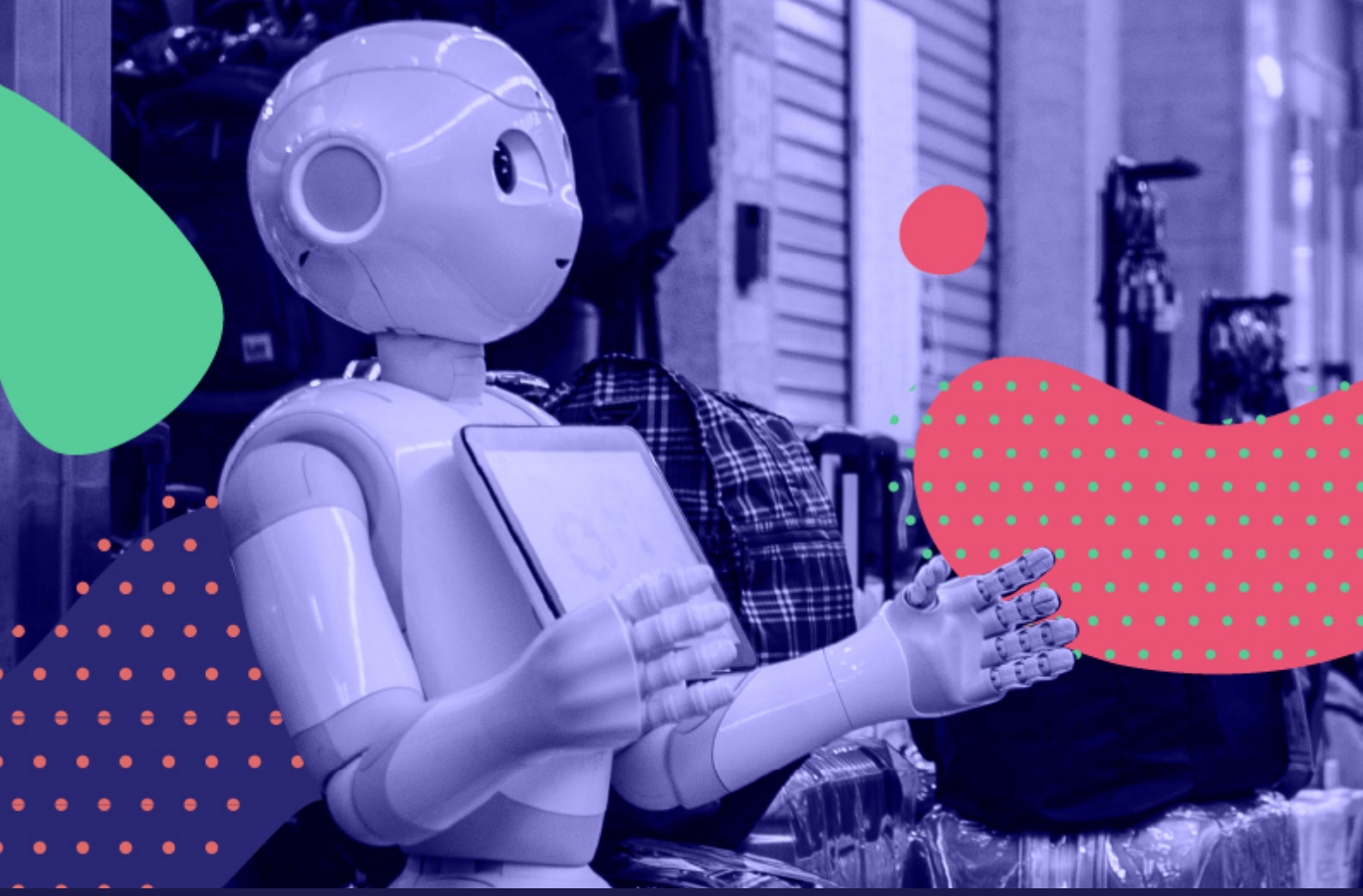


Future Jobs Canada

The Pace of Robotics Technology Adoption in Canada

Covid-19 will likely slow the pace of robotics adoption in Canada

Future Jobs Canada

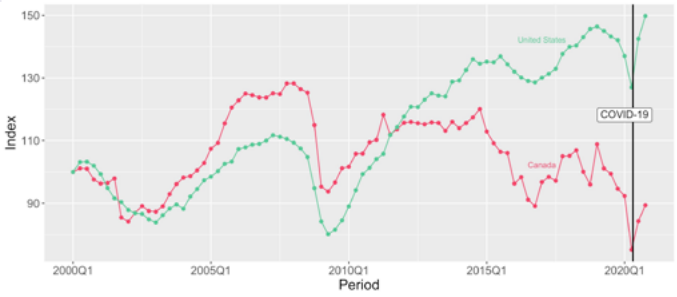
Canadian Investment in Machinery and Equipment Lags Behind the US

