measures and the implementation of telework practices brought about the largest growth rates in demand for products and services necessary to set up remote access to work, communications (for both work and reducing the effects of personal isolation), and home leisure.

**Figure 13. Lines of trade – Trademark filings and growth, 2020**







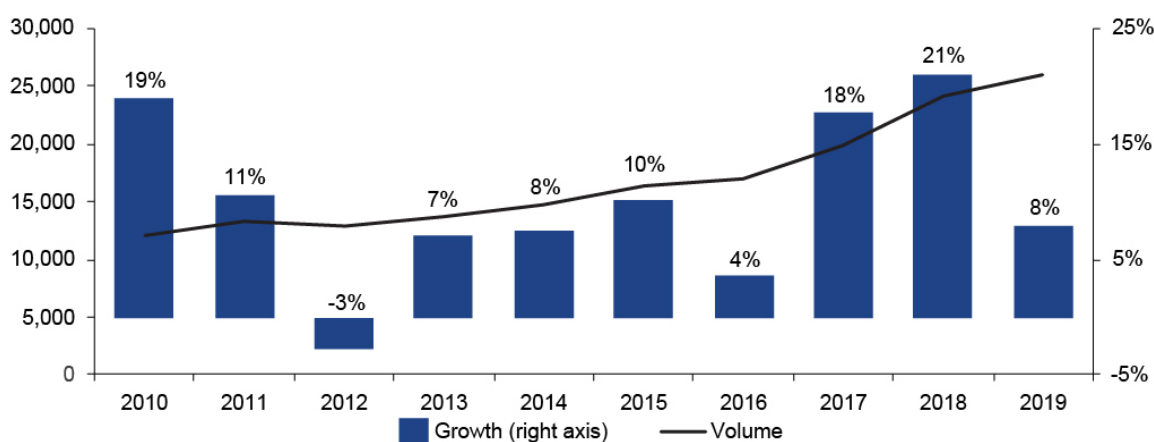


## Trademark applications filed abroad by Canadians

Between 2012 and 2019, trademark filing activity abroad by Canadians experienced uninterrupted growth, validating the notion that Canadian applicants recognize the importance of protecting their brands internationally. Canada filed 26,049 trademark applications abroad in 2019, representing an 8% increase compared with 2018 and more than doubling 2010 volumes. Of this total, about 7% was filed using the Madrid system, a relatively high proportion considering that the Madrid Protocol was implemented in Canada on June 17, 2019, and available to Canadian applicants for approximately only 6 months of the year.

The 10-year trend for trademark filings abroad and annual growth rates are presented in Figure 16. Except for 2012, application volumes have consistently grown every year since the 2008 financial crisis.

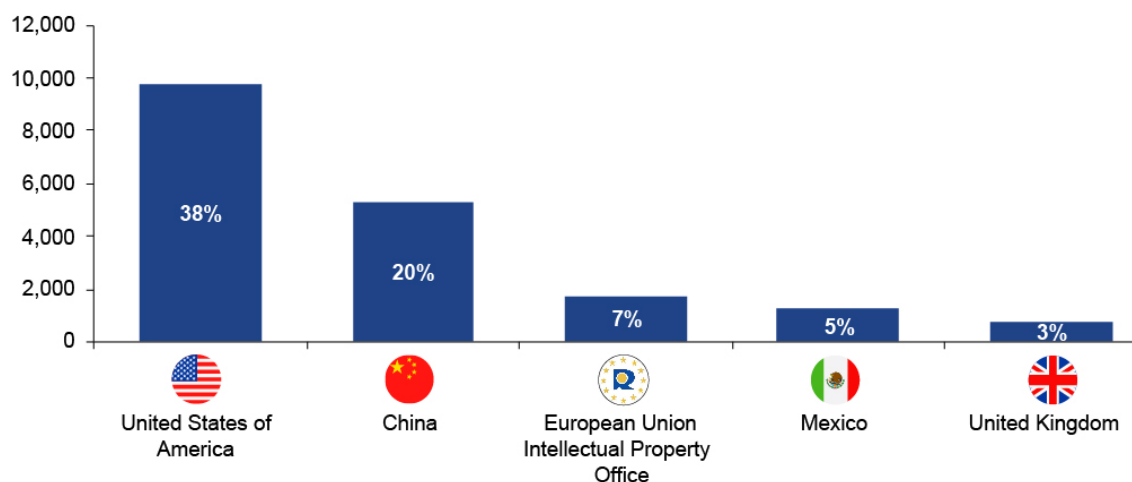
**Figure 16. Trademark applications filed abroad by Canadians, 2010–2019**





The top 5 international destinations for Canadian trademark applicants are shown in Figure 17. The United States continues to be the main destination with 9,794 filings in 2019, accounting for 38% of the trademark activity abroad by Canadians. China retained its position as the second preferred destination, with 5,287 applications (20% of the total applications abroad), representing a 17% increase compared with 2018 and more than 3 times the number of applications filed in 2010. With 1,719 applications and 7% of the share of international activity, European Union Intellectual Property Office (EUIPO) represents the third highest jurisdiction for trademark filings by Canadians; the 2019 volumes show a year-to-year increase of 10% and almost a doubling over the last 10 years. Mexico and the United Kingdom are the fourth and fifth destinations of choice by Canadian applicants, with 1,283 and 746 trademark filings, respectively.

**Figure 17. Top international destinations for Canadian trademark applicants, 2019**



## Conclusion

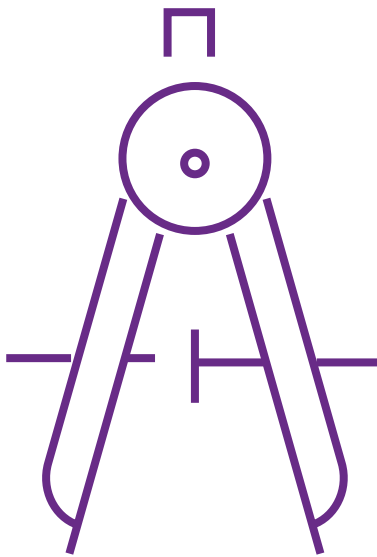
Despite the negative effects of the economic crisis caused by the COVID-19 pandemic, trademark application volumes saw an annual increase of 2% in 2020. A more in-depth analysis indicates that such growth was driven by filings from some non-resident origins, with China being the most noticeable case (an 84% increase in trademark filings in Canada compared with 2019). Non-resident filings in 2020 have also been characterized by an increasing preference for the Madrid system. This was especially true among European countries, whose proportion of Madrid applications designating Canada to their total filings at CIPO was over 70%. For trademark filing activity abroad by Canadians, it increased by 8% in 2019 and has more than doubled since 2010.



# Industrial designs

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Industrial designs refer to the visual appearance of a finished article. By registering an industrial design, the proprietor obtains an exclusive right to the design, preventing competitors from using the same or a substantially similar design applied to the same or analogous finished article. CIPO received 8,064 industrial designs in 2020, representing a 20% increase compared with 2019. Overall, industrial design activity has increased 54% over the past 10 years, driven mainly by non-resident activity.





## Industrial designs filed in Canada

Figure 18 presents industrial designs filed at CIPO over a period of 10 years by residency status. A total of 8,064 industrial designs were filed in Canada in 2020, with a notable 20% increase compared with 2019. Of particular note for 2020, the month of April represented a record-breaking month for industrial design activity in Canada, with a total of 919 filings.

Of the total, 763 designs were filed by residents and 7,301 by non-residents. The 54% growth over 10 years is reflective of a steady increase in demand for industrial design protection in Canada, especially from international applicants. In fact, the number of industrial designs filed by non-residents have grown 65% since 2011. On the other hand, designs by residents were down 3% compared with 2011, due largely to 3 consecutive years of decline between 2017 and 2019. The 919 filings in April represented a record-breaking month for industrial design activity in Canada.

**Figure 18. Industrial designs filed in Canada by residency status, 2011–2020**

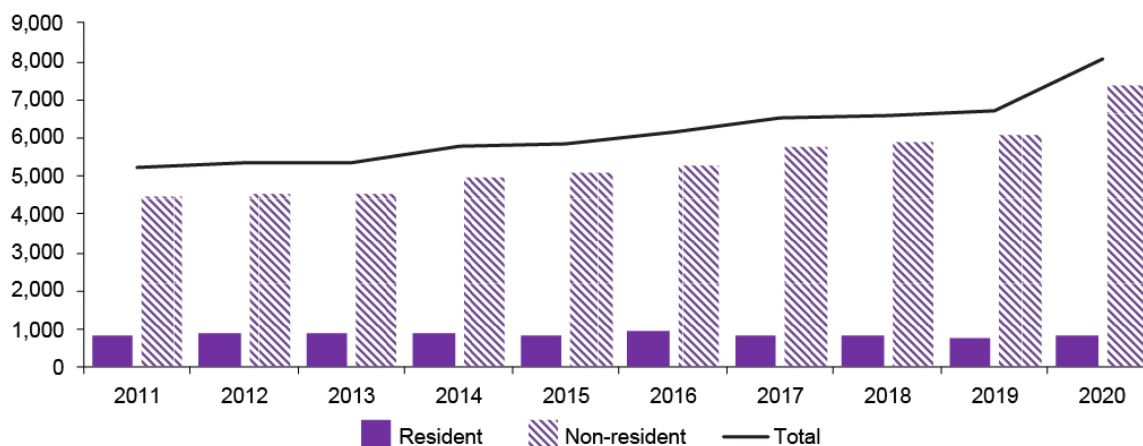
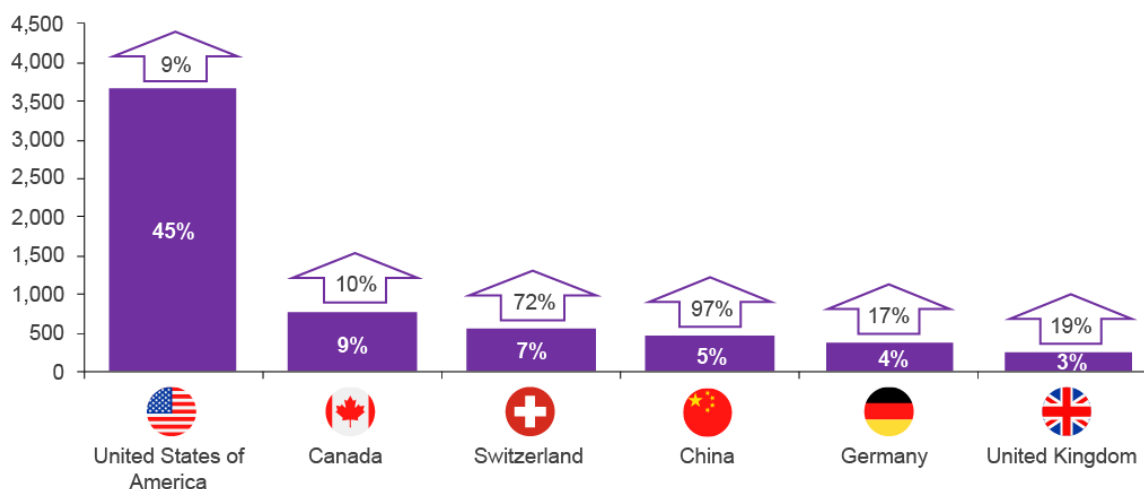




