BIG DATA
Deeper Insights

Why Statistics Canada’s drive to lead the knowledge revolution will matter to you.

January 2020
Delivering insight through data for a better Canada
A century has passed since the Dominion Bureau of Statistics – later renamed Statistics Canada – was created.

Much has changed since 1918. Our country is more diverse, more complex and more data-rich than ever. Technology is evolving at unprecedented speed: 90% of the world’s data was produced in the last two years. In today’s knowledge economy, having credible information – and knowing how to use it – is vital.

As Canadians’ information needs have evolved, so has Statistics Canada – from data provider to data expert. We innovate by providing not only data, but usable and relevant insights, and by integrating new tools, technologies and channels, by increasing our collaboration with clients, stakeholders and partners like you.

As your national statistical agency, we believe that statistics can help shape a better and more prosperous Canada. That is why we will always be committed to providing high-quality statistical information that matters.

The pages ahead are just a sample of what we can offer. Should you want to learn more about what we can do for you, please connect with us. We are at your service.

Best regards,

Anil Arora
Chief Statistician of Canada
Immigration is a main driver of population growth in most provinces.

Half of all immigrants have at least a bachelor’s degree, and over half of those in Canada aged 25 to 64 with a STEM (science, technology, engineering, mathematics and computer sciences) degree are immigrants.

The employment gap between new immigrants and the Canadian-born population is the smallest it has been in a decade.

Visible minority populations are expected to continue to increase, particularly in major cities.

In 2016, immigrants accounted for 54% of individuals aged 25-64 with a university degree in a STEM field.

Close to 75% are at the graduate level in engineering, computer science and mathematics.

2/3 of adult immigrants with a doctoral degree in STEM fields received education in Canada, the US, UK and France.

50% of recent immigrants aged 25-64 had at least a bachelor’s degree in 2016, compared with 30% among Canadian-born youth aged 25-34.

From 2001 to 2016, the number of individuals aged 25-64 with a university degree increased 66% in Canada, one-half came from immigrants.
The decreasing employment gap

- First-full year earnings among economic immigrants rose 19% between 2010 and 2015 entry cohorts, which drove the trend for all new immigrants.
- Earnings growth slower among family immigrants at 10%.
- New immigrants experience faster growth in employment rate than the Canadian born – 7.7 ppts increase from 2010 to 2018, compared with 2.1 ppts increase for Canadians.
- The employment rate gap between new immigrants and Canadians decreased from 19 ppts in 2010 to 13 ppts in 2018.

The increasing visible minority population

By 2036,
- 26% to 31% of the population is expected to have a mother tongue other than English or French.
- 13% to 16% of the population is expected to have a non-Christian religion.
- 35% to 40% of the population aged 15 to 64 is expected to belong to a visible minority group.

The digital economy is changing the way Canadians interact

- Nominal GDP associated with digital economic activities in Canada: $109.7 billion (5.5% of the total economy).
- In comparison, activities in the retail and oil and gas extraction sectors were 5% and 4.8% respectively.
- From 2010 to 2017, the nominal GDP of digital activities grew 40.2%. This compares with 28% for the rest of the economy.
- 886,114 jobs associated with digital economic activities.

Digitization of the economy – Potential impacts for businesses and workers

Statistics Canada is a world leader in measuring the value of data to the Canadian economy. We work in partnership with national and international organizations to develop new and enhanced measures of digital economic activity, including recent estimates of the value of investments in data in different areas of the economy.

- Emerging technologies are changing the way businesses operate and, as a result, are changing the nature of work.
- Robots and artificial intelligence are changing the modes of production and skills required for the future.
- The majority of gig workers are young and looking primarily to supplement their income.
- Canada’s economy continues to adjust to lower oil prices and global uncertainty.
- Labour market conditions in Canada have remained strong.

Digital economy gross domestic product (GDP) as a proportion of the total economy, by province and territory, 2017


Note: The initial estimates of the digital economy presented in this paper are only available in nominal basic prices. In order to compare the digital economy to the total economy, GDP in nominal market prices was adjusted for taxes less subsidies on products and imports. This adjustment provides an approximate estimate of GDP in nominal basic prices.

Robots and artificial intelligence are changing the modes of production and skills required for the future

- There was considerable growth in the non-automotive robot stock, which is reflected in the data on the import of robots by Canadian firms.
- Significant investments in automation were made in the non-automotive manufacturing (particularly machinery, chemicals and metals), and wholesale and retail industries.
- Robotics are associated with gains in employment and productivity, but also with higher employee turnover.
- Robots increase the multifactor productivity and employment of adopting firms.
- Productivity gains from the use of robots are associated with organizational changes and fewer managers, but also with more production staff with different skills.