It is well known that investment in machinery and equipment per labour force participant in Canada has lagged behind that of the United States before the COVID-19 pandemic. This trend has continued through the early stages of the COVID-19 pandemic, during which both countries' investment patterns were severely affected by business closures and economic downturns. While the normalized investment data demonstrates that the US business investment patterns in machinery and equipment have returned to their pre-pandemic levels, Canada's remain significantly below (Figure 1).

Figure 1

Business Investment in Machinery and Equipment per Available Labour

Quarterly Data 2000 Q1 = 100



Date Source – Statistics Canada Bureau of Economic Analysis. Perios Observed 2000 Q1–2020 Q4

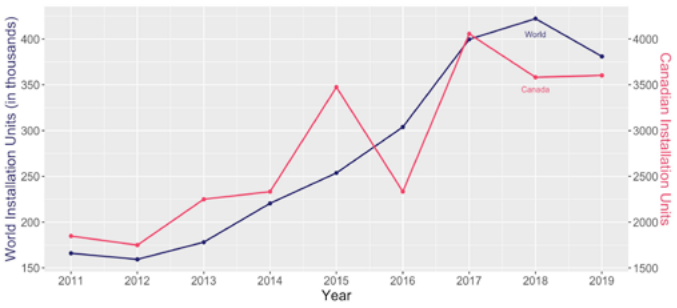
Canada Follows the Global Trend in Robotics Installations Pre-COVID-19

Data from the International Federation of Robotics World Robotics Reports indicate increased adoption of industrial robotics technology in the pre-pandemic period. Canada's data suggests that our companies have installed industrial robots at a similar pace, but this adoption has slowed in recent years (Figure 2). Between 2011 and 2019, Canada's installations grew by an average of 10.6% annually. During the same period, the world installations grew 14.4% annually on average.

Figure 2

World and Canadian Industrial Robots Installation

Annual Data



Date Source – International federation of Robotics. Period Observed: 2011 – 2019

The Pace of Global Industrial Automation is Forecasted to be Slowed by COVID-19

Economies worldwide continue to struggle with the impact of the pandemic. An examination of changes in the published robotics installations forecasts from the International Federation of Robotics (IFR) gives insights into the disruption and economic damage expected to be caused by COVID-19. Compared with the robotics forecasts from previous years, the 2020 forecasts show that the IFR expects the pandemic to slow global robot installations. Given the ongoing uncertainty surrounding the pace of economic recovery, the IFR has presented multiple projections of industrial robot installations over the next 3 years. All cases predict growth to be depressed in the short term (Figure 3). The expected impact of the pandemic on professional service robots is more muted. According to the report, professional service robots are projected to grow 38% in 2020 as the increased demand for medical service and industrial cleaning robots help offset decreased demand in other areas. While this is below the 41% growth they projected for 2020 the year prior, it is still up from the 32% growth for 2019 (Figure 4). The forecasted installation levels for personal service robot installations have also diminished as a result of the pandemic (Figure 5).

Figure 3

World Projected Installations of Industrial Robots

Annual Data. 2005 = 100

Dots represent observed values. Dashed lines represent forecast values.
Data Source: International Federation of Robotics. Period observed 2005–2023

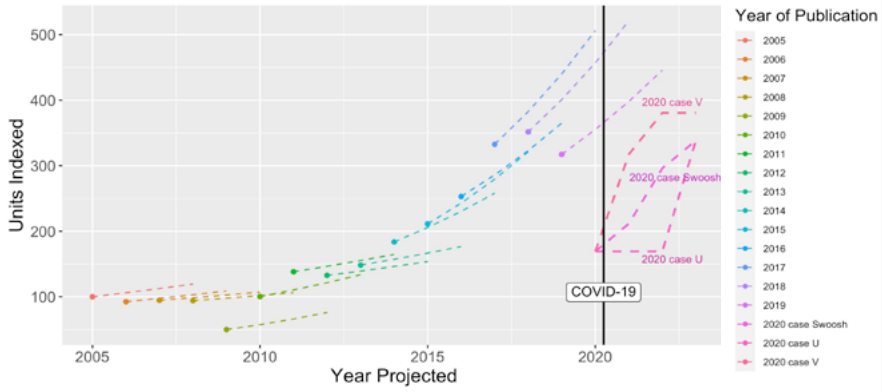


Figure 4

World Projected Installations of Professional Service Robots

Annual Data. 2005 = 100

Dots represent observed values. Dashed lines represent forecast values.
Data Source: International Federation of Robotics. Period observed 2005–2023