Figure 19 shows the top 6 countries filing for industrial designs in Canada in 2020. Compared with 2019, designs filed in 2020 from the United States increased 9%, solidifying Canada's neighbour as the top filer at CIPO, with 3,651 designs and 45% of all industrial design filing activity. Canada retained its second place as Canadians increased their filings in 2020 by 10%, with a total of 763 designs. Switzerland occupies the third place with 7% of the total activity, while China is fourth with 5%. More striking, however, is the respective increase of 72% and 97% in filings from these countries, compared with 2019. Germany and the United Kingdom complete the ranking, with Germany holding 4% of the total activity and a 17% increase compared with the previous year, while the United Kingdom increased its activity in Canada by 19% and was attributed with 3% of the designs filed in Canada. Combined, the industrial designs from these countries account for 65% of all filings in Canada and 71% of all non-resident activity.

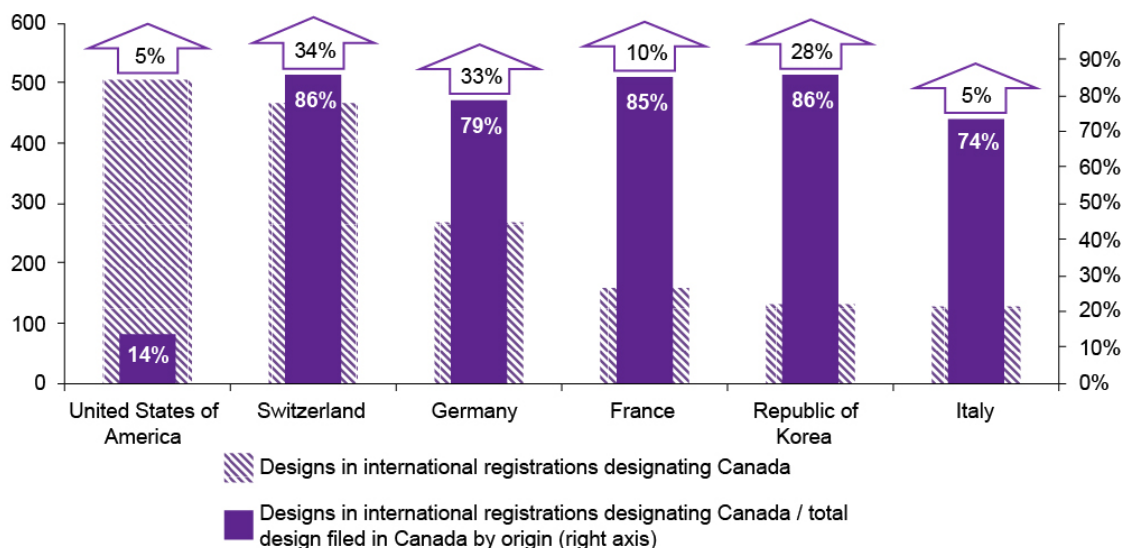
**Figure 19. Top 6 countries filing for industrial designs in Canada, 2020**





Since the implementation of the Hague Agreement in 2018, CIPO has been able to receive industrial design applications via the Hague system. “International registrations designating Canada” is the term used to identify international applications filed via the Hague system that were registered by WIPO and sent to CIPO for examination. Of the 8,064 industrial designs received in 2020, a total of 2,948 were designs in international registrations that designated Canada. These designs represented 37% of the total received in Canada and 40% of the designs filed by non-residents. This indicates the increasing importance of the Hague system as filing option, considering that those 2 rates were 20% and 22% only 1 year before. Figure 20 presents the use of the Hague system by non-residents designating Canada,<sup>xiii</sup> showcasing the United States as the top Hague user filing in Canada, with 508 designs in international registrations; however, the proportion of those designs as a share of the total designs filed in Canada from that country is 14%. This rate is low when compared with that of the other 5 top filing countries, ranging from 74% in Italy to 86% in both Switzerland and the Republic of Korea. Clearly, non-resident applicants perceive Canada and the United States as a highly integrated market, and naturally, industrial design protection will be sought in the 2 jurisdictions, further justifying the use of the Hague system.

**Figure 20. Top 6 countries filing for industrial designs using the Hague system and designating Canada, 2020**





Applications made via the Hague system can include up to 100 designs. The 2,948 designs received by CIPO from WIPO in 2020 were filed through 1,239 international registrations. This means that, on average, there were 2.4 designs per international registration. This ratio is slightly higher than that of the United States but below that of other top filing countries. Figure 21 ranks offices in descending order on the basis of the number of international registrations that designated the offices and presents the ratio of designs per international registration at the end of each bar.

**Figure 21. Top destinations for industrial design filings via the Hague system and average number of designs per international registration, 2020**



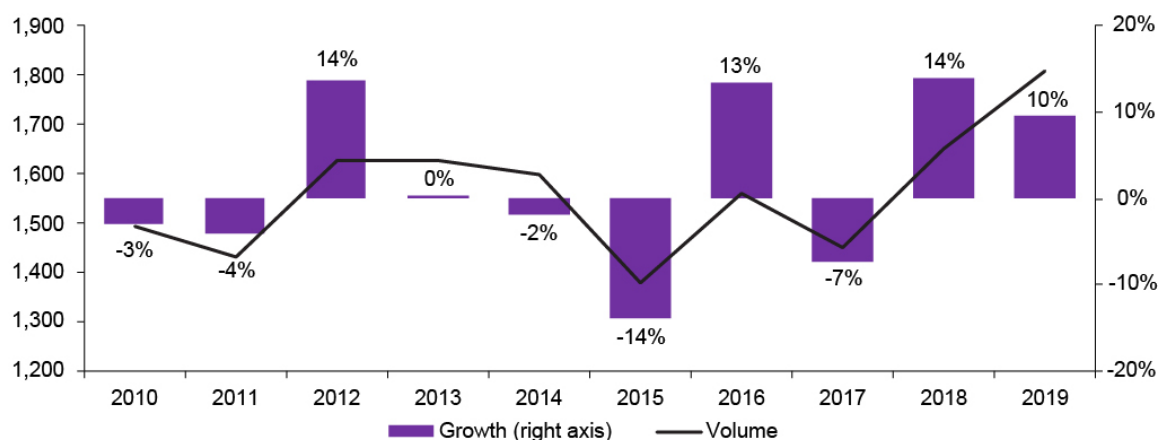




## Industrial designs filed abroad by Canadians

The trend in international industrial designs filed by Canadians from 2010 to 2019 is provided in Figure 22.<sup>xiv</sup> Canadians filed for 1,807 designs abroad in 2019, representing a 10% increase over 2018. Approximately 20% of these designs were filed using the Hague system. Since 2010, designs have grown 21%, a result of the volatile behaviour of this series, with periods of high growth like those of 2012, 2016 and 2018 offset by periods of notable negative growth like in 2015 and 2017.

Figure 22. Canadian industrial design applications filed abroad, 2010–2019

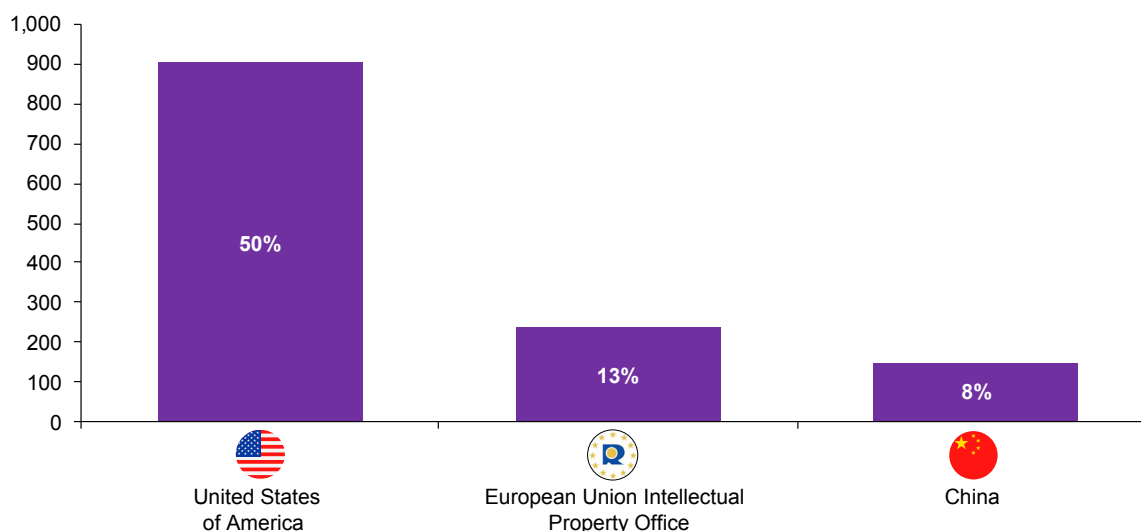




Canada implemented the Hague Agreement on November 5, 2018. Therefore, 2019 represents the first full year with Canadian applicants being able to file for industrial designs through that route. WIPO data indicate that the top 6 designated contracting parties by Canadians using the Hague system were EUIPO (81 designs), Canada (61),<sup>xv</sup> the United States (52), the United Kingdom (32), the Russian Federation (20), and the Republic of Korea (18).