**Robot investment by economic sector, 2000 to 2015**

![Diagram showing robot investment by economic sector, 2000 to 2015]


New technologies are changing the nature of work

“Artificial intelligence (AI) enables machines or the in-build software to behave like human beings which allows these devices to perceive, analyze data, reason, talk, make decisions and act.”

– The Information and Communications Technology Council.

**Predicted share facing a high risk of job transformation due to automation by highest level of education**

<table>
<thead>
<tr>
<th>Level of Education</th>
<th>Percentage of Enterprises Facing High Risk of Job Transformation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finance and insurance excluding</td>
<td>19.1</td>
</tr>
<tr>
<td>ministerial authorities</td>
<td></td>
</tr>
<tr>
<td>Information and cultural industries</td>
<td>16.8</td>
</tr>
<tr>
<td>Professional, scientific and technical services</td>
<td>11.5</td>
</tr>
<tr>
<td>Total surveyed industries</td>
<td>4.0</td>
</tr>
</tbody>
</table>

Source: Statistics Canada, table 27-10-0367-01.

**Predicted share facing a high risk of job transformation due to automation by highest level of education**

<table>
<thead>
<tr>
<th>Highest completed level</th>
<th>Jobs at risk of automation</th>
</tr>
</thead>
<tbody>
<tr>
<td>No high school diploma or equivalent</td>
<td>Canada 13.5%</td>
</tr>
<tr>
<td>High school diploma or equivalent</td>
<td>14%</td>
</tr>
<tr>
<td>Trade or apprenticeship certificate</td>
<td>Canada 28.6%</td>
</tr>
<tr>
<td>College or CEGEP certificate or diploma</td>
<td>OCDE average 31.6%</td>
</tr>
<tr>
<td>University certificate or diploma below a Bachelor’s degree</td>
<td></td>
</tr>
<tr>
<td>Bachelor’s degree</td>
<td></td>
</tr>
<tr>
<td>First professional degree</td>
<td></td>
</tr>
<tr>
<td>Master’s degree</td>
<td></td>
</tr>
</tbody>
</table>

Source: Longitudinal and International Study of Adults (LISA), Wave 3 (2016).

The majority of gig workers are young and looking primarily to supplement their income.

Reasons for informal work:
- Approximately 80% of gig workers do it to earn money.
- 25% of gig workers do it as their primary source of income (mostly youth).

Characteristics of gig workers:
- 58% of youth reported working in the gig economy.
- Part-time workers participate more in the gig economy.

• For the first time in over four decades, life expectancy did not increase between 2016 and 2017, primarily because of accidental drug poisonings.

• More than 1 in 10 Canadians aged 15 and older reported having used opioid pain relievers in the previous 12 months.

Working collaboratively with stakeholders at the federal, provincial and municipal levels, Statistics Canada is using innovative methods to leverage existing administrative data, as well as creating new sources of data to deliver greater insights on this critical issue.

The number of years employed in the five years prior to death, British Columbia and Surrey, 2011 to 2016

Industry of last main job in the five years prior to death, British Columbia and Surrey, 2011 to 2016

Note: Only those years where employment income was above $500 are counted as years with employment.
The issue of affordability of homeownership continues to be front and centre for many families, as increases in the costs of living and the strain these place on pocketbooks has emerged as a major source of stress for Canadian families. To obtain a full picture of the impacts of changes in living costs on Canadian families, we need to look beyond conventional measures.

- About 1 in 10 Canadian families with debt shows signs of financial distress, such as skipping or delaying a non-mortgage payment during a 12-month period.
- A total of 8% of Canadian families have less than $500 in net worth.
- Basic shelter-related living expenditures have risen more rapidly in certain areas of the country, outpacing earnings growth (e.g., in Ontario). Increases in shelter costs have been far more modest in other areas (e.g., in Quebec).
- Household savings and the share of household income spent on food, shelter and transportation vary substantially within the household sector and reflect differences in income level, family type and household age.
- Savings are concentrated among higher-earning households. Most low-to-middle income families have negative savings rates.

Household wealth differs substantially across major urban areas because of differences in homeownership rates and housing values

Lower-income families, especially in Toronto and Vancouver, are more vulnerable to potential financial shocks

Source: Statistics Canada, table 11-10-0057-01.

