

Study: Experimental economic activity indexes for Canadian provinces and territories, January 2002 to March 2020

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New experimental indexes of economic activity show that, among all provinces and territories, Alberta experienced the largest year-over-year decline in economic activity in March 2020. This large decline reflects the impact of both the COVID-19 pandemic and lower oil prices in Alberta. Saskatchewan, Ontario, Quebec, New Brunswick and Nova Scotia also posted large declines. Nunavut, an area of Canada that has yet to report a confirmed case of COVID-19, experienced no decline.

The experimental economic activity indexes and the methodologies used to calculate them are described in the study "Experimental Economic Activity Indexes for Canadian Provinces and Territories," released today. These indexes provide a timely summary measure of economic activity by combining existing economic data into a single index using a number of statistical methods for the period from January 2002 to March 2020.

Statistics Canada releases timely statistics that inform Canadians about economic activity in a range of areas, such as the labour market, merchandise trade, manufacturing production, and wholesale and retail trade sales. However, each statistic reflects activity only in a particular area of the economy. Gross domestic product (GDP) is a comprehensive measure of all these areas, but it is less timely, especially for individual provinces and territories, where the data are annual. The experimental economic activity indexes address this data gap.

Four different approaches to creating an economic activity index were considered in this study: (1) a simple linear regression model, (2) principal component analysis, (3) least absolute shrinkage and selection operator, and (4) a weighted average of 1 and 2. Different approaches were considered because there is no optimal or commonly accepted statistical method for combining multiple data series into one index. The study discusses the strengths and weaknesses of each approach and identifies the approaches that yield fit-for-use series for each province and territory.

The study does not identify a preferred approach because there is no comprehensive measure of economic activity, such as monthly GDP for each of the provinces and territories, with which to compare the experimental indexes. Otherwise, it would have been possible to evaluate the statistical methods based on how well each index approximates the historical GDP data and calculate an economic activity index for the most recent period, when the input data are available but GDP is not. As a consequence, the indexes should be viewed as a composite of a range of economic activity indicators and as experimental, rather than as a measure of GDP. The quality of the indexes will continue to be assessed as they are updated monthly.

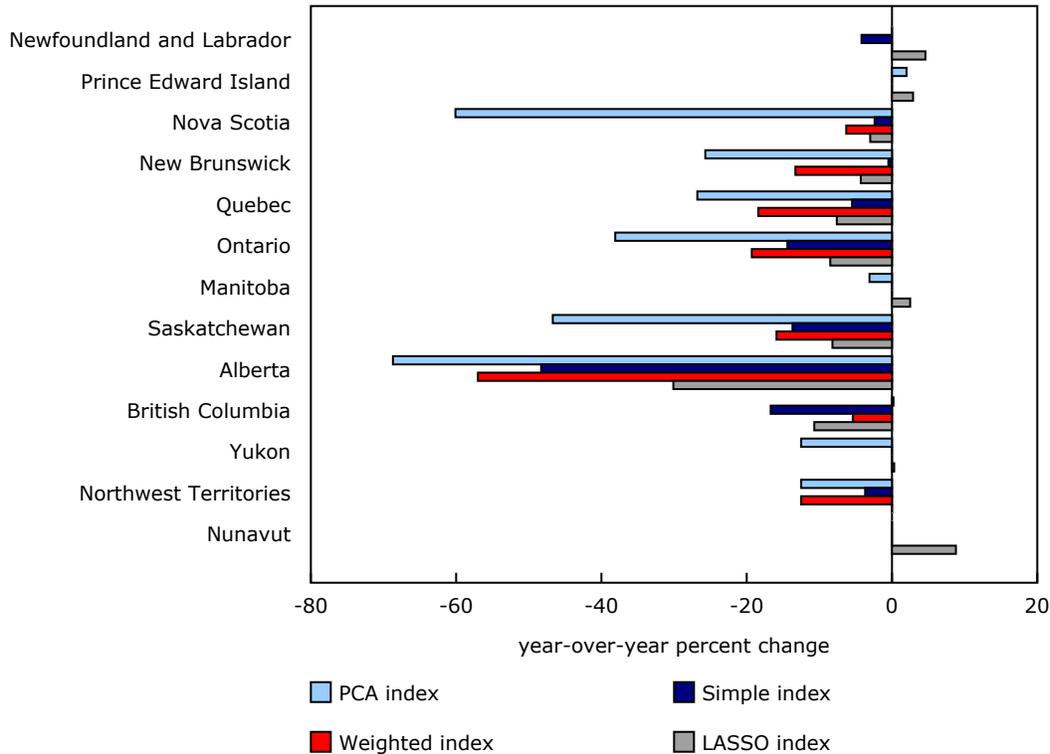
Across all four methods, Alberta recorded the largest year-over-year decline in economic activity in March 2020. Estimates range from a decrease of 30.1% to a decrease of 68.7%. The size of the declines in the indexes for Alberta illustrates an important feature of the economic activity indexes—they tend to exhibit a large degree of cyclicity and variability.