The top 3 international destinations of industrial designs by Canadians in 2019 are presented in Figure 23. The United States is once again the top destination, with 905 designs, representing an increase of 9% in its share compared with 2018; this destination represents 50% of the designs in applications filed abroad by Canadians. The 238 designs filed at EUIPO, the second top destination, represented a 6% annual increase. Conversely, Canadian industrial designs filed in China experienced a 6% decrease between 2018 and 2019, with 150 counts. Combined, the top 3 destinations represented 72% of the share of designs filed abroad by Canadians, 2% less than the share observed in 2018 (74%).

**Figure 23. Top 3 international destinations for Canadian industrial design applicants, 2019**



## Conclusion

The number of industrial designs filed at CIPO has grown 54% since 2011. Resident filing activity is still 3% below 2011 levels but experienced an annual increase of 10% in 2020, demonstrating resilience to the pandemic. In 2020, a notable increase of 17% in the number of designs received by CIPO via the Hague system was observed, with designs filed through this route representing 37% of the total filed in Canada. Designs filed abroad by Canadians increased by 21% since 2010. International data from 2019 revealed the use of the Hague system by Canadians, signalling EUIPO, Canada, and the United States as the top designated contracting parties.



# Plant breeders' rights

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Plant breeders use this form of IP right to protect their new varieties, obtaining exclusive rights in relation to the propagating material (seeds, cuttings, budwood, etc.) of their plant variety. Plant varieties can be grouped into agricultural plants (cereals, pulses, potatoes, oilseeds and forages) and horticulture plants (fruits, vegetables and ornamentals).

In Canada, the plant breeders' rights IP regime is administered by the Canadian Plant Breeders' Rights Office (PRBO), within the Canadian Food Inspection Agency (CFIA).

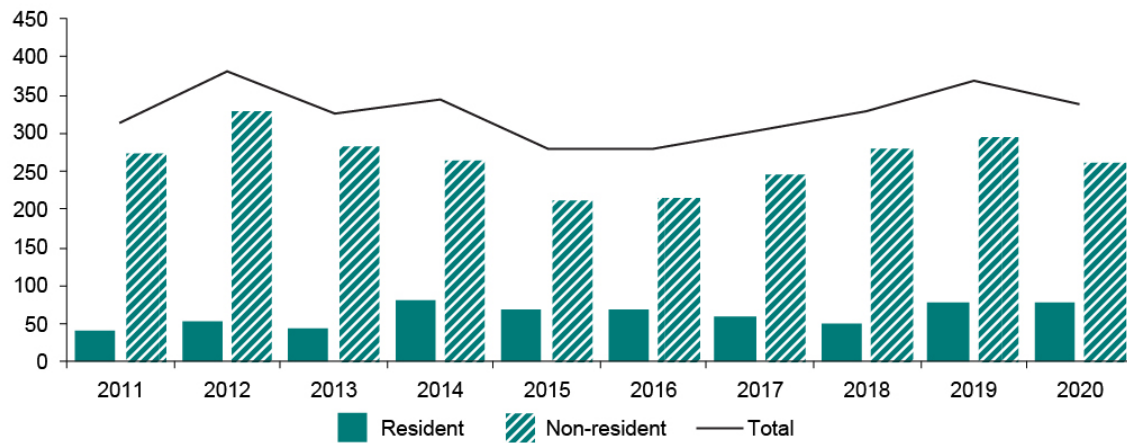




## Plant breeders' rights applications filed in Canada

In 2020, the PRBO received 337 plant breeders' rights applications, the first decrease since 2015 (Figure 24). This could be attributed to the effects of the COVID-19 crisis on plant breeder activity. Furthermore, the decrease is observed only in non-resident activity, given that the number of resident filings (75) did not show any variation compared with 2019 while non-resident filings decreased from 295 units in 2019 to 262 in 2020.

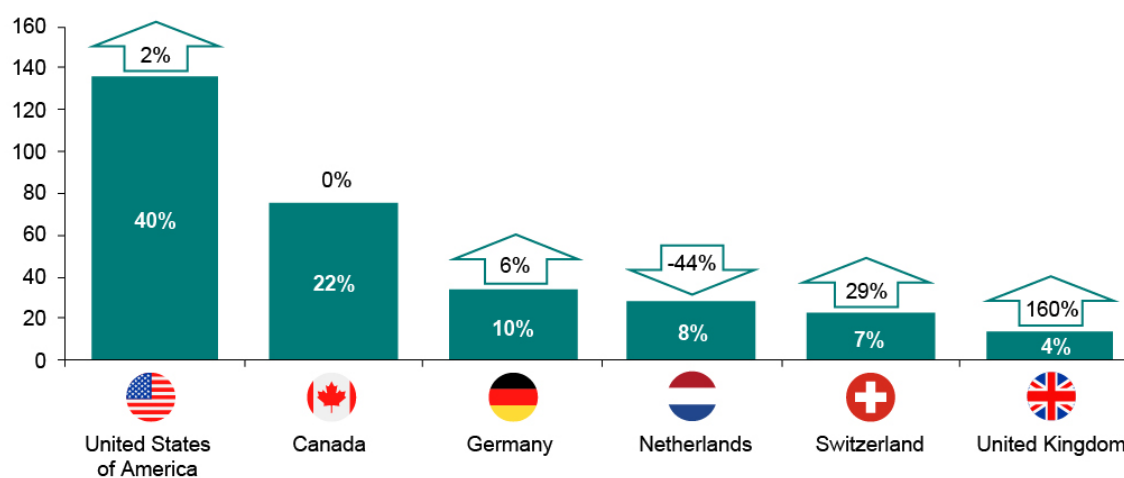
**Figure 24. Plant breeders' rights applications in Canada by residency status, 2011–2020**





According to Figure 25, 22% of plant breeders' rights applications were received from residents while non-residents were responsible for 78% of the total applications, demonstrating the reliance of international varieties in the Canadian marketplace. A total of 40% of the filings came from the United States, which saw 135 applications and a balanced proportion of agriculture and horticulture varieties, an increase of 4% compared with applications filed in 2019. This figure also suggests that the decline in filings in 2020 was driven mainly by a drop of 44% in filings originating from the Netherlands, compared with 2019.

**Figure 25. Top 6 countries filing for plant breeders' rights in Canada, 2020**



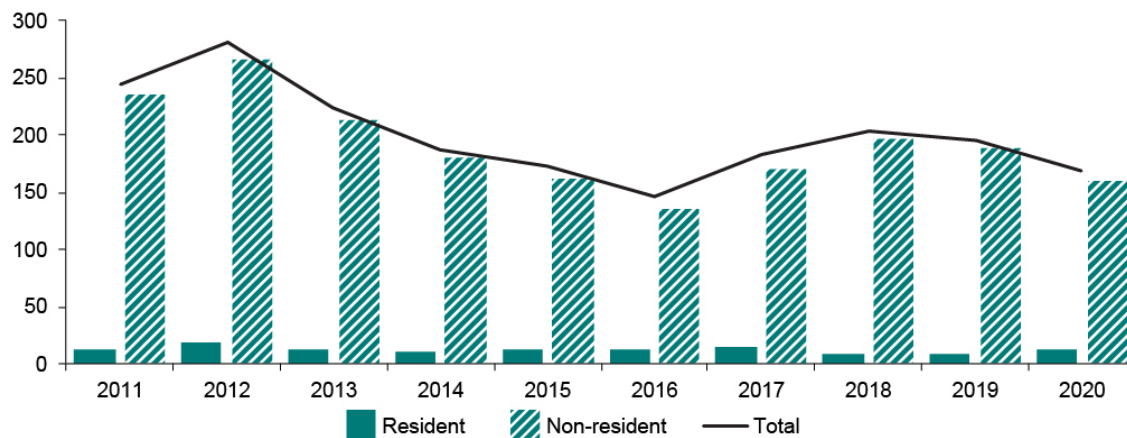
Interesting insights on plant breeders' rights activity can be obtained when the filing trends are broken down by variety group, presented next.



## Filing activity by variety group – Horticultural

Filings for horticultural plants—fruits, vegetables, and ornamentals—are heavily weighted by non-resident activity, while resident applications represented only 7% of the total for this variety group in 2020. Consequently, non-resident filings are the main driver, which explains the shape of the filing trend shown in Figure 26. The PBRO received 169 applications in 2020, 26 (13%) fewer than in 2019. Over the last decade, the highest number of horticultural filings occurred in 2012, with a total of 282 applications.

**Figure 26. Plant breeders' rights applications for horticulture varieties in Canada by resident status, 2011–2020**

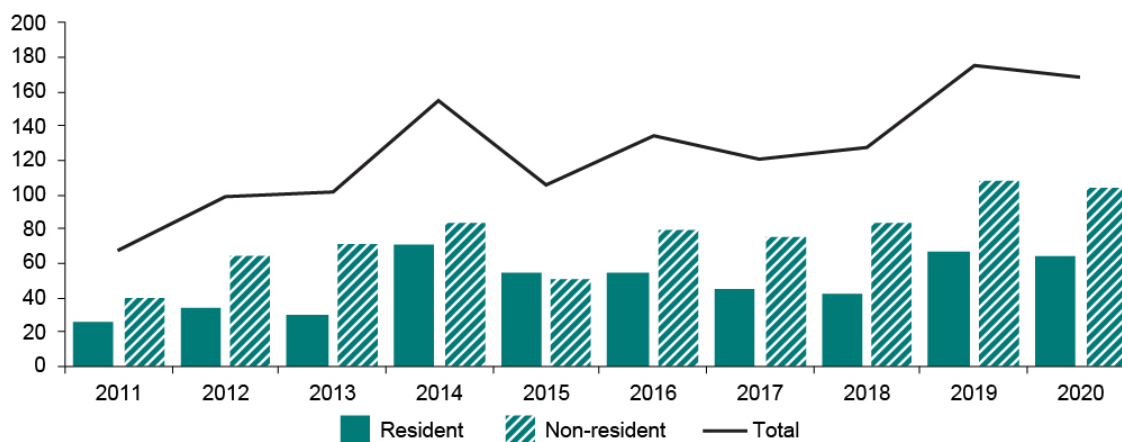




## Filing activity by variety group – Agricultural

Resident filing activity for agricultural plants—cereals, pulses, potatoes, oilseeds, and forages—is higher than that for horticulture plants. In 2020, resident filings represented 38% of total filings. Within the last decade, this proportion reached its lowest in 2013 (29%) and peaked in 2015 (52%), the only time over that 10-year period that resident filings were higher than non-resident filings. The PBRO received 168 applications for agricultural varieties in 2020, 7 units less than in the previous year, when the number of filings had reached its highest.