Housing values are the main driver of higher wealth and debt levels among millennials aged 30 to 34

Mortgage debt and after-tax income, persons aged 30 to 34, with a mortgage, by generation

[Graph showing median values, 2016 dollars]


Principal residence values, persons aged 30 to 34, with a mortgage, by generation

[Graph showing median values, 2016 dollars]


There are fewer average differences in savings and living expenditures among households in their prime income-earning years

Percentage of after-tax household total income spent on food, shelter and transportation by age, Canada, 2017

[Bar chart showing percentage]

Source: Statistics Canada, Survey of household spending, special tabulation.
Indigenous life and culture

The Indigenous population is increasing faster than the non-Indigenous population and more Indigenous people acquired an Indigenous language.

Indigenous people have made significant gains in educational attainment, but unemployment rates among this group remain higher.

Social and health challenges remain—suicide rates are significantly higher among Indigenous populations compared with non-Indigenous populations.

Indigenous Statistical Capacity Development Initiative:

Statistics Canada is strengthening its relationships with Indigenous organizations and communities to support them in building their own data and research capacities.

Proportion of indigenous-language speakers who acquired an indigenous language as a second language, 1996 to 2016

Age-standardized suicide rate by Indigenous status, Canada, 2011 to 2016

The impact of climate change is becoming more acute. Understanding the different facets of climate change requires new, innovative ways of developing and analyzing data. We cannot continue to examine social and economic issues in isolation. They need to be looked at in the context of ecological assets, ecosystem services and the changing impacts of climate change.

- Environmental and clean technology activities accounted for 3% of GDP in 2017, as trade and jobs related to these activities continued to expand.
- Household activities—either directly or indirectly—account for about 40% of Canada’s greenhouse gas (GHG) emissions.
- Differences in socioeconomic risks across communities may affect their ability to respond to—and recover from—natural disasters.
- The population in urban areas is rising, as are commuting times. Despite decreasing levels of fine particulate matter, air pollution still has a negative impact on longevity.
- The built environment can have positive impacts on health.

Many environmental and clean technology jobs are relatively high paying and high skilled

- Average annual wages for environmental and clean technology (ECT) jobs are higher than those for non-ECT jobs across comparable educational levels.
- Two-thirds of ECT jobs employ workers with some postsecondary education.
- Engineering positions are relatively well represented in the ECT sector.

Source: Statistics Canada, Portrait of environmental and clean technology jobs in Canada, 2017
The distance to work has increased across the eight largest CMAs

In 2016
- 1.5 million Canadians spent at least 60 minutes commuting one way to work
- Approximately 60% of workers with a usual place of work and a long commute by car worked in Toronto, Montréal or Vancouver.

Use of sustainable transportation is increasing in large cities, but challenges remain

Proportion of car commuters who are taking at least 60 minutes to go to work
Significantly higher in Toronto and surrounding municipalities

Among those going from the suburbs to the downtown core, public transit use increased significantly…

…but among suburb-to-suburb commuters (more than 5km), most people drive to work, and public transit take-up rates remained low

<table>
<thead>
<tr>
<th>Percent using public transit, traditional commuters (from a suburb to the downtown core)</th>
<th>1996</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toronto</td>
<td>53</td>
<td>67</td>
</tr>
<tr>
<td>Montréal</td>
<td>38</td>
<td>55</td>
</tr>
<tr>
<td>Vancouver</td>
<td>30</td>
<td>45</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Percent using public transit, suburb-to-suburb commuters with a commute of more than 5km</th>
<th>1996</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toronto</td>
<td>13</td>
<td>13</td>
</tr>
<tr>
<td>Montréal</td>
<td>12</td>
<td>10</td>
</tr>
<tr>
<td>Vancouver</td>
<td>9</td>
<td>13</td>
</tr>
</tbody>
</table>
For almost four decades, Statistics Canada has been working with the federal, provincial and territorial justice communities to leverage administrative data to provide information to the public and decision makers on the nature and extent of crime, victimization, and the administration of criminal and civil justice in Canada.

**The Crime Severity Index increased for the fourth consecutive year**

![Crime Severity Index graph](image)

Source: Statistics Canada, Uniform Crime Reporting Survey, 2018

**Police-reported sexual assault in Canada peaked in October 2017, coinciding with the widespread #MeToo movement**

![Sexual assault report graph](image)

Source: Statistics Canada, Uniform Crime Reporting Survey, 2018
Police reported hate-crimes dropped in 2018, but have been trending upward over the last decade—most were motivated by race, ethnicity or religion.

The vast majority (88%) of Canadians are either satisfied or very satisfied with their personal safety from crime.
WE ARE AT YOUR SERVICE

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