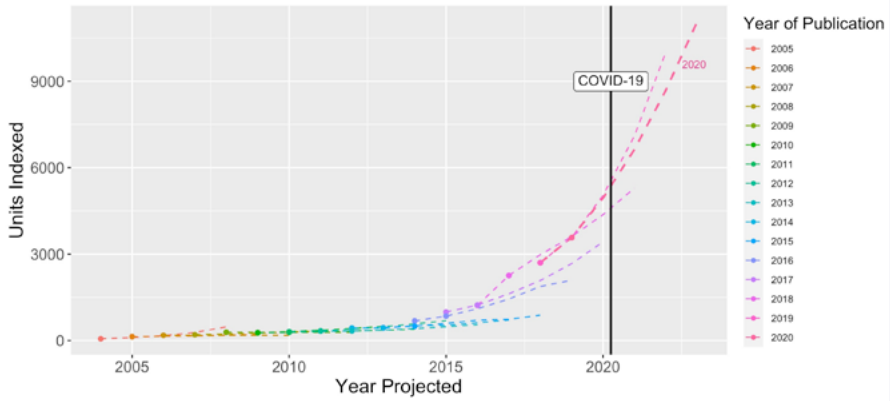
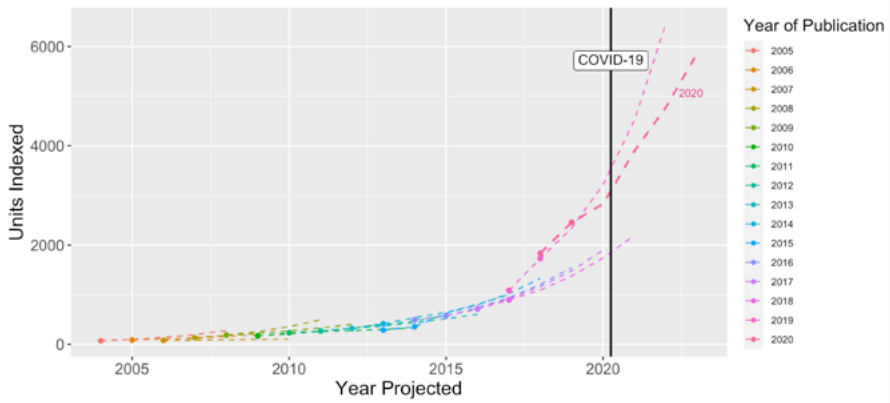


Figure 5

World Projected Installations of Personal Service Robots

Annual Data. 2005 = 100

Dots represent observed values. Dashed lines represent forecast values.
Data Source: International Federation of Robotics. Period observed 2005–2023



Global projection key takeaways:

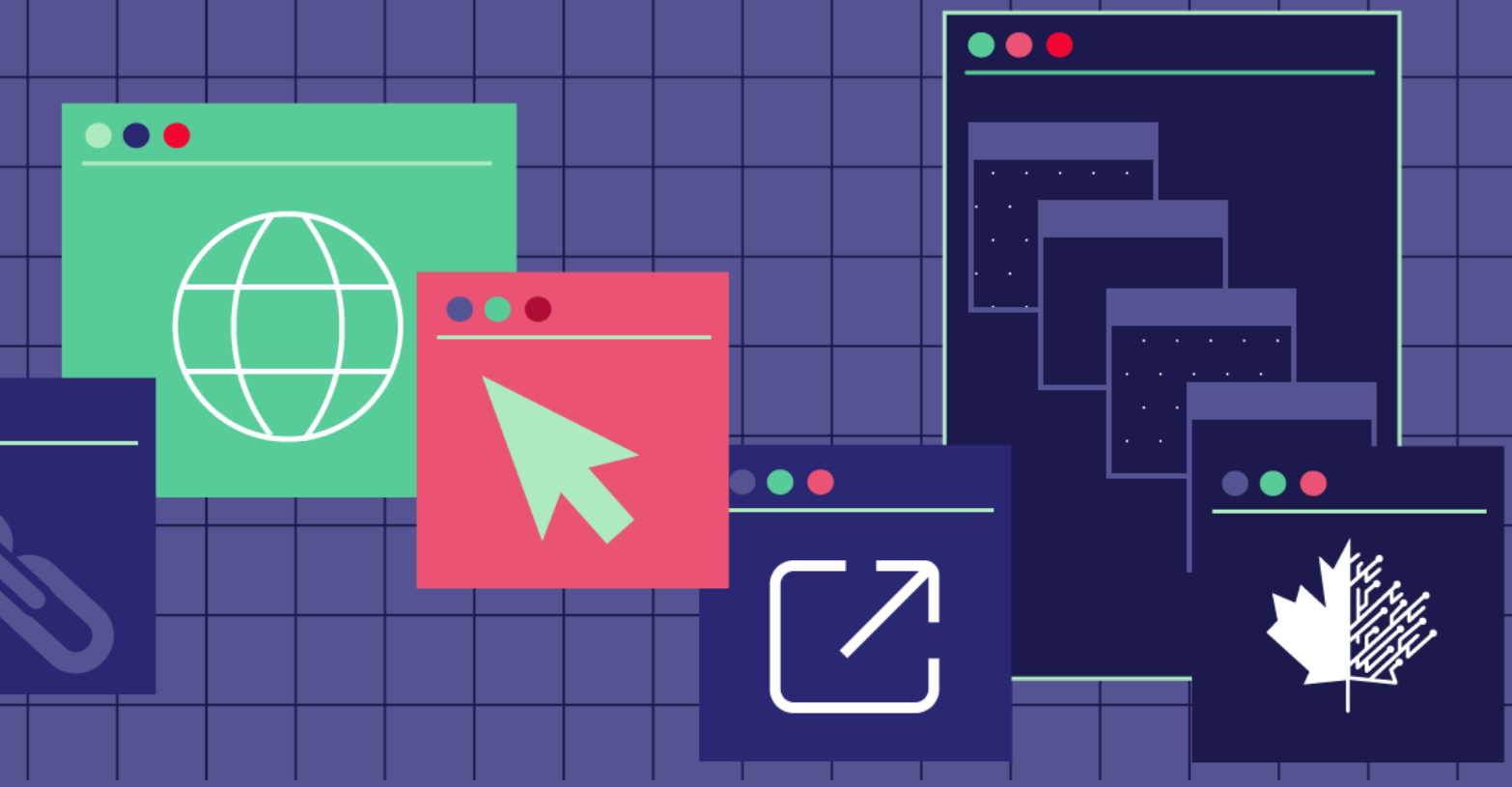
- The COVID-19 pandemic is expected to reduce the pace of robotics adoption to varying degrees depending on the type of robots and their application.
- The expected pace of industrial automation highly depends on the pace of broad economic recovery.
- The COVID-19 pandemic is expected to reduce the potential level of industrial robot installations through 2023.
- A comparison of the IFR forecasts indicates that the growth of service robot adoption may be less affected by the pandemic than that of industrial robots.
- Based on historical similarities between global and Canadian robotic adoption rates alongside recent data on diminished investment in machinery and equipment in Canada during the pandemic, it is likely that the rate of robotics adoption in Canada will be dampened in the short run by the COVID-19 pandemic.
- If slower adoption rates materialize, the short-run disruptions in the labour market linked to increased adoption of robotics technologies may be attenuated.

Robotics definitions:

- Personal service robots include household task and entertainment robots such as vacuuming and floor cleaning robots, lawn-mowing robots, pool-cleaning robots, and toy robots.
- Professional service robots include robots used for commercial purposes. They are typically operated by trained professionals. Examples of this type include medical, farming, and professional cleaning robots.
- Industrial service robots refer strictly to those used for industrial automation applications.

Sources:

- Statistics Canada. Table 14-10-0287-01 Labour force characteristics, monthly, seasonally adjusted and trend-cycle, last 5 months. https://doi.org/10.25318/1410028701-eng
- Statistics Canada. Table 36-10-0104-01 Gross domestic product, expenditure-based, Canada, quarterly (x 1,000,000). https://doi.org/10.25318/3610010401-eng
- U.S. Bureau of Labor Statistics, Civilian Labor Force Level [CLF16OV], retrieved from FRED, Federal Reserve Bank of St. Louis. https://fred.stlouisfed.org/series/CLF16OV
- U.S. Bureau of Economic Analysis, Gross Private Domestic Investment: Fixed Investment: Nonresidential: Equipment [Y033RC1Q027SBEA], retrieved from FRED, Federal Reserve Bank of St. Louis. https://fred.stlouisfed.org/series/Y033RC1Q027SBEA
- Installations of Industrial Robots, International Federation of Robotics World Robotics Industrial Robots Reports (Various Years)



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