**Figure 27. Plant breeders' rights applications for agriculture varieties in Canada by resident status, 2011–2020**



## Conclusion

Plant breeders' rights trends in Canada are characterized by a strong presence of non-resident activity, especially in the horticultural area, while resident filings are concentrated primarily in the agricultural group. Applications in Canada grew over the past 5 years, until 2019, leading to a slight dip in 2020. While this 4% drop could be attributed to the effects of the COVID-19 pandemic, new data will enable a more in-depth analysis on the resilience of this IP right to the economic crisis.



# IP awareness and use among Canadians

## Introduction

As part of Canada's National IP Strategy, the 2018 Canadian budget committed funds to “better understand what groups of Canadians are benefiting the most from intellectual property.”<sup>xvi</sup> In response, the Survey of Intellectual Property Awareness and Use (IPAU Survey) was developed by Statistics Canada, ISED, and CIPO. The survey was conducted between November 2019 and February 2020, collecting data from a sample of nearly 12,000 observations representing approximately 600,000 Canadian enterprises with at least 1 employee and annual revenues equal to or greater than \$30,000. The data stratification covers 15 industry sectors in the North American Industry Classification System (NAICS), in addition to 2 other categories—Information and Communication Technologies and Clean Technologies Industries—, as well as 4 economic regions (Atlantic, Quebec, Ontario, Rest of Canada) and 5 categories of firm size based on the number of employees.

On February 18, 2021, Statistics Canada released selected results of the survey.<sup>xvii</sup> The summary of the descriptive results from the survey data provided in this report is designed such that 8 IP indicators are analyzed along an innovation path. This path starts with a firm becoming aware of IP and ends with that firm reaping the benefits of holding IP.

**Figure 28. Eight steps in the IP innovation path**



The 8 steps in the IP innovation path fall into 3 groups:

### **Group 1**

#### IP awareness

- IP familiar: Firms that reported being familiar with at least 1 type of IP right
- Sought IP information: Firms that sought information on IP in the 3 years prior to completing the survey
- Has a formal IP strategy: Firms reporting having carried out strategic activities related to IP in the 3 years prior to completing the survey

### **Group 2**

#### IP use

- Filed for IP: Respondents that filed for IP during the 3 years prior to completing the survey
- Owns IP in Canada: Respondents that reported owning IP rights domestically
- Owns IP abroad: Similar to "Owns IP in Canada" indicator but when protection was sought in other jurisdictions

### **Group 3**

#### IP impacts

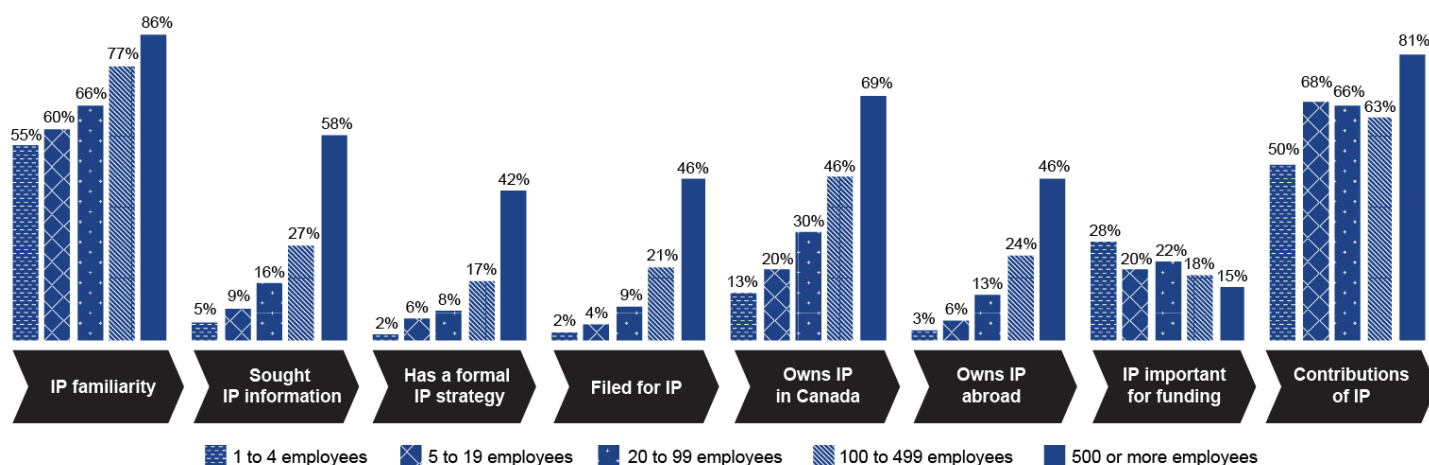
- IP Important for funding: IP-holding firms reporting that IP was important for securing funds from external investment sources
- Contributions of IP: IP-holding firms reporting that IP was important to 1 or more the following business contributions in the 3 years prior to completing the survey:
  - increased employment
  - increased revenues
  - increased business value
  - expanded markets
  - facilitated financing
  - provided business collaboration
  - strengthened long-term business projects
  - positioned business for acquisition

The 6 stratifications used for analysis are firm size, industry, innovation, investments in R&D, exporter status, and high growth.

## Descriptive results

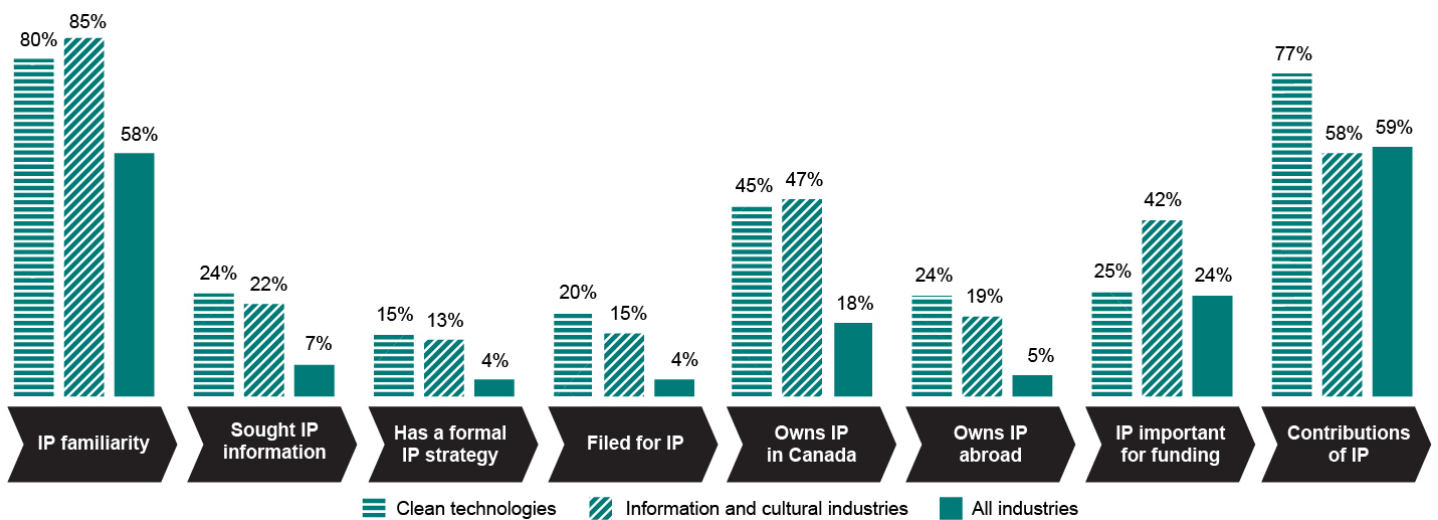
The results from the survey confirm what is well known about the positive relationship between IP and firm size. Figure 29 shows that, for almost all the steps in the innovation path, the rates increase with firm size. This is especially true for IP ownership and implementation of formal IP strategies. The first exception relates to the importance of IP for funding: it is natural that larger firms have additional means of financing other than IP, while smaller firms may be more likely to rely on their IP when seeking funding. The second exception relates to recognizing the contributions of IP, which seems to be unanimous and less related to firm size.

Figure 29. IP indicators by firm size, Canada, 2020



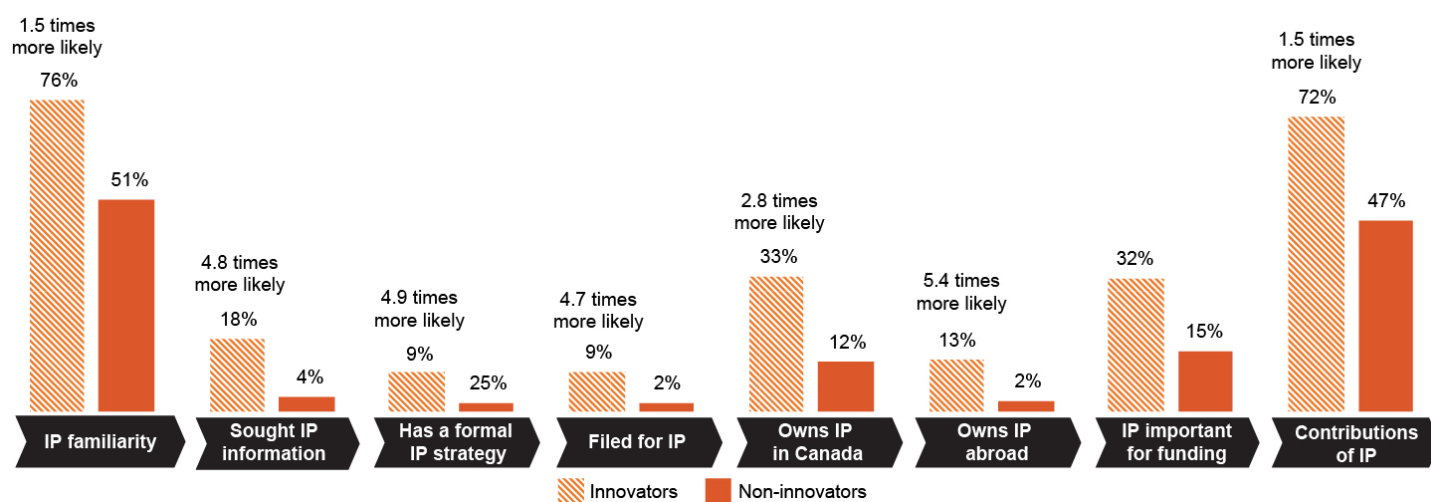
The survey also provides information on industries, specifically Information and Cultural Industries (NAICS 51) and Clean Technologies Industries, presented in Figure 30. It can be observed that both industries are more familiar with IP, were more likely to seek IP information, and filed for and own more IP than the average for all industries. Furthermore, firms in Information and Cultural Industries are 1.3 times more likely to recognize the importance of IP for funding, while those in the clean technologies industries category are 1.3 times more likely to perceive the contributions of IP.