Estimates for Ontario, Quebec and Saskatchewan were also consistently large and negative. As the second-largest oil producer in Canada, Saskatchewan was also affected by both COVID-19 and the oil price shock. Economic activity in Saskatchewan fell by 8.2% to 46.7%, depending on the measure used, from March 2019 to March 2020. Ontario and Quebec have the highest number of COVID-19 cases per capita among the provinces and territories, and they experienced declines in their economic activity indexes of between 8.5% and 38.1%, and between 5.5% and 26.8%, respectively, over the same period. Consistent declines were also reported for Nova Scotia, New Brunswick and the Northwest Territories.

At the other end of the spectrum, from March 2019 to March 2020, Nunavut (which has no confirmed COVID-19 cases) saw an 8.8% increase in its economic activity index, while Prince Edward Island (which has been less affected by COVID-19) was the only province where all economic activity indexes consistently showed positive year-over-year growth in March.

The remaining provinces and territories fell between the two ends of the spectrum, with activity indexes that did not decline as much or as consistently as those for Alberta, Saskatchewan, Ontario, Quebec, New Brunswick and Nova Scotia.

Chart 1
Year-over-year changes in economic activity indexes, March 2020



. not available for any reference period

Note(s): PCA: principal component analysis; LASSO: least absolute shrinkage and selection operator. Series are not available for all combinations of indexes and geographic areas. The simple index is not available for Prince Edward Island, Manitoba, Yukon and Nunavut. The PCA index is not available for Newfoundland and Labrador and Nunavut. The weighted index is not available for Newfoundland and Labrador, Prince Edward Island, Manitoba, Yukon, and Nunavut. The LASSO index is not available for the Northwest Territories.

Source(s): Table 36-10-0633-01.

Note to readers

A paper in the Analytical Studies Branch Research Paper Series that provides more detail on the statistical approaches and data series used to calculate the economic activity indexes will be released in August. The programs used to create the indexes will also be made available in the future.

To obtain feedback on these experimental estimates, the estimates will be updated monthly for the next few months and provided in table 36-10-0633. After that, a review of the indexes that will be updated, if any, will take place. Feedback on the indexes is welcomed, and it will be incorporated into the review. The indexes are experimental, and it is not clear which index performs best. If you wish to provide feedback on the methods, the data sources, the experimental indexes or other aspects of the project, please contact statcan.analyticalstudies-etudesanalytiques.statcan@canada.ca.

Available tables: table [36-10-0633-01](#).

Definitions, data sources and methods: survey numbers [2101](#), [2151](#), [2201](#), [2301](#), [2310](#), [2325](#), [2401](#), [2406](#), [2419](#), [2612](#), [2802](#), [3701](#), [5005](#) and [7505](#).

The research article "[Experimental Economic Activity Indexes for Canadian Provinces and Territories](#)," part of the *Economic Insights* series ([11-626-X](#)), is now available.

To enquire about the concepts, methods or data quality of this release, contact Ryan Macdonald (ryan.macdonald@canada.ca), Economic Analysis Division.

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