**Figure 30. IP indicators among selected industries, Canada, 2020**



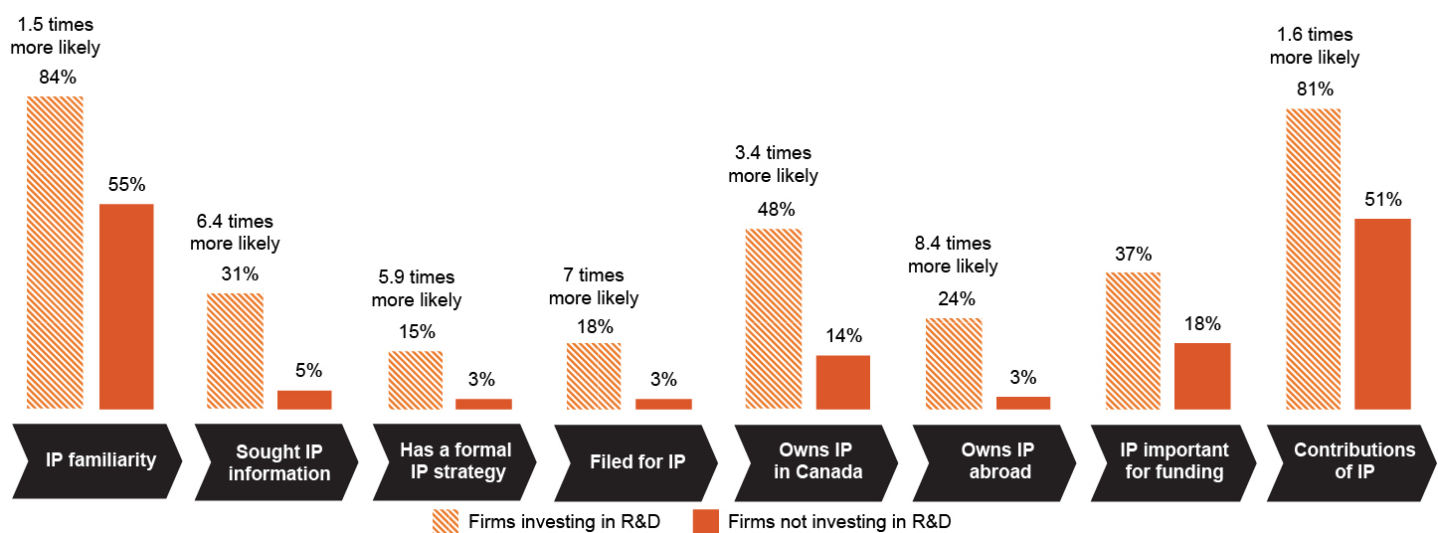
There is a strong impact of a firm's exposure to innovation activities in the innovation path. In this survey, respondents are considered innovators if they have carried out 1 or more activities in the following categories in the past 3 years: new or improved goods, new or improved services, and new or improved business process. As shown in Figure 31, compared with non-innovators in Canada, innovators in Canada are 4.8 times more likely than non-innovators to seek information on IP, 4.9 times more likely to have a formal IP strategy, 4.7 times more likely to have filed for IP, and 5.4 times more likely to own IP in other countries.

**Figure 31. IP indicators and innovation, Canada, 2020<sup>xviii</sup>**



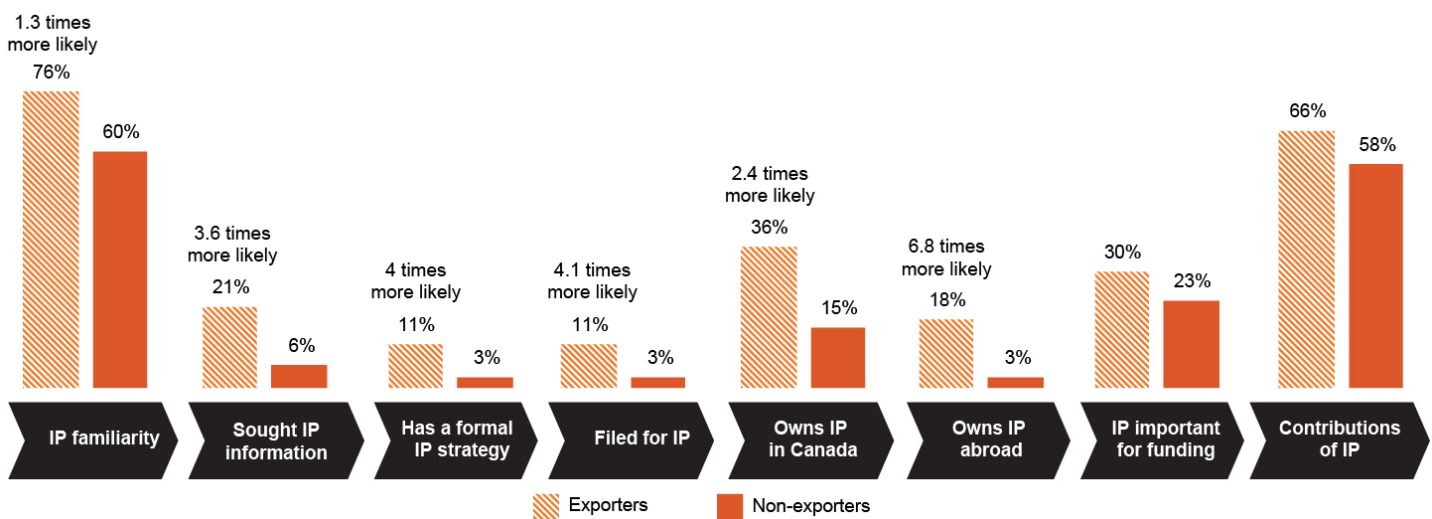
Similar to the case of innovative activities presented above, the innovation path is much more pronounced for firms that invest in R&D. Some examples from Figure 32 indicate that, compared with their counterparts who did not invest in R&D, Canadian firms investing in R&D are 6.4 times more likely to seek IP information, 7 times more likely to have filed for IP recently, and 8.4 times more likely to hold IP in other countries. Furthermore, these firms are 1.6 times more likely to recognize business contributions of IP.

**Figure 32. IP indicators and investments in R&D, Canada, 2020<sup>xix</sup>**



In a small open economy like Canada's, entering international markets is one of the most important outcomes for Canadian businesses. Figure 33 describes the differences between exporters and non-exporters. Compared with non-exporting firms, exporting firms in Canada are 3.6 times more likely to seek IP information, 4 times more likely to have a formal IP strategy, and 4.1 times more likely to have recently filed for IP. As expected, the likelihood of owning IP abroad is much higher (6.8 times higher) for exporters than for non-exporters.

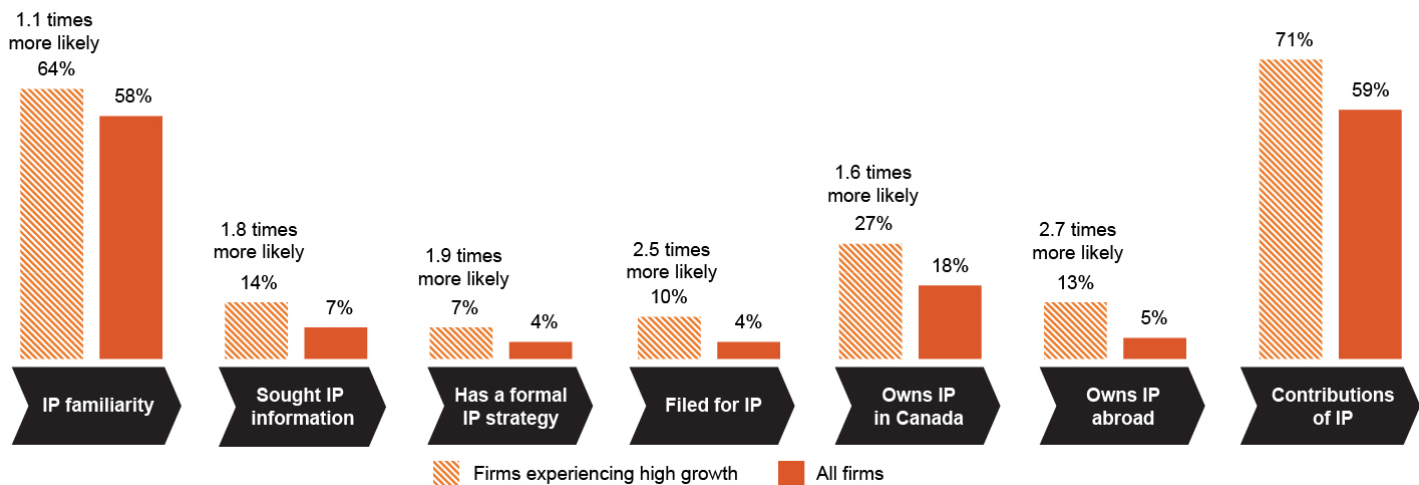
**Figure 33. IP indicators among exporting firms, Canada, 2020<sup>xx</sup>**





To finalize this summary, Figure 34 looks at the most tangible outcome for an enterprise: growth. The term “high-growth firm” applies when a firm experiences 3 consecutive years with increases in annual revenue greater than 20%. Compared with the average firm, high-growth firms in Canada are 1.8 times more likely to have sought IP information, 1.9 times more likely than to have a formal IP strategy, 2.5 times more likely to have recently filed for IP, and 1.6 times more likely to own IP in Canada. High-growth firms are 2.7 times more likely to own IP abroad, once again showing the importance of entering international markets for a small open economy like Canada.

**Figure 34. IP indicators among firms experiencing high growth, Canada, 2020<sup>xxi</sup>**



## Conclusion

One of the first studies to use data from the IPAU Survey provides key insights into the important relationship between IP awareness and use of IP and the positive outcomes experienced at the firm level. In general, all the steps of the innovation path are more prominent among larger firms, innovators, R&D investors, exporters, high-growth firms, and in certain IP-intensive industries, such as clean technologies. The results revealed new findings, perhaps the most important being that Canadian firms expressed a high level of recognition of the contributions of IP to their business.

# The growth of standard-essential patents

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## Introduction

Standards are defined by the Standards Council of Canada as “agreed upon rules and guidelines that establish accepted practices, technical requirements and terminologies.”<sup>xxii</sup> Standards are typically established by standard-setting organizations such as the International Organization for Standardization (ISO) and the European Telecommunications Standards Institute (ETSI). Standards are especially common in the information and communications technology industry, where they act as agreed-upon protocols to ensure different technologies from different companies can operate together. Moreover, they are written protocols that ensure interoperability and compatibility between technologies.

Patents relevant to forming such standards are called standard-essential patents (SEPs). A SEP is a type of patent whose rights would be licensed to anyone wanting to comply with the related standard. In exchange for a patent being included in a standard, the owner of a SEP makes the commitment to license it either on the basis of “fair, reasonable and non-discriminatory” (FRAND) royalties or royalty-free. Standardized technologies, like Wi-Fi, 4G and 5G networks in telephony used by many organizations, rely on SEPs.

## Evolution of standard-essential patent inventions<sup>xxiii</sup>

In general, very few patents become SEPs and not all standards rely on SEPs. As standards become more important in a number of industries, there is an increasing interest to better understand the patents that are related to standards. SEP data used at CIPO for research purposes are obtained from the PatentVector database, which consists of 22,851 SEP inventions and 12 standard-setting organizations between application years 1990 and 2018. Of these inventions, 22,126 were attributable to institutions (academic institutions, businesses, government departments, medical facilities, and research organizations). The remaining SEP inventions were attributed to inventors. The rest of this section will focus solely on standard-essential inventions by institutions, referred to as simply “SEP inventions by institutions.”

This analysis found that, in 2018, the amount of SEP inventions worldwide was 42 times the amount in 1990, with 57 SEP inventions at the beginning of this period and 2,406 at the end, representing an average annual growth of 14%. The year with the highest growth was 2000, with 72%, while the lowest (-19%) was observed in 2009. The volumes of SEP inventions and annual growth rates are presented in Figure 35.

**Figure 35. SEP invention filing trends, 1990–2018**

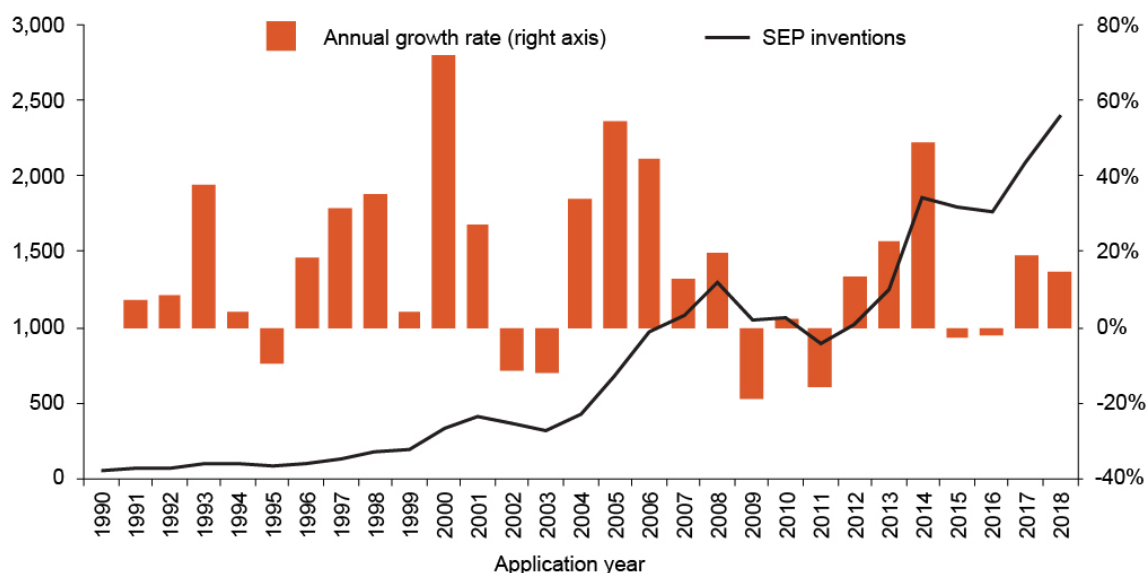
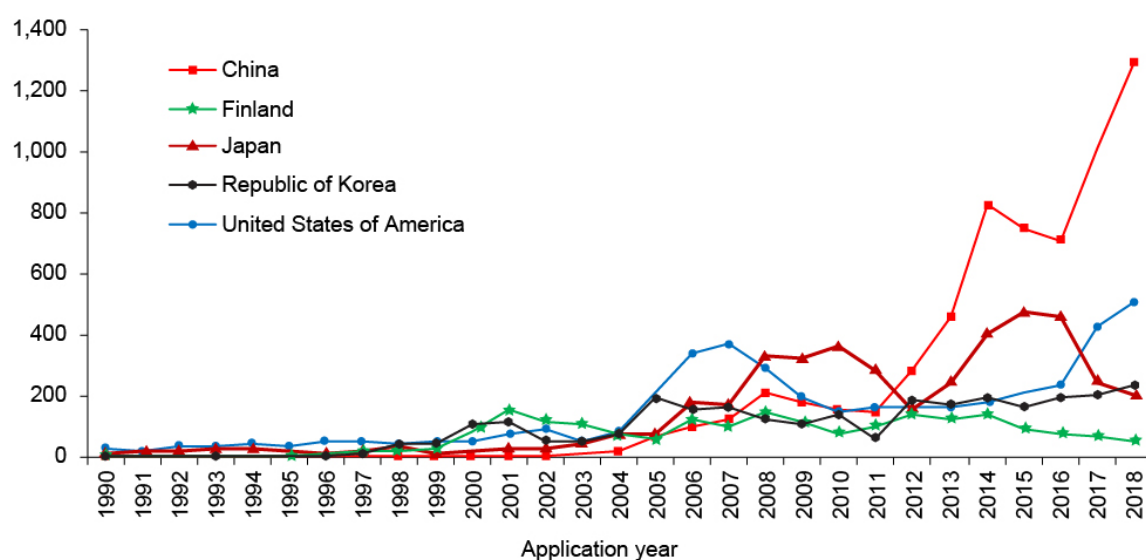


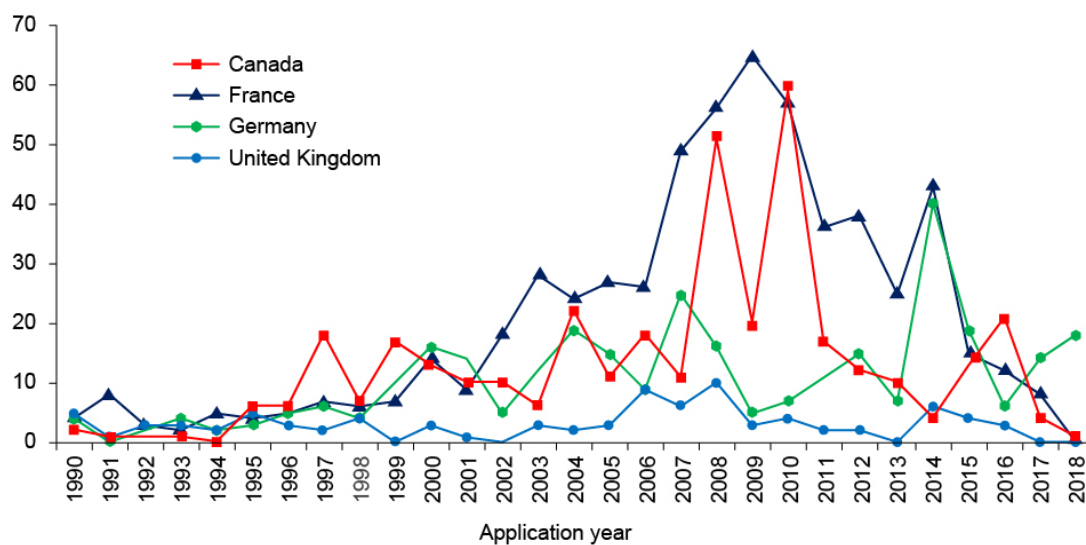
Figure 36 shows the filing trend of the 5 world-leading countries in SEP inventions. Chinese institutions ranked first, with 6,344 SEP inventions between the application years 1990 and 2018. China has experienced a significant uptick in SEP inventions since the mid-2000s, which coincides with their burgeoning telecommunications industry.<sup>xxiv</sup> American institutions rank second, with 4,349 SEP inventions, followed by institutions from Japan, Korea and Finland.

**Figure 36. SEP invention trends from the top 5 countries, 1990–2018**



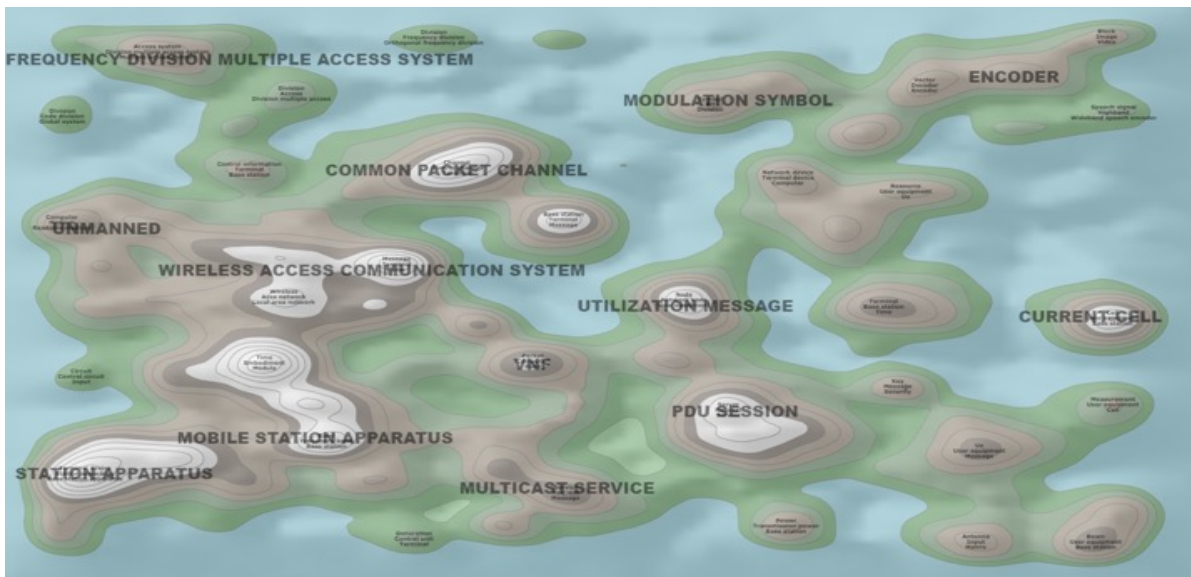
Canadian institutions held a total of 372 SEP inventions over that same time period. They recorded high growth in the mid-to-late 2000s, peaking in 2010 with 59 SEP inventions. While Canadian institutions own less SEP inventions than the leading countries, it can be observed that Canada is on par with France, Germany, and the United Kingdom. This is shown in Figure 37, which presents the filing trends for Canadian, French, German, and British institutions.

**Figure 37. SEP invention filing trends, 1990–2018**



The patent landscape map in Figure 38 shows the key technology fields in which there is a high concentration of SEP inventions.<sup>xxv</sup> It superimposes over the white peaks the keywords that appear most frequently throughout the data set. Observing large white peaks around keywords such as “wireless access communication system” and “mobile station apparatus” is consistent with the notion that SEP inventions are tied predominately to the telecommunications sector. This reinforces the notion that SEP inventions are an important factor for succeeding in the Information and communications technology industry.

**Figure 38. Landscape map of international inventions**



## Conclusion

In this data set drawn from the leading standard-setting organizations in the world, we find that the number of standard-essential patents (SEPs) inventions has been increasing over the last 2 decades, especially in the information and communications technology industry. This growth in SEP inventions highlights the need for a deeper analysis of the available data. CIPO intends to publish a full-length, comprehensive report on SEP inventions, which will take a much closer look at the SEP landscape in Canada. This report will highlight the Canadian institutions and inventors that hold SEP inventions and the specific technology fields in which they operate.



## Conclusion

The 2021 edition of the IP Canada Report presents trends in IP filings in Canada and abroad by Canadians. In the year of the onset of the COVID-19 pandemic, patent activity in Canada exhibited a downward trend, decreasing 5% compared with 2% over the last decade; however, resident filings showed positive growth in 2020, increasing by 5%. Also in 2020 and despite the effect of the pandemic, trademark applications filed with CIPO saw a 2% increase, although in this case, the growth was driven by non-residents (notably residents of China), who filed 45% of their applications using the Madrid system. Over the last decade, trademark applications at CIPO grew 44%. In 2020, the number of industrial designs filed in Canada (either directly at CIPO or through the Hague system) increased 20%. Applicant use of the Hague system went from 20% to 37% in only 1 year. Finally, plant breeders' rights applications decreased 9% in 2020, driven by a reduction in non-resident activity.

IP activity abroad by Canadians showed an increase in 2019, with patents, trademarks, and industrial designs growing 1%, 8%, and 10%, respectively. Between 2010 and 2019, patent activity abroad by Canadians observed a 3% increase, while industrial designs increased 21% and trademarks increased 117%.

This year, the report featured a summary of internal research carried out at CIPO using new data from the IPAU Survey. Based on an innovation path approach, results from a descriptive analysis reveal the weight of awareness and use of IP in the innovation path among innovators, R&D investors, exporters, and high-growth firms. The IP Canada Report concludes by presenting preliminary findings from an ongoing IP analytics project that aims to explore the evolution of standard-essential patent inventions in Canada and internationally.

Similar to last year, the findings in the IP Canada Report 2021 highlight the changes in Canadian IP activity that followed the onset of the COVID-19 pandemic, and reveal that Canadian businesses and inventors are resilient, have an ability to adapt to a crisis, and help maintain Canada as a key player on the global scene.

# Appendix A

CIPO administers IP rights in Canada, for patents, trademarks, industrial designs, copyrights, geographical indications, official marks, and integrated circuit topographies. This report focuses on the first 3 of these IP rights. Each type of IP protection is designed for different circumstances. The fees applied by CIPO change yearly. For an updated list of fees as well as the fee form to submit payment, visit [www.ic.gc.ca/eic/site/cipointernet-internetopic.nsf/eng/h\\_wr00023.html](http://www.ic.gc.ca/eic/site/cipointernet-internetopic.nsf/eng/h_wr00023.html).

## Patents

Patents provide a time-limited, legally protected, exclusive right to make, use, and sell an invention. In this way, patents serve as a reward for ingenuity. Patents apply to newly developed technology and to improvements on existing products or processes.

Patent protection applies in the country or region that issues the patent. In Canada, a patent lasts for 20 years from the date it is filed. Patents can have a great deal of value. They can be sold, licensed, or used as assets to attract funding from investors.<sup>xxvi</sup>

In exchange for these benefits, a full description of the invention must be provided when the patent is filed. This helps enrich technical knowledge worldwide. Details of patent applications filed in Canada are disclosed to the public after an 18-month confidentiality period.

To be eligible for patent protection, an invention must be new (first in the world), useful (functional and operative), and inventive (showing ingenuity and not obvious to someone of average skill who works in the field of the invention). The invention can be a product (e.g. door lock), a composition (e.g. chemical composition used in lubricants for door locks), a machine (e.g. device for making door locks), a process (e.g. method for making door locks), or an improvement on any of these.

In Canada, the first applicant to file a patent application is entitled to obtain the patent. The patent should be filed as soon as possible after an invention is completed in case someone else is on a similar track.

Any public disclosure of an invention before filing may make it impossible to obtain a patent. There is an exception in Canada and the United States when the public disclosure was made by the inventor or by someone who learned of the invention from the inventor less than 1 year before filing the patent application. Be aware that, in some countries, disclosing the invention to the public anywhere in the world before filing a patent application may in many circumstances prevent the inventor from obtaining a patent.<sup>xxvi</sup>

For applications using the Patent Cooperation Treaty, consult [www.wipo.int/pct/en/](http://www.wipo.int/pct/en/).

## Trademarks

Trademarks can be 1 or many words, designs, tastes, textures, moving images, modes of packaging, holograms, sounds, scents, 3-dimensional shapes, colours, or a combination of these used to distinguish the goods or services of one person or organization from those of others. Over time, trademarks stand for not only the actual goods or service a person or company makes but also the reputation of the producer. Trademarks are very valuable IP.<sup>xxvii</sup> For example, suppose you started a courier business that you chose to call Giddy-up. You could register these words as a trademark for the service that you offer (if you met all the legal requirements).

A certification mark, which is a type of trademark, can be licensed to many people or companies for the purpose of showing that certain goods or services meet a defined standard. For example, the Woolmark design, owned by Woolmark Americas Ltd., is used on clothing and other goods.

For applications using the Madrid Protocol, consult [www.ic.gc.ca/eic/site/cipointernet-internetopic.nsf/eng/wr04619.html?Open&wt\\_src=cipo-tm-main&wt\\_cxt=learn](http://www.ic.gc.ca/eic/site/cipointernet-internetopic.nsf/eng/wr04619.html?Open&wt_src=cipo-tm-main&wt_cxt=learn).

## Industrial designs

Industrial design is about how something looks. It protects the visual features of shape, configuration, pattern or ornament, or any combination of these features that are applied to a finished article. In other words, it protects the appearance of an article. For example, industrial designs can be found in many everyday products, such as the unique contour of a car hood, the graphical user interface on a phone, or the specific shape or pattern of your favourite shoes. If you want to register an industrial design, it must be novel. Registering your industrial design will provide you with an exclusive right to your design for up to 15 years.

You can file for registration through CIPO or through the Hague system. If you choose to file an application through CIPO, you can protect your design only in Canada. If you choose to file an application through the Hague system, you can protect your design in multiple countries at the same time, including in Canada. For more information on the how to apply for registration, consult the Industrial Designs Guide.<sup>xxviii</sup>

## Appendix B

### Interpreting patent data

Patent data are a good starting point for analyzing the development of new technologies because they provide important information on the specific innovation in the invention and who the inventors and applicants are. Like any data source, patent data have strengths and weaknesses and if used in the wrong way can lead to erroneous conclusions and poor policy. The following provides context on the use of patents to understand innovation.

While patents measure the flow of new ideas, it has been argued that patents may not measure innovation for 3 important reasons: patents do not include non-patented innovations, not all patents result in commercialization, and many patents are strategic in nature. For these reasons, the analysis is based on patent families that include applications in at least 2 jurisdictions. This makes it more likely that these patent families be a higher-value invention and that the firm expects to commercialize the invention.<sup>xxxix</sup>

Another challenge is that many innovations or inventions remain hidden as trade secrets. These innovations will be missed in a measure that includes only patents. However, a 2008 study indicates that world-first innovators patent more frequently. Conversely, firms that patent infrequently tend to be imitators.<sup>xxx</sup> In addition, the study finds that firms that protect their IP are more likely to increase their profits than those that do not patent. Moreover, small- and medium-sized enterprises that patent are more likely to be high-growth firms, which is important for success.<sup>xxxi</sup> These conclusions are reinforced by a Canadian study showing that firms that are aggressive innovators, introducing radically new products that involve patent protection, have higher profits.<sup>xxxii</sup> Finally, while some inventions are not patented, patents are obtained for almost all economically significant inventions.<sup>xxxiii</sup>

Below are the primary ways to view or interpret patent data.

## Market reach

Patent filings in foreign markets are a good indicator of firms accessing those markets. Surveys have shown that firms that hold patents are more likely to be exporters.<sup>xxxiii</sup>

## Innovative activity

When we do not account for filings in multiple jurisdictions, we are double and triple counting the number of patented inventions or innovative activities. In order to address this, patent data allow for the formation of patent families whereby each family includes all related or similar patents in all jurisdictions.

## Scientific strength

It is possible to identify the researchers or scientists rather than the company or applicant. While they can be one and the same, they are often different. Such identification makes it possible to see the inventive activity of Canadian researchers working in other countries or for non-Canadian companies.

## Relative advantage

Canada is a small, open economy. For this reason, it is unlikely that Canadian industries or innovators have an absolute advantage in a particular area, be the most prolific IP users, or have the largest global market share. However, there are areas where they have a comparative or relative advantage. Much work has been done in the area of creating metrics of relative technological advantage and relative specialization.

## Endnotes

<sup>i</sup> Consult CIPO's About us page for information on the organization's mission, vision, and values and for links to the latest annual report and business strategy. [www.ic.gc.ca/eic/site/cipointernet-internetopic.nsf/eng/h\\_wr00025.html](http://www.ic.gc.ca/eic/site/cipointernet-internetopic.nsf/eng/h_wr00025.html).

<sup>ii</sup> Canadian Intellectual Property Office, "Guide to Plant Breeders' Rights in Canada," Ottawa, 2015. [www.inspection.gc.ca/plants/plant-breeders-rights/overview/guide/eng/1409074255127/1409074255924](http://www.inspection.gc.ca/plants/plant-breeders-rights/overview/guide/eng/1409074255127/1409074255924).

<sup>iii</sup> CIPO data were last updated December 15, 2020.

<sup>iv</sup> World Intellectual Property Organization, IP Statistics Data Center (November 2021 update). WIPO collects the previous year's data from member offices and provides public access. Last available year is 2019. [www3.wipo.int/ipstats/](http://www3.wipo.int/ipstats/).

<sup>v</sup> World Intellectual Property Organization, "Global Innovation Index 2021," Geneva, Switzerland, 2021. [www.wipo.int/global\\_innovation\\_index/en/2021/](http://www.wipo.int/global_innovation_index/en/2021/).

<sup>vi</sup> Canadian Intellectual Property Office, "A Guide to Copyright," 2018. [www.ic.gc.ca/eic/site/cipointernet-internetopic.nsf/eng/h\\_wr02281.html](http://www.ic.gc.ca/eic/site/cipointernet-internetopic.nsf/eng/h_wr02281.html).

<sup>vii</sup> Canadian Intellectual Property Office, "A Guide to Integrated Circuit Topographies," Ottawa, 2015. [www.ic.gc.ca/eic/site/cipointernet-internetopic.nsf/eng/h\\_wr02282.html](http://www.ic.gc.ca/eic/site/cipointernet-internetopic.nsf/eng/h_wr02282.html).

<sup>viii</sup> The various categories of marks, Canadian Intellectual Property Office. [www.ic.gc.ca/eic/site/cipointernet-internetopic.nsf/eng/wr03109.html#offmark](http://www.ic.gc.ca/eic/site/cipointernet-internetopic.nsf/eng/wr03109.html#offmark).

<sup>ix</sup> Canadian Intellectual Property Office, "Trademarks Guide," Ottawa, 2016. [www.ic.gc.ca/eic/site/cipointernet-internetopic.nsf/eng/h\\_wr02360.html](http://www.ic.gc.ca/eic/site/cipointernet-internetopic.nsf/eng/h_wr02360.html).

<sup>x</sup> Applications filed through the Madrid system that designate Canada are referred to as protocol applications under Canadian legislation. Technically, protocol applications will always be by non-residents because Canadians generally cannot designate their own country; they must have a base application in their country of origin.

<sup>xi</sup> Housing prices, for example, also experienced significant increases despite the negative effects of the pandemic.

<sup>xii</sup> Source: Trade Data Online. [www.ic.gc.ca/app/scr/tdst/tdo/crtr.html?grouped=GROUPED&searchType=All&areaCodes=553&naArea=9999&countryList=specific&toFromCountry=CDN&reportType=TI&timePeriod=5%7CComplete+Years&currency=PC&productType=HS6&runReport=true](http://www.ic.gc.ca/app/scr/tdst/tdo/crtr.html?grouped=GROUPED&searchType=All&areaCodes=553&naArea=9999&countryList=specific&toFromCountry=CDN&reportType=TI&timePeriod=5%7CComplete+Years&currency=PC&productType=HS6&runReport=true).

<sup>xiii</sup> In Figure 20, only countries that showed activity in both 2020 and 2019 were used. This criterion leaves the case of Malta, which filed for 141 designs in international registrations in 2020 but did not report any industrial design filing activity in 2019.

<sup>xiv</sup> For the case of designs filed abroad by Canadians, the WIPO macrodata used do make it possible to determine how many jurisdictions that protection for a design was sought in.

<sup>xv</sup> Contrary to what happens with the Madrid system, with the Hague system, Canada can be a designated contracting party in industrial design applications filed by Canadians.

<sup>xvi</sup> [www.budget.gc.ca/2018/docs/plan/budget-2018-en.pdf](http://www.budget.gc.ca/2018/docs/plan/budget-2018-en.pdf), p. 117.

<sup>xvii</sup> Public data tables from the survey are available in Canada's Open Government portal, at [open.canada.ca/data/en/dataset/9e44d142-9062-4f96-be50-c613fe504585](https://open.canada.ca/data/en/dataset/9e44d142-9062-4f96-be50-c613fe504585).

<sup>xviii</sup> The absence of a ratio denotes lack of statistical significance at the 95% confidence level.

<sup>xix</sup> The absence of a ratio denotes lack of statistical significance at the 95% confidence level.

<sup>xx</sup> The absence of a ratio denotes lack of statistical significance at the 95% confidence level.

<sup>xxi</sup> The absence of a ratio denotes a lack of statistical significance at the 95% confidence level. The absence of estimates denotes estimates of insufficient quality for use.

<sup>xxii</sup> Standards Council of Canada. "Maximize the Value From Intellectual Property Rights and Standards." [www.scc.ca/en/system/files/publications/Standards\\_and\\_IP\\_factsheet\\_EN.pdf](http://www.scc.ca/en/system/files/publications/Standards_and_IP_factsheet_EN.pdf).

<sup>xxiii</sup> "SEP invention" refers to the first filed patent to have gained SEP status within an INPADOC patent family. A patent family represents 1 or more published patents related to the same invention with a shared priority. CIPO's analysis is based on SEP data collected by PatentVector.

<sup>xxiv</sup> Ernst, Dieter (2017). "China's Standard-Essential Patents Challenge: From Latecomer to (Almost) Equal Player?" Centre for International Governance Innovation. [www.cigionline.org/sites/default/files/documents/China%27s%20Patents%20ChallengeWEB.pdf](http://www.cigionline.org/sites/default/files/documents/China%27s%20Patents%20ChallengeWEB.pdf).

<sup>xxv</sup> This map is generated using an algorithm that analyzes patent documents in order to group together those using shared language.

- <sup>xxvi</sup> Canadian Intellectual Property Office, “A Guide to Patents,” Ottawa,” 2018.  
[www.ic.gc.ca/eic/site/cipointernet-internetopic.nsf/eng/h\\_wr03652.html](http://www.ic.gc.ca/eic/site/cipointernet-internetopic.nsf/eng/h_wr03652.html).
- <sup>xxvii</sup> Canadian Intellectual Property Office, “A Guide to Trademarks,” Ottawa, 2018.  
[www.ic.gc.ca/eic/site/cipointernet-internetopic.nsf/eng/h\\_wr02360.html](http://www.ic.gc.ca/eic/site/cipointernet-internetopic.nsf/eng/h_wr02360.html).
- <sup>xxviii</sup> Canadian Intellectual Property Office, “A Guide to Industrial Designs,” Ottawa, 2018.  
[www.ic.gc.ca/eic/site/cipointernet-internetopic.nsf/eng/h\\_wr02300.html](http://www.ic.gc.ca/eic/site/cipointernet-internetopic.nsf/eng/h_wr02300.html).
- <sup>xxix</sup> Kleinknecht, Alfred, Van Montfort, Kees and Brouwew, Erik (2002). “The Non-Trivial Choice between Innovation Indicators,” *Economics of Innovation and New Technology* 11(2), 109–21.
- <sup>xxx</sup> Hanel, Petr (2008) “The Use of Intellectual Property Rights and Innovation by Manufacturing Firms in Canada,” *Economics of Innovation and New Technology*, 17(4), 285–309.
- <sup>xxxi</sup> Survey on Financing and Growth of Small and Medium Enterprises, 2014,” ISED and Statistics Canada. [www150.statcan.gc.ca/n1/daily-quotidien/151127/dq151127d-eng.htm](http://www150.statcan.gc.ca/n1/daily-quotidien/151127/dq151127d-eng.htm).
- <sup>xxxii</sup> Baldwin, John R. and Gellatly, Guy (2006). “Innovation Capabilities: The Knowledge Capital Behind the Survival and Growth of Firms,” *The Canadian Economy in Transition* research paper series, Statistics Canada.
- <sup>xxxiii</sup> Dernis, Herman, Guellec, Dominique and van Pottelsberghe de la Potterie, Bruno (2001). “Using Patent Counts for Cross-Country Comparisons of Technology Output,” *STI Review*, 27, 129